

ANNUAL REPORT

AICRP ON PIG
&
MEGA-SEED PROJECT ON PIG
(2017-18)



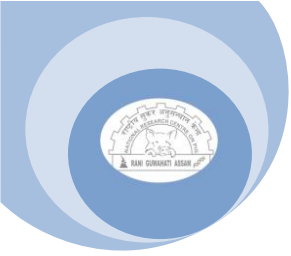
भा.कृ.अनु.प.-राष्ट्रीय शूकर अनुसंधान केन्द्र
ICAR-NATIONAL RESEARCH CENTRE ON PIG
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
RANI, GUWAHATI-781131



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ICAR-National Research Centre on Pig
Rani, Guwahati, Assam- 781 131



NATIONAL RESEARCH CENTRE ON PIG

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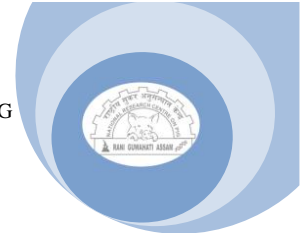
Project Coordinator

Dr. D.K. Sarma (Till Dec-2012)
Dr. S. Rajkhowa, Director, NRC on Pig

Compiled and Edited by:

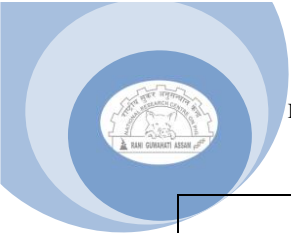
Dr. Santanu Banik, Principal Scientist (AG&B) & I/C AICRP on Pig
Dr. Mohan N.H., Principal Scientist (AP) & I/C Mega-seed Project on Pig
Dr. Keshab Barman, Principal Scientist (AN)
Dr. P.J. Das, Senior Scientist (AG&B)
Dr. Sunil Kumar, Scientist (AR)

ICAR-National Research Centre on Pig, Rani, Guwahati, Assam



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कार्यकारी सारांश

सूकर पर अखिल भारतीय समन्वित अनुसंधान परियोजना

अखिल भारतीय समन्वित अनुसंधान परियोजना का सूत्रपात पांचवीं पंचवर्षीय योजना (1970-1971) के दौरान हुआ था जिसका मुख्य उद्देश्य मौजूदा प्रबंधन शर्तों के तहत सूकरों की शुद्ध नस्लों के प्रदर्शन का अध्ययन करना था।

चौथी और पांचवीं पंचवर्षीय योजना के दौरान निम्नलिखित उद्देश्यों के साथ सूकरों की विदेशी नस्लों पर (तिरुपति और जबलपुर में बड़े सफेद यार्कशायर पर, खानापाड़ा और इज्जतनगर में लानद्रस पर) अनुसंधान कार्य संपादित किए गए:

- चयन सूचकांक और आनुवंशिक उन्नयन की दृष्टि से भारत में उपलब्ध सूकरों की विदेशी नस्लों की उपयोगिता हेतु आर्थिक रूप से महत्वपूर्ण विदेशी नस्लों के विभिन्न आनुवंशिकी मानकों का आकलन करना।
- सूकर उत्पादन पर प्रोटीन ऊर्जा अनुपात के प्रभाव की जांच करना और विभिन्न स्थानों पर सूकरों के लिए कम लागत पर समुचित और किफायती चारे का पता लगाने हेतु पोषण संबंधी प्रयोग करना।
- सूकर रोगों का अध्ययन करना और उनकी रोक-थाम के लिए उपयुक्त नियंत्रण उपायों की खोज करना।

पांचवीं पंचवर्षीय योजना के अंत तक इनकी बहुल संख्या और ग्रामीण जनता के लिए इसके उच्च आर्थिक महत्व को ध्यान में रखते हुए देशज सूकरों में सुधार करने की जरूरत महसूस की गई। यह भी महसूस किया गया है कि ग्रामीण स्थिति के साथ-साथ फार्म में भोजन रूपांतरण की अधिकतम क्षमता वाले अनुकूल किस्म के सूकर विकसित करने के लिए प्रजनन तकनीक को विकसित करना आवश्यक है। अतः सूकर उत्पादनों के बहुआयामी पहुंच के लिए छठी पंचवर्षीय योजना की शुरुआत में सर्वप्रथम देशज सूकर पर, तत्पश्चात वर्तमान लक्ष्य के साथ देशज मादा से उचित विदेशी नस्ल के साथ परस्पर प्रजनन पर शोध कार्य हेतु राष्ट्रीय सूकर अनुसंधान केंद्र (एनआरसी) द्वारा सूकर के तकनीकी कार्यक्रम को संपूर्णतः दुबारा तैयार किया गया। इसके बाद बारहवीं योजना अवधि के दौरान एआईसीआरपी केन्द्रों की संख्या बढ़कर 15 हो गयी। 01.04.2017 से एआईसीआरपी के निम्नलिखित केंद्र कार्य कर रहे हैं-

- असम कृषि विश्वविद्यालय, खानापाड़ा, गुवाहाटी।
- केरल पशु चिकित्सा एवं पशु विज्ञान विश्वविद्यालय, मन्नुति।
- तमिलनाडु पशु चिकित्सा पशु विज्ञान विश्वविद्यालय, कट्टुपक्कम।
- श्री वेंकटेश्वर पशु चिकित्सा विश्वविद्यालय, तिरुपति
- आईवीआरआई, इज्जतनगर।
- गोवा, ओल्ड गोवा के लिए आईसीएआर अनुसंधान परिसर।
- केन्द्रीय कृषि विश्वविद्यालय, आइजोल, मिजोरम
- नागालैंड विश्वविद्यालय, मेइजीफेमा
- कृषि विज्ञान केंद्र, दुधनोई, गोलपाड़ा, असम
- केन्द्रीय कृषि अनुसंधान संस्थान, पोर्ट ब्लेयर, अंडमान और निकोबार द्वीप
- केन्द्रीय कृषि विश्वविद्यालय, इम्फाल, मणिपुर



- भारतीय पशु चिकित्सा अनुसंधान संस्थान, पूर्वी क्षेत्रीय केन्द्र, कोलकाता, पश्चिम बंगाल
- NEH क्षेत्र, बारापानी, शिलांग, मेघालय के लिए आईसीएआर अनुसंधान परिसर
- गुरु अंगद देव पशु चिकित्सा और पशु विज्ञान विश्वविद्यालय, लुधियाना, पंजाब
- क्रांतिसिंह नाना पाटिल पशु चिकित्सा विज्ञान महाविद्यालय, शिरवल, महाराष्ट्र

ऊपर्युक्त केन्द्रों को वित्तीय समर्थन प्रदान करने के अलावा, राष्ट्रीय सूकर अनुसंधान केंद्र (एनआरसी) वार्षिक समीक्षा बैठकों के दौरान केन्द्रों की कार्य योजना तय करता है और प्रत्येक केन्द्र की प्रगति पर लगातार निगरानी रखता है।

सूकर पर मेगा सीड प्रोजेक्ट

वर्तमान परियोजना एक नाभिक जर्मप्लाज्म उत्पादन केंद्र की अवधारणा के साथ क्रियान्वित की गयी है जिसे लक्षित गांव के अंदर और बाहर विशिष्ट सूकरों के क्षैतिज प्रसार सुनिश्चित करने के लिए ग्रामीण स्तर पर इसे उपग्रह केंद्रों से जोड़ा गया है।

उद्देश्य:

- प्रतिवर्ष 300 सूकर पालक परिवारों को वितरित करने हेतु प्रत्येक केंद्र द्वारा 900 सूकर के बच्चों का उत्पादन करना।
- उत्तम दर्जे के बहु संख्यक सूकर के बच्चों के उत्पादन के लिए संस्थानों की क्षमता का निर्माण करना।
- उन्नत सूकर पालन के माध्यम से लिंग सम्मत अस्थायी गरीबों के विकास की शुरुआत करना।

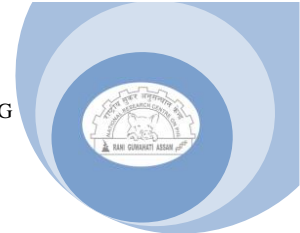
लक्ष्य:

- प्रौद्योगिकी नेतृत्व विकास के माध्यम से उत्तम दर्जे के उन्नत किस्म के सूकर के बच्चों का उत्पादन और फार्म की आय में बढ़ोतरी करना।

वर्तमान में इस परियोजना के तहत सात केंद्र हैं, जैसे-

- बिरसा कृषि विश्वविद्यालय, रांची
- असम कृषि विश्वविद्यालय, खानापाड़ा
- आईसीएआर आर सी NEHR, नागालैंड केंद्र, मेडिज़फेमा
- राज्य पशु चिकित्सा विभाग, मिजोरम, आइजोल, मिजोरम सरकार।
- केरल पशु चिकित्सा एवं पशु विज्ञान विश्वविद्यालय, मन्नुथि।
- पशु संसाधन विकास विभाग, त्रिपुरा सरकार
- पशु चिकित्सा और पशु पालन विभाग, सिक्किम सरकार।

पिछले कुछ वर्षों के दौरान सुअर पर मेगा सीड प्रोजेक्ट के प्रभाव किसानों को सूकर के बच्चों के विकसित किस्म की आपूर्ति के संदर्भ में महत्वपूर्ण हो पाया था। विभिन्न मेगा सीड केन्द्रों द्वारा बेरोजगार ग्रामीण युवाओं की क्षमता निर्माण के बीच में उन्हें आजीविका के एक तरीके के रूप में सुअर पालन को लेने के लिए मदद की है।



Executive Summary

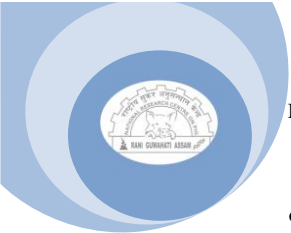
AICRP on Pig

All India coordinated research project was initiated during IVth five year plan (1970-1971) with the main objective of studying the performance of pure breed pigs under existing managerial conditions. During IVth and Vth five year plan, the research work was conducted with the exotic breeds of pig (Large white Yorkshire at Tirupati and Jabalpur, landrace at Khanapara and Izatnagar) with the following objectives:

- To assess various genetics parameters of economically important exotic breeds of pig genetics available in India with a view to utilize the same in selection index and for making genetic advancement.
- To investigate the effect of protein energy ratio on production of pig and to conduct nutritional experiment to find out low cost and reasonably economic pig feed for different locations.
- To study the occurrence of pig diseases and to find suitable control measures against the same.

By the end of Vth five year plan, it was realized the need for improvement of indigenous pig in view of their large number and high economic importance to the rural population. It was also realized that breeding technologies need to be developed to evolve a suitable type of pig having optimum efficiency of feed conversion in farm as well as rural condition. Therefore, to give a multidisciplinary approach in pig production, the technical programme of AICRP on pig was completely remodeled in the beginning of VIth five year plan to undertake research work first on indigenous pig and then subsequently on the crossbreeding by crossing indigenous female with appropriate exotic breed with the present objectives. Subsequently during XII plan period, the AICRP centres were increased to 15 numbers. From 1.04.2017 the following AICRP centers were in position.

- Assam Agricultural University, Khanapara, Guwahati.
- Kerala Veterinary and Animal Sciences University, Mannuthy.
- Tamilnadu Veterinary Animal Science University, Kattupakkam.
- Sri Venkateswara Veterinary University, Tirupati
- IVRI, Izatnagar.
- ICAR Research Complex for Goa, Old Goa.
- Central Agricultural University, Aizawl, Mizoram
- Nagaland University, Medziphema
- Krishi Vigyan Kendra, Dudhnoi, Goalpara, Assam
- Central Agricultural Research Institute, Port Blair, Andaman and Nicobar Island
- Central Agricultural University, Imphal, Manipur



- Indian Veterinary Research Institute, Eastern Regional Station, Kolkata, West Bengal
- ICAR Research Complex for NEH Region, Barapani, Shillong, Meghalaya
- Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab
- Krantisinh Nana Patil College of Veterinary Science, Shirval, Maharashtra

Besides providing the budgetary support to the above centers, the NRC on pig is deciding the work plan of the centres during the annual review meeting and continuously monitoring the progress of each of the centres

Mega seed project on pig

The present project is implemented with a concept of one nucleus germplasm production centre linking it with satellite centres at village level to ensure a horizontal spread of quality pigs within and outside the targeted village.

Objectives:

- Production of 900 piglets by each centre for distribution to 300 farm families per annum.
- Capacity building in institutes to produce above number of quality piglets
- Initiating gender friendly pro-poor growth through improved pig husbandry

Target:

- Production of upgraded variety of quality piglets and increased farm income through technology lead growth

Currently there are seven centers under this project viz.

- Birsa Agricultural University, Ranchi
- Assam Agricultural University, Khanapara
- ICAR RC NEHR, Nagaland Centre, Medziphema
- State Veterinary Department, Government of Mizoram, Aizawl, Mizoram.
- Kerala Veterinary and Animal Sciences University, Mannuthy.
- Animal resources development department, Government of Tripura
- Dept. of Animal Husbandry and Veterinary Services, Govt. of Sikkim

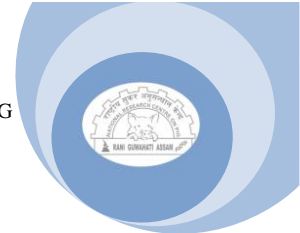
The impact of Mega Seed Project on Pig during last few years was found to be significant in terms of supply of developed variety of piglets to the farmers. Capacity building of the unemployed rural youth by different Mega Seed centers has helped to take up piggery as a way of livelihood among them.



AICRP on Pig

**NAME OF THE CENTRE AND INCHARGE**

AICRP Project on Pig		Name of Incharge
1	College of Veterinary Science, Assam Agricultural University Khanapara, Guwahati, Assam-781022	Dr. Dhireswar Kalita
2	College of Veterinary & Animal Science, Kerala Veterinary and Animal Science University, Mannuthy, Kerala-680651	Dr. A.P. Usha
3	College of Veterinary Science, Sri Venkateshwara Vety. University, Tirupati- 517 502, Andhra Pradesh	Dr. D. Suresh Babu
4	ICAR-Central Coastal Agricultural Research Institute, Ela, Old Goa-403402, Goa	Dr. E.B. Chakurkar
5	ICAR-Indian Veterinary Research Institute, Izatnagar, U.P. - 243122	Dr. G.K. Gaur
6	Post Graduate Research Institute in Animal Sciences, Tamil Nadu Veterinary and Animal Sciences University, Kattupakkam, Tamilnadu-603203	Dr. D. Balasubramanyam
7	College of Veterinary Science & AH, CAU, Selesih, Aizawl, Mizoram-796007	Dr. Shyamsana Singh
8	School of Agricultural Science and Rural Development, Nagaland University, Medziphema, Nagaland-797 106	Dr. M. Catherine Rutsa
9	ICAR-Central Island Agricultural Research Institute, Port Blair, A&N Island-744105	Dr. Madhu Sudan Kundu
10.	College of Agriculture, Central Agricultural University, Imphal, Manipur-795004	Dr. Th. Ranadhir Singh
11.	ICAR- Indian Veterinary Research Institute, Eastern Regional Station, Kolkata, West Bengal-700037	Dr. Syamal Naskar
12.	ICAR Research Complex for NEH Region, Barapani, Shillong, Meghalaya-793 103	Dr. Kadirvel Govindasamy
13.	Krishi Vigyan Kendra, NRC on Pig, Dudhnoi, Goalpara, Assam-781131	Dr. Santanu Banik
14.	Krantisinh Nana Patil College of Veterinary Science, Maharashtra Animal and Fishery Sciences University), Shirval, Dist.- Satara, Maharashtra-412801	Dr. Mukund Bhimraoji Amle
15.	Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab- 141004	Dr. Ashwani Kumar Singh



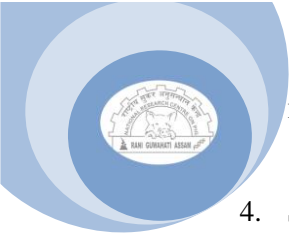
ACTIVITY ASSIGNED AND TARGET FIXED

General:

1. The most significant achievements *w.r.t.* developed pig breed/variety/strain, nutritional package(s), field validation report, major success stories and impact analysis since inception needs to be compiled in the form of a booklet by each centers and sent to the Coordinating unit by December, 2017.
2. The statement of expenditure (SOE) need to be submitted quarterly for the release of subsequent installment.
3. Monthly report of piglet production and sale is to be sent to the Project Coordinator office by 28th of every month, preferably by e-mail. The period to be covered is from 25th of previous month to 24th of current month.
4. The centres need to submit AUC before July month of preceding financial year and UC quarterly, positively.
5. The unspent amount as on 31st of March must be refunded by 30th April of next financial year positively.
6. Final annual report should be submitted as per format to ICAR-NRC on Pig by April of the preceding financial year.
7. The 75 percent of revenue receipt from sale proceed should be retained in the SAU/institute and 25 percent should be sent to the Project coordinating unit. 50% of the 75% retained with the institute can be utilized by the concerned project centre.
8. Sale-proceed need to be deposited to office at the earliest preferably next day or maximum within the week.
9. Salary component to be utilized for permanent staff of the project only.
10. Changing of PI/In-charges of the centre should be done in consultation with Project Coordinator. In-charges should have specialization in Animal Genetics and Breeding, as the major mandate of each centre is on breeding aspect, however scientists from other disciplines may be associated with the project as Co-PIs.
11. The AICRP on pig and Mega Seed Project on pig incharges should visit other centres.
12. Extension activities of the programme including animal distribution record should be maintained as per Direct Benefit Transfer (DBT) norms of Govt. of India.

Animal Breeding:

1. Breed registration and conservation: All the AICRP on Pig centres shall take necessary steps for registration of indigenous germplasm in collaboration with ICAR-NRC on Pig and ICAR-NBAGR, Karnal.
2. Crossbred animals of 75% exotic inheritance should be maintained by the old centres. Centres approved in XIIth Five Year Plan should continue to maintain the germplasm as per the recommendation made in review meet of 2014-15.
3. Minimum 30 breedable sows unit should be maintained with a sex ratio of 1:3 and thus 10 sires (2 sires from each 5 unrelated sire lines) need to be maintained by each of the centres.



4. Selection of male animals should be based on weaning weight (best 25%) and 8 month body weight (best 5%), based on two stage sequential selection. Selection of female animals should be based on dam's litter size at birth (>7) and weaning weight (best 25%) and number of functional teats (at least 6 pairs of functional teats).
5. The generation-wise data should be presented indicating progress made in each generation over the previous ones. The overall genetic gain, selection differential and heritability need to be calculated and reported. Data should be presented for last three generations.
6. Three number of farrowings per sow need to be recorded. Three farrowings per sow should be completed in 2 years. Following lifetime production traits should be reported:
 - Live weight produced per sow at birth
 - Live weight produced per sow at weaning
 - Live weight produced per sow at 8 months
 - Live weight produced per sow at the time of slaughter.
7. Artificial Insemination should be implemented at all centers. Required training for AI may be obtained from ICAR-NRC on Pig or other AICRP on Pig center.

Nutrition, physiology and management:

1. Each centre should develop a parallel strategy/plan for entrepreneurship development in the locality. For this, readymade plan to be prepared for 100/200 animal units including capital investment, animal, feed, marketing strategies with complete value-chain in piggery.
2. Good management practice (GMP) need to be followed by individual centers.
3. Recording of daily micro and macroclimatic data (Temperature, Humidity and calculation of THI) need to be undertaken and compiled on monthly basis.
4. The centers should develop technologies, including shelter management to reduce thermal stress.

Health Management:

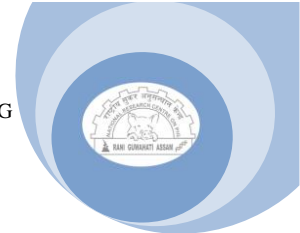
1. Regular monitoring of the herd for emerging infectious diseases should be undertaken in collaboration with ICAR-NRC on Pig/National Institutes.
2. Proper managerial care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5 months) and adult (5 months to 8 months) mortality and to keep it below 10%, 5% and 2%, respectively.
3. Steps need to be taken up to strengthen required bio-security measures at the farm.

Centre wise recommendation:

All the AICRP centers should ensure that the above recommendations are implemented. Besides, some of the specific action points were mentioned for each of the centers.

Assam Agricultural University, Khanapara:

1. The centre should submit the AUC/UC in time.
2. Initiation of characterization of local pig of Assam needs to be carried out.
3. Compile the generation-wise data of HD-K 75 for each generation (as per format of TANUVAS) and send to coordinating unit by 15th August, 2017.

**Kerala Veterinary and Animal Science University, Mannuthy:**

1. Initiation of characterization of local pig of Kerala needs to be carried out.
2. Compile the generation-wise data of Mannuthy White for each generation (as per format of TANUVAS) and send to coordinating unit by 15th August, 2017.

ICAR-IVRI, Bareilly:

1. Process of registration of local pigs of the states need to be initiated.

Sri Venkateswara Veterinary University, Tirupati

1. Breeding data need to be analysed properly.
2. Initiation of characterization of local pig of the state need to be carried out.
3. Compile the generation-wise data of Tirupati-Varaha for each generation (as per format of TANUVAS) and send to coordinating unit by 15th August, 2017.

ICAR Research Centre for Goa, Goa:

1. Centre should maintain the required breeding stock.

Tamil Nadu Veterinary and Animal Sciences University, Kattupakkam:

1. Initiation of characterization of local pig of Tamil Nadu needs to be carried out.

CVSc, Central Agricultural University, Aizawl:

1. Centre should improve and implement the programme assigned.
2. Registration of Zovawk Pig needs to be carried out.

SASARD, Nagaland University, Nagaland:

1. Breeding data need to be analysed properly.
2. Centre should implement the approved technical programme.

CAU, Imphal, Manipur:

1. Centre should maintain the recommended genetic stock.

ICAR-RC, Barapani, Meghalaya:

1. Compile the generation-wise data of Lumsniang for each generation (as per format of TANUVAS) and send to coordinating unit by 15th August, 2017.

ICAR- CIARI, Port Blair:

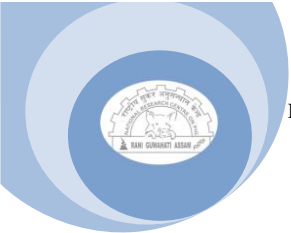
1. The centre should maintain the required stock of animals.
2. Initiation of characterization of Andaman Local Pig needs to be carried out.
3. Continuation of centre will be decided after getting report on the required stock of animals by September, 2017.

IVRI-ERS, Kolkata:

1. Centre should follow selective breeding for further improvement of Ghungroo stock.
2. The centre should maintain the required stock of animals.

KVK-Goalpara, ICAR-NRC on Pig, Dudhnoi:

1. The centre should maintain the required stock of animals.



INTRODUCTION

1. Brief history:

AICRP on pig was launched during IVth five year plan (1970-1971) with the main objective of studying the performance of purebred exotic pigs under existing managerial conditions at the following research centers:

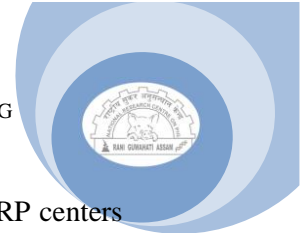
- I. ANGRAU, Tirupati, Andhra Pradesh
- II. AAU, Guwahati, Assam
- III. JNKVV, Jabalpur, Madhya Pradesh
- IV. IVRI, Izatnagar, Uttar Pradesh

In 1992-93, two more centres at Kattupakam (Tamilnadu) and Mannuthy (Kerala) was added in the AICRP network. During the year 2000-2001, two more centres at ICAR Research Complex, Goa and BAU, Ranchi were started to study the performance of indigenous pig for two generations followed by their crossbreeding with Large White Yorkshire boars.

During the XI plan two more centres of AICRP were approved, namely College of Veterinary Science (CAU) at Aizawl, Mizoram and Nagaland University, Medziphema. JNKVV, Jabalpur, Madhya Pradesh center was discontinued from AICRP programme since April, 2013. During the XII plan five more new centers were approved and started functioning in 2014-15. In 2017, two centers, Birsa Agricultural University, Kanke, Ranchi and ICAR Research Complex for NEH Region, Tripura Centre, Agartala, Tripura were dropped and another two new centers were included in the project.

All existing AICRP centres on pig as listed below are coordinated by NRC on Pig.

- Assam Agricultural University, Khanapara, Guwahati
- Kerala Veterinary and Animal Science University, Mannuthy
- Sri Venkateswara Veterinary University, Tirupati
- Tamilnadu Veterinary and Animal Science University, Kattupakkam
- Indian Veterinary Research Institute, Izatnagar
- ICAR-Central Coastal Agricultural Research Institute, Old Goa.
- Central Agricultural University, Aizawl, Mizoram
- SASARD, Nagaland University, Medziphema.
- Krishi Vigyan Kendra, ICAR-NRC on Pig, Dudhnoi, Goalpara, Assam
- Central Agricultural University, Imphal, Manipur
- Indian Veterinary Research Institute, Eastern Regional Station, Kolkata, West Bengal
- ICAR Research Complex for NEH Region, Barapani, Shillong, Meghalaya
- ICAR-Central Island Agricultural Research Institute, Port Blair, Andaman and Nicobar Island
- Krantisinh Nana Patil College of Veterinary Science, Shirval, Satara, Maharashtra
- Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab



ICAR-NRC on Pig is engaged in coordinating the research and development of the AICRP centers both in terms of technical and financial aspect in consultation with Council.

2. Original objectives and modification thereof:

During IVth and Vth five year plan, the research work was carried out with the exotic breeds of pig (*viz.* Large White Yorkshire at Tirupati and Jabalpur, Landrace at Khanapara and Izatnagar) with the following objectives:

- To assess various genetic parameters of economically important traits of existing exotic breeds (Landrace and Large White Yorkshire) of pigs in India with respect to production, reproduction and efficiency of feed utilization.
- To investigate the effect of protein energy ratio on production of pigs and to evolve a low cost and reasonably economic pig feed for different region.
- To study the occurrence of pig diseases with a view to derive suitable control measure against the same.

By the end of Vth five year plans, urgent need for improvement of indigenous pig was realized in view of their large number and high economic importance to the rural population. Simultaneously breeding needed to be put in place to evolve a suitable type of pig having optimum efficiency of feed conversion in farm as well as rural condition. Therefore, to give a multidisciplinary approach in pig production, the technical programme of AICRP on pig was completely remodeled in the beginning of VIth five year plan to undertake research first on indigenous pig and then subsequently on the crossbreeding between indigenous female with appropriate exotic breed with the following objectives:

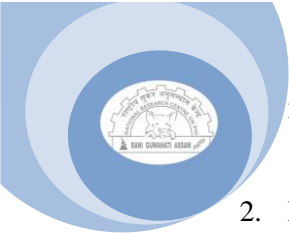
- To study the performance of indigenous pigs under optimal managerial conditions
- To produce crossbred by crossing indigenous gilts with exotic boars and to assess their performance in respect of their efficiency of feed conversion, production and reproduction
- To evolve economic pig ration with locally available feed ingredients, conventional and unconventional
- To select animals from within half breeds with faster growth on economic ration(s) to produce superior strain of improved pigs.
- To study the incidences of various diseases in pigs, so as to suggest areas for undertaking research to provide optimum health care.

The above technical programme was followed till Xth plan.

3. Revision of Technical Programme in XIth Plan:

The technical programme was further refined in view of the objective of the programme at AICRP meet at College of Veterinary and Animal Science, Manuthy in June, 2007 as follows:

1. *Inter-se*-mating in small population is not appropriate. Replacement of males must be practiced to avoid inbreeding.



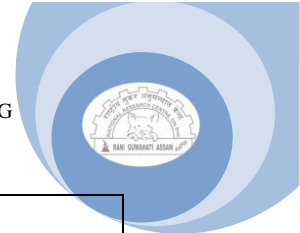
2. Early weaning at 4 weeks of age should be practiced providing all nutritive feed supplements in creep ration
3. Region based shelter management should be adopted and for that extra fund may be provided
4. Integrated farming system may be adopted in order to economize production and transfer to field unit. Stocking density per hector area of land for pig *cum* fish may be calculated
5. Efforts need to be adopted to reduce overall mortality below 10% level. Meteorological data need to be recorded in order to forecast the disease outbreaks so that appropriate prevention measures can be adopted.
6. Region based suitable developed economic feed formula(e) is(are) yet to come up for adoption as package of practice. Search should continue, but it should not be a component of replacement in feeding formula for pigs under AICRP research units.

To further streamline and maintain uniformity among different centers, and finalization of work plan of new centers, lastly, details technical programme against the objective was recommended at AICRP Scientists’ meet at NASC Complex, Pusa, New Delhi on September, 2015.

4. Action point discussed in Review Meet of ‘All India Coordinated Research Project on Pig’ and ‘Mega Seed Project on Pig’ held at Sri Venkateswara Veterinary University, Tirupati on 1-2nd July, 2017.

AAU, Khanapara

Recommendation	Action Taken
General:	
1. Preparation of booklet based on success stories of AICRP	1. Under Process
2. Release of crossbred pig variety	2. Done
3. Submission of monthly report	3. Done
4. Quarterly submission of SOE	4. Done
5. Submission of AUC	5. Yet to be done
6. Submission of Annual report	6. Done
7. Extension activities /animal distribution as per Direct Benefit Transfer	7. Done
Animal Breeding:	
1. Breed registration and conservation	1. Yet to be done
2. Crossbred animals of 75% exotic inheritance	2. Done
3. Minimum 30 breedable sows unit should be maintained	3. Done
4. Selection of female animals based on dam’s litter size at birth	4. Done
5. Generation wise presentation of data	5. Done
6. Three number of farrowings per sow need to be recorded	6. Done
7. Inclusion of lifetime production traits	7. Done
8. Artificial Insemination should be implemented	8. Done
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Under process
2. Good management practice (GMP) need to be followed	2. Done
3. Recording of daily micro and macroclimatic data	3. Done
4. Shelter management to reduce thermal stress.	4. Done
Health Management:	
1. Regular monitoring of the herd	1. Done
2. Reduce mortality percentage	2. Done
3. Strengthen the bio-security measures	3. Done



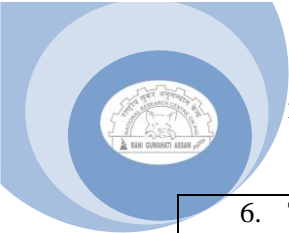
Centre wise recommendation:	
1. The centre should submit the AUC/UC in time.	1. Done
2. Initiation of characterization of local pig of Assam	2. Initiated
3. Compile the generation-wise data of HD-K 75	3. Done

KVASU, Mannuthy, Kerala

Recommendation	Action Taken
General:	
1. Preparation of booklet based on success stories of AICRP	1. Done
2. Release of crossbred pig variety	2. Done
3. Submission of monthly report	3. Done
4. Quarterly submission of SOE	4. Done
5. Submission of AUC	5. Will be done
6. Submission of Annual report	6. Done
7. Extension activities /animal distribution as per Direct Benefit Transfer	7. Done
Animal Breeding:	
1. Breed registration and conservation:	1. Initiated
2. Crossbred animals of 75% exotic inheritance	2. Done
3. Minimum 30 breedable sows unit should be maintained	3. Done
4. Selection of female animals based on dam's litter size at birth	4. Done
5. Generation wise presentation of data	5. Done
6. Three number of farrowings per sow need to be recorded	6. Done
7. Inclusion of lifetime production traits	7. Done
8. Artificial Insemination should be implemented	8. Done
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Done
2. Good management practice (GMP) need to be followed	2. Done
3. Recording of daily micro and macroclimatic data	3. Not done
4. Shelter management to reduce thermal stress.	4. Not done
Health Management:	
1. Regular monitoring of the herd	1. Done
2. Reduce mortality percentage	2. Done
3. Strengthen the bio-security measures	3. Done
Centre-specific recommendation:	
1. Initiation of characterization of local pig of Kerala	1. Done
2. Compile the generation-wise data of Mannuthy White	2. Done

SVVU, Tirupati

Recommendation	Action Taken
General:	
1. Preparation of booklet based on success stories of AICRP	1. Done
2. Release of crossbred pig variety	2. Done
3. Submission of monthly report	3. Done
4. Quarterly submission of SOE	4. Done
5. Submission of AUC	5. Not yet done
6. Submission of Annual report	6. Done
7. Extension activities /animal distribution as per Direct Benefit Transfer	7. Done
Animal Breeding:	
1. Breed registration and conservation	1. Not yet done
2. Crossbred animals of 75% exotic inheritance	2. Followed
3. Minimum 30 breedable sows unit should be maintained	3. Followed
4. Selection of female animals based on dam's litter size at birth	4. Followed
5. Generation wise presentation of data	5. Followed



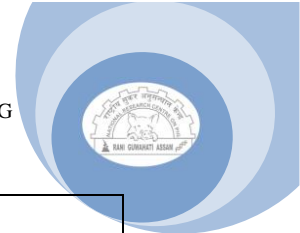
6. Three number of farrowings per sow need to be recorded	6. Followed
7. Inclusion of lifetime production traits	7. Followed
8. Artificial Insemination should be implemented	8. Followed
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Not yet done
2. Good management practice (GMP) need to be followed	2. Followed
3. Recording of daily micro and macroclimatic data	3. Followed
4. Shelter management to reduce thermal stress.	4. Followed
Health Management:	
1. Regular monitoring of the herd	1. Followed
2. Reduce mortality percentage	2. Followed
3. Strengthen the bio-security measures	3. Followed
Centre wise recommendation:	
1. Breeding data need to be analysed properly.	1. Followed
2. Initiation of characterization of local pig of the state	2. Not yet done
3. Compile the generation-wise data of SVVU-T17	3. Done

TANUVAS, Kattupakkam

Recommendation	Action Taken
General:	
1. Preparation of booklet based on success stories of AICRP	1. Done
2. Release of crossbred pig variety	2. Done
3. Submission of monthly report	3. Done
4. Quarterly submission of SOE	4. Done
5. Submission of AUC	5. Done
6. Submission of Annual report	6. Done
7. Extension activities /animal distribution as per Direct Benefit Transfer	7. Done
Animal Breeding:	
1. Breed registration and conservation:	1. Will be done
2. Crossbred animals of 75% exotic inheritance	2. Done
3. Minimum 30 breedable sows unit should be maintained	3. Done
4. Selection of female animals based on dam's litter size at birth	4. Done
5. Generation wise presentation of data	5. Done
6. Three number of farrowings per sow need to be recorded	6. Done
7. Inclusion of lifetime production traits	7. Done
8. Artificial Insemination should be implemented	8. Done
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Done
2. Good management practice (GMP) need to be followed	2. Done
3. Recording of daily micro and macroclimatic data	3. Done
4. Shelter management to reduce thermal stress.	4. Done
Health Management:	
1. Regular monitoring of the herd	1. Done
2. Reduce mortality percentage	2. Done
3. Strengthen the bio-security measures	3. Done
Centre-specific recommendation:	
1. Initiation of characterization of local pig of Tamil Nadu	1. Initiated

ICAR-IVRI, Bareilly

Recommendation	Action Taken
General:	
1. Preparation of booklet based on success stories of AICRP	1. Done



2. Release of crossbred pig variety	2. Initiated
3. Submission of monthly report	3. Done
4. Quarterly submission of SOE	4. Done
5. Submission of AUC	5. Done
6. Submission of Annual report	6. Done
7. Extension activities /animal distribution as per Direct Benefit Transfer	7. Done
Animal Breeding:	
1. Breed registration and conservation:	1. Initiated
2. Crossbred animals of 75% exotic inheritance	2. Done
3. Minimum 30 breedable sows unit should be maintained	3. Done
4. Selection of female animals based on dam's litter size at birth	4. Done
5. Generation wise presentation of data	5. Done
6. Three number of farrowings per sow need to be recorded	6. Done
7. Inclusion of lifetime production traits	7. Done
8. Artificial Insemination should be implemented	8. Done
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Done
2. Good management practice (GMP) need to be followed	2. Done
3. Recording of daily micro and macroclimatic data	3. Done
4. Shelter management to reduce thermal stress.	4. Done
Health Management:	
1. Regular monitoring of the herd	1. Done
2. Reduce mortality percentage	2. Done
3. Strengthen the bio-security measures	3. Done
Centre-specific recommendation:	
1. Process of registration of local pigs of the states need to be initiated	1. Initiated

ICAR-CCARI, Goa

Recommendation	Action Taken
General:	
1. Preparation of booklet based on success stories of AICRP	1. Yet to be done
2. Release of crossbred pig variety	2. Yet to be done
3. Submission of monthly report	3. Done
4. Quarterly submission of SOE	4. Done
5. Submission of AUC	5. Done
6. Submission of Annual report	6. Done
7. Extension activities /animal distribution as per Direct Benefit Transfer	7. Done
Animal Breeding:	
1. Breed registration and conservation:	1. Done
2. Crossbred animals of 75% exotic inheritance	2. Done
3. Minimum 30 breedable sows unit should be maintained	3. Done
4. Selection of female animals based on dam's litter size at birth	4. Done
5. Generation wise presentation of data	5. Yet to be done
6. Three number of farrowings per sow need to be recorded	6. Done
7. Inclusion of lifetime production traits	7. Done
8. Artificial Insemination should be implemented	8. Done
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Done
2. Good management practice (GMP) need to be followed	2. Done
3. Recording of daily micro and macroclimatic data	3. Done
4. Shelter management to reduce thermal stress.	4. Done



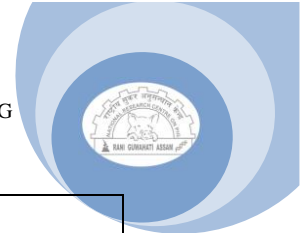
Health Management: 1. Regular monitoring of the herd 2. Reduce mortality percentage 3. Strengthen the bio-security measures Centre-specific recommendation: 1. Centre should maintain the required breeding stock	1. Done 2. Done 3. Done 1. Done
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CVSc & AH, CAU, Aizawl

Recommendation	Action Taken
General: 1. Preparation of booklet based on success stories of AICRP 2. Release of crossbred pig variety 3. Submission of monthly report 4. Quarterly submission of SOE 5. Submission of AUC 6. Submission of Annual report 7. Extension activities /animal distribution as per Direct Benefit Transfer	1. Yet to be done 2. Yet to be done 3. Done 4. Done 5. Not yet done 6. Done 7. Done
Animal Breeding: 1. Breed registration and conservation: 2. Crossbred animals of 75% exotic inheritance 3. Minimum 30 breedable sows unit should be maintained 4. Selection of female animals based on dam's litter size at birth 5. Generation wise presentation of data 6. Three number of farrowings per sow need to be recorded 7. Inclusion of lifetime production traits 8. Artificial Insemination should be implemented	1. Done 2. Done 3. Done 4. Done 5. Done 6. Done 7. Done 8. Done
Nutrition, physiology and management: 1. Entrepreneurship development with readymade plan for 100/200 animal 2. Good management practice (GMP) need to be followed 3. Recording of daily micro and macroclimatic data 4. Shelter management to reduce thermal stress.	1. Done 2. Done 3. Done 4. Done
Health Management: 1. Regular monitoring of the herd 2. Reduce mortality percentage 3. Strengthen the bio-security measures	1. Done 2. Done 3. Done
Centre-specific recommendation: 1. Centre should improve and implement the programme assigned 2. Registration of Zovawk Pig	1. Followed 2. Done

SASARD, Nagaland

Recommendation	Action Taken
General: 1. Preparation of booklet based on success stories of AICRP 2. Release of crossbred pig variety 3. Submission of monthly report 4. Quarterly submission of SOE 5. Submission of AUC 6. Submission of Annual report 7. Extension activities /animal distribution as per Direct Benefit Transfer	1. Yet to be done 2. NA 3. Done 4. Done 5. Done 6. Done 7. Done
Animal Breeding: 1. Breed registration and conservation: 2. Crossbred animals of 75% exotic inheritance 3. Minimum 30 breedable sows unit should be maintained	1. Done 2. Done 3. Done



4. Selection of female animals based on dam's litter size at birth	4. Done
5. Generation wise presentation of data	5. Done
6. Three number of farrowings per sow need to be recorded	6. Done
7. Inclusion of lifetime production traits	7. Done
8. Artificial Insemination should be implemented	8. Done
Nutrition, physiology and management:	
1. Entrepreneurship development with readymade plan for 100/200 animal	1. Done
2. Good management practice (GMP) need to be followed	2. Done
3. Recording of daily micro and macroclimatic data	3. Yet to be done
4. Shelter management to reduce thermal stress.	4. Done
Health Management:	
1. Regular monitoring of the herd	1. Done
2. Reduce mortality percentage	2. Done
3. Strengthen the bio-security measures	3. Done
Centre-specific recommendation:	
1. Breeding data need to be analysed properly.	1. Initiated
2. Centre should implement the approved technical programme	2. Followed

Centers included during XIIth Plan and later:

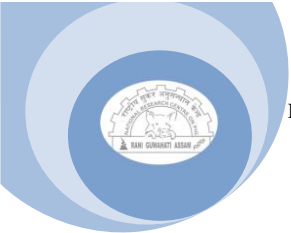
Targets	ICAR-CIARI, Port Blair	CAU, Imphal	IVRI-ERS, Kolkata	ICAR-RC, Barapani	KVK, ICAR-NRCP, Dudhnoi	GADVASU, Ludhiana	MAFSU, Sirwal
Submission of (A)UC	Yes	Yes	Yes	Yes	Yes	New Centre from 2017	New Centre from 2017
Final Report submission	Yes	Yes	Yes	Yes	Yes		
Breed maintained	Andaman local and Nicobari pigs	Rani Cross	Ghungroo pig	Lumsnian g Cross	Doom Pig		
Maintenance of 30 breeding stock	Yes	Yes	Yes	Yes	Yes		

5. Salient Achievements of the AICRP on Pig till Date

Significant achievements have been made in respect of pig breeding, nutrition, reproduction including endocrinology, production, health management practices, extension education and technology dissemination. Necessary details about the same areas under:

A. Animal Breeding & Production:

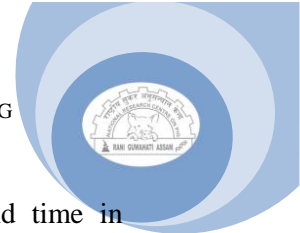
- Development and release of region specific crossbred variety was done in following centers
 - HD-K75- Assam Agricultural University, Khanapara, Guwahati
 - Jharsuk- Birsa Agricultural University, Kanke, Ranchi
 - Mannuthy White - Kerala Veterinary and Animal Science University, Mannuthy
 - Lumsniang-ICAR Research Complex for NEH Region, Barapani, Shillong, Meghalaya
 - TANUVAS KPM Gold- Tamil Nadu Veterinary and Animal Sciences University, Kattupakkam
 - SVVU T-17- Sri Venkateshwara Vety. University, Tirupati
- Breeding programmes were developed to generate the following genotypes/genetic groups:



- Conservation of indigenous germplasm viz. Ghungroo, Niang Megha, Agonda Goan, Tenyi Vo, Doom and Nicobari.
 - Improved indigenous pigs
 - Crossbreds having 50:50 inheritance from Landrace and indigenous pigs
 - Large White Yorkshire crossbreds having 50% indigenous inheritance
 - Crossbreds having 75% Large White and 25% indigenous inheritance
 - Landrace crossbreds having 25% indigenous inheritance
 - Hampshire crossbreds carrying 25% and 50% indigenous inheritance
 - Landrace X indigenous half-breds from reciprocal crosses
- Exotic pig viz. Landrace, Large White Yorkshire and Hampshire could be successfully raised and multiplied under organized farm conditions.
 - Genetic improvement of indigenous pig through pure breed selection programme was conducted in all eight centres of AICRP under different agro- climatic conditions.
 - Litter size at birth and weaning showed continuous improvement over the years. Similarly, the growth rate and body weight at 32 weeks was also increased significantly.
 - However, the genetic improvement of indigenous breed through pure breed selection programme has been slow.
 - All groups of crossbred had higher litter size and weight, growth rate and better feed conversion efficiency than indigenous pig.
 - Large White Yorkshire crossbred (75%) and Hampshire crossbred (75%) had higher value of litter traits than their respective 50% crossbred.
 - Pig can be utilized effectively as a component in integrated farming system which shall act as an insurance cover. Significant improvement on economic gain could be observed under integrated farming system.
 - The crossbreds had lower back fat thickness and higher lean cuts in their carcasses than the indigenous pigs.

B. Pig Husbandry and Management:

- Collection of boar semen and artificial insemination: Technology was developed for collection of boar semen using a dummy. Artificial insemination technology by using liquid semen has been standardized and widely been used in different centres.
- Artificial milk feeder: To feed orphan piglets when suitable foster dams are not available, artificial milk feeder was developed which can be recommended to breeder farmer.
- Sprinkler system: This was designed and installed in the open pig styes for alleviating summer stress in pigs. This can be recommended to commercial farmers rearing more than 250 pigs in tropical areas where there are chances of heat stress. Wallowing can be avoided in this system, thereby saving water and labour.



- Pressure cleaning system: The system helps considerable savings in labour and time in cleaning of sheds and ensures effective cleaning of pens. In this system cleaning of a pen can be done in 4-5 minutes against 10-15 minutes in traditional system. This can be recommended for larger commercial breeding farms rearing more than 200 numbers of breeding stocks. Labour can be saved up to 1/3rd of the normal requirement in commercial farms.
- Automatic waterers: It ensures continuous drinking water availability to pigs. It can be fitted at varying heights from the floor for various categories of pigs (25 cm for weaners, 65 cm for growers and 85-90 cm for sows and boars).

C. Animal Nutrition:

- Energy protein ratio for optimum production:
 - 18.2 to 18.5 kcal energy per g CP for Landrace and Large White grower pigs.
 - 20.4 to 21.3 kcal energy per g CP for finishing exotic pigs.
 - A diet with 15.44% CP and 3.0 MCal DE per kg feed for indigenous grower pigs.
 - For crossbred pigs, ratio of 16% C.P. and 3000 kcal digestible energy per kg of feed was found to be optimal.
- Locally available feed resources like root crop (tapioca, sweet potato etc.), brewery waste, used tea leaves and other vegetable wastes like cabbage, colocassia etc. could be used for developing economic ration for pig.
- Various alternate sources of energy and protein were identified
 - Energy sources: rice polish, molasses, tamarind seed, wheat bran, tea waste, pine apple waste, jackfruit waste and cashew apple.
 - Protein sources: silk worm pupae, sunflower cake
- Economic ration was developed by partial or complete replacement of costly ingredient of the standard ration with the alternate feed sources.
 - Replacement of maize with 20% tamarind seed and 5% molasses or 30% tamarind seed and 10% molasses increased average daily gain and lowered cost/kg body weight gain.
 - Cabbage is an important vegetable crop of North East India. Generally 50 to 70% of the biological yield cabbages are used as human consumption and remaining portion is discarded as waste which is primarily the green leaves. This waste can be fed to grower and finisher pig replacing 10% of the concentrate mixer in the daily feed allowances.
 - Graded replacements of maize with 40, 30 and 12 parts of rice polish/supplemented with zinc sulphate) were found to be superior in terms of ADG, feed per kg gain and cost of ration per kg gain for Large White grower pigs.
 - Replacing maize partly or completely with 20% tamarind seed and 5% molasses or 30% tamarind seed and 10% molasses was found to give higher ADG (423 g) and lower cost/kg gain as compared to ADG 401 g under the standard ration.



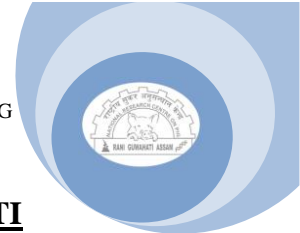
- In pregnant and lactating gilts, maize (36% in standard ration) could be replaced with 30% rice polish or tamarind seed along with 20% molasses without affecting the performance characteristics.
- An economic ration was developed by graded replacement of maize with wheat bran.
- In indigenous grower pigs, 20 parts of maize can be replaced with bagasse and molasses mixture without any adverse effect on FCR.
- In crossbred finisher pigs, tamarind seed waste replaced up to 75% of maize without any detrimental effect on performance, carcass-characteristics and nutrient utilization.
- No significant reduction in ADG (420 Vs 408 g) and FCR (4.13 Vs 4.26) when GN cake in the standard ration was replaced with sunflower cake in crossbred growers.
- Replacement of wheat bran up to 50% level with de-caffeinated tea waste lowered the cost of production in crossbred pigs.
- Supplementation of yeast culture product containing useful enzyme improved average daily gain and feed conversion efficiency by 5 and 8%, respectively.
- Chelated mineral could be supplemented at a dose of 0.05% along with Dicalcium Phosphate in diet for better growth and feed conversion efficiency in pig.
- Fish meal can be replaced with dried cuttla fish waste silage without causing any deleterious effect on growth, feed conversion efficiency or carcass quality.
- Dried *Cuttla* fish bone meal could be used as calcium supplement in the ration for growing pigs replacing calcium carbonate.

D. Pig Reproduction and Endocrinology

- Indigenous pigs compared unfavourably with exotic pigs in respect of litter size and weight at birth, weaning, growth rate, efficiency of feed utilization and lean meat production.
- All groups of crossbreds had higher litter productivity, growth rates and efficiency of feed utilization than the indigenous pigs.
- Large White and Hampshire crossbreds carrying 75% exotic inheritance had higher values of litter traits than those respective half-bred.

E. Health Management

- Health calendar was maintained by all the AICRP centers
- Reduced disease outbreak, pre and post weaning mortality could be achieved in most of the AICRP centers for better health care and management.



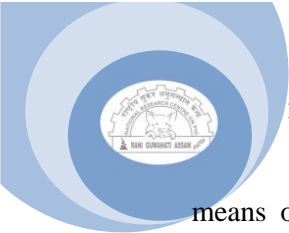
ASSAM AGRICULTURAL UNIVERSITY, KHANAPARA, GUWAHATI

North Eastern Region covered an area of 26.12 million hector with a total population of 3.90 million. Assam, the second largest state in North Eastern Region having 27 districts and shares its boundary with Meghalaya, Arunachal Pradesh and Nagaland and internationally with Bangladesh and Myanmar. Agriculture and Animal husbandry practices are the main source of income for majority of the population. In tribal and weaker section of the population, pig husbandry is very popular and lucrative occupation in NE Region in particular and country in general. Though pig is popular yet it is a small scale unorganized rural activity and is an integral part of diversified agriculture. The region has around 38.42 percent of country's pig population. Farmer keeps livestock as supplementary source of income. Farmers belonging to the general community usually rear cattle, buffaloes, goat and poultry. However, the majority of the farmer belonging to tribal and other backward class community prefer to keep 2-3 pigs along with poultry and goat. The majority of the people of the North Eastern Region are non-vegetarian and among them a good number of people consume pork.

Assam possesses 1.63 million (15.89%) pigs of the total population of India (10.92 millions). Assam is having highest pig population amongst NE Region yet has to import about one lakh number of pig per year from the other parts of the country to meet the requirement. Due to some biological advantages like high prolificacy, faster growth, good converter of feed to meat, short generation interval, high dressing percentage etc. the pig plays an important role for increasing meat production in this region. Hampshire, Large black and other crosses are more popular among the farmers in Assam. Pig production in the state is invariably a small-scale backyard enterprise and majority of the farmer reared piglets only up to the slaughter age. The private owner's i.e. weaker sections maintain their pigs either in back out rooms or in some discarded rooms of their houses. They confined their pigs during night and left in morning for scavenging. In the evening some rice bran is provided to them as feed. Generally those pigs are reared on kitchen and human waste. Sometimes banana, papaya *orum*, *juguli* (local beverage residue) etc. are cooked and provided with rice bran.

For profitable pig production, efficient use of cheaper balanced rations based on locally available materials and agricultural by products is very essential. Due to low availability of balanced feed along with higher cost handicapped the development of organized pig farm in this part of country. But a sizeable numbers of unemployed educated youth have taken up this venture as means of their livelihood and also as subsidiary income generation.

Pig farming as a commercial venture is still to be set up in the state. The major constraints like non-availability of superior quality seed stock, imbalanced ration at reasonable price, unscientific management or inadequate knowledge, lack of financial support as well as marketing channel etc. are hampering in the growth and development of pig industry. But a sizeable number of unemployed educated youth, retired persons from the affluent families / societies have taken up this venture as



means of their livelihood / occupation or as subsidiary income generation. This development has opened up a new chapter in the entire scenery of piggery development in the state.

The ICAR-AICRP & MSP on pig, AAU, Khanapara has played an important role since its inception for development of pig production in the state and neighboring states through various ways like attending training, awareness program, exhibition, demonstration, distribution of leaflet /booklet. The ICAR- AICRP & MSP on Pig, AAU, and Khanapara has played a significant role in developing piggery sector by selling of quality piglets, elite gilts / sows and boars at nominal price to the interested farmers of the state.

Herd Dynamics: 01.04.2017 – 31.03.2018

Age in months	Opening balance as on 01.04.17			Closing balance as on 31.03.18		
	Male	Female	Total	Male	Female	Total
	75% H	75% H		75% H	75% H	
0 - 6 w	-	-	-	146	114	260
6w - 2 m	-	-	-	-	-	-
2 - 6 m	-	-	-	-	-	-
6 - 8 m	12	6	18	11	11	22
Over 8 m	28	44	72	14	40	54
Total	40	50	90	171	165	336

Stock Continuity Details II:

Sex	Stock as on 01.04.2017	Addition (1 st Crop+2 nd Crop)	Purchase	Total	Grand total
Male	40	111+147 = 258	-	298	298
Female	50	101+117= 218	-	268	268
Total	90	212 +264= 476	-	566	566

Deletion:

Sex	Sale	Slaughter	Died	Total	Stock as on 31.03.2018
Male	95	14	18	127	171
Female	94	-	9	103	165
Total	189	14	27	230	336

Breeding strategy of the farm as approved:

- The Exotic breed, Landrace was maintained since inception (1971) of the project and studied their performances and genetic parameters under agro-climatic condition of Assam.
- A number of selected indigenous gilts were maintained since 1981. A group of indigenous gilt was bred (1987) with pure Hampshire boars to get 50% Hampshire inheritance from 24 normal farrowing. Another group of indigenous gilts were maintained for indigenous line.
- The progenies of 50% H50% I were again grouped to produce 50% H50% I (*Inter se mating*) and 75% H25% I by crossing with pure Hampshire Boar.
- The cross breeding program *ie inter se mating* was adopted initially to maintain 50% H50% I and 75% H25% I genetic groups since 1987.
- The parent stocks are maintained up to 3rd farrowing and weaning of piglets at 42 days of age.

Performance of animals 75% H Genetic group:

Sl. No	Traits/ Characters	Mean±SE (No. of observation)		
		M	F	T
1	Av. Litter size at birth (no.)	3.36±0.26	3.06±0.23	6.42±0.21



2	Av. Litter weight at birth (kg)	3.47±0.25	3.03±0.24	6.51±0.22
3	Av. Litter size at weaning (no.)	2.90±0.20	2.96±0.16	5.87±0.23
4	Av. Litter weight at weaning (kg)	31.50±1.17	29.56±2.51	61.06±1.53
5	Av. individual wt at birth (kg)	1.03±0.01 (111)	0.99±0.01 (101)	1.01±0.71 (212)
6	Av. individual wt at weaning (kg) (6w)	9.99±0.17 (104)	9.85±0.17 (99)	9.90±3.10 (213)
7	Number of days for weaning	42 days		
8	Pre weaning mortality rate (%)	6.73 (7)	2.02 (2)	4.43(9)
9	Pre weaning growth rate(g/day) (0 to 6w)	213.33±0.53	210.95±0.43	212.14±0.51
10	Post weaning mortality rate (%) (Wean to 5m)	9.62 (10)	3.0 3(3)	6.40 (13)
11	Adult mortality rate (%) (above 5 m)	Nil	0.72 (1)	0.39 (1)
12	Post weaning growth rate (6 w to 8 th m) g/d)	328.38±0.91	331.26±1.04	329.82±0.89
13	Overall growth rate 0 to 8 th m of age) (g/d)	308.25±0.83	310.20±0.89	309.22±0.78
14	Body weight (kg) at 1 month	7.45±0.12 (104)	7.16±0.13 (99)	7.31±0.12 (203)
	2 month	12.01±0.14(94)	12.05±0.17(86)	12.03±3.22(180)
	3 month	17.78±0.43 (40)	17.51±0.43 (36)	17.64±0.43 (76)
	4 month	29.71±1.04 (21)	25.42±0.52(20)	27.56±0.78 (41)
	5 month	41.78±1.19 (19)	40.16±3.68 (18)	40.97±2.43 (37)
	6 month	52.43±16.73(15)	51.64±1.31 (17)	52.03±8.51 (32)
	7 month	61.34±0.68 (13)	62.56±1.20 (16)	61.95±0.94 (19)
	8 month	NA	NA	NA
15	Age at slaughter (days) 16 th generation	255 days (12 Nos.)		
16	Weight at slaughter (kg)	78.33±2.86		
17	Dressing percentage (%)	68.73±2.64		
18	Carcass Length (cm)	69.20±0.64		
19	Back Fat Thickness (mm)	27.80±0.85		
20	Meat Bone ratio (:)	Not done		
21	Amount of pork produced per sow (kg)	Not calculated		
22	Feed conversion efficiency (:)	1: 3.90		

Life time production traits:

- Average litter size at birth per sow : 7.80 (3 Farrowings) 6.42 (1 Farrowing)
- Average litter weight at birth per sow : 7.71 6.5 kg
- Average litter size at weaning per sow : 7.41 5.87
- Average litter weight at weaning per sow: 74.95 61.06 kg

Specific managemental practice:

Identification: The identification number of respective animal is recorded in clip board of individual pens. However, the animal number is given on ear tag.

Castration: Castrations of male piglets are routinely done before weaning by open method.

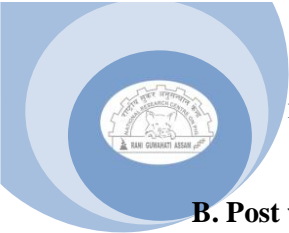
Mortality Parameter:

i) Genetic group wise and sex wise mortality rate:

Mortality rate in HD-K75 genetic group of pigs during the period 1.4.2017 to 31.03.2018

Pre-weaning mortality:

Animal	0 - 14 days			15 - 28 days			29 - 42 days			Pre-weaning		
	M	F	T	M	F	T	M	F	T	M	F	T
Animals at risk	111	101	212	105	99	204	104	99	203	104	99	203
Animals died	6	2	8	1	-	1	-	-	-	7	2	9
Mortality%	5.41	1.98	3.77	0.95	-	0.49	-	-	-	6.73	2.02	4.43



B. Post weaning and adult mortality:

Animal	Post weaning (43 days – 5 months)			Adult (Over 5 months)			Over all at farm		
	M	F	T	M	F	T	M	F	T
Animal at risk	104	99	203	104	99	203	104	98	202
Animals died	10	3	13	-	1	1	10	4	14
Overall mortality %	9.62	3.03	6.40	-	0.72	0.39	8.47	2.90	5.47

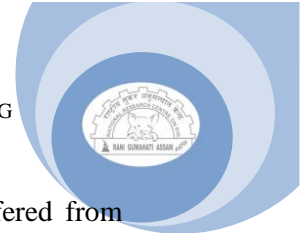
ii) Causes of mortality:

Sl. No.	Causes of mortality	HD-K75 (75% H)		
		M	F	T
1	Septicemia	5	-	5
2	Ulcerative hepatitis with Necrosis	3	-	3
3	Hemorrhagic Gastro-enteritis	1	2	3
4	Pneumo-enteritis	-	1	1
5	Catarrhal enteritis	1	1	2
6	Fibrinous Enteritis with Hemorrhagic gastritis	1	1	2
7	Necrotic Hepatic-Nephritis	2	-	2
8	Suspected Swine Pox	1	-	1
9	Pneumonia	2	2	4
10	Suspected Swine Fever	1	1	2
11	Stamped	1	-	1
12	Traumatic Injury	-	1	1
Total		18	9	27

iii) Measures taken to minimize mortality:

Managemental measures:

- **General management and disease control:** Regular cleaning and washing of pig sheds with Potassium Permanganate / Caustic soda / Bleaching powder and proper disposal of sewage materials were practiced routinely. The floor, corners and crevices inside the pig sheds were burned at fortnight interval. A solution of 3% Formaldehyde spray is also routinely practiced.
- **Action taken to minimize mortality:** Comfortable beddings were provided to all the pregnant sows. Special care and attention were given round the clock during farrowing. Newborn piglets were kept under observation to avoid injury from the mother. Debilitated piglets were nourished specially to regain their health. Pre starter (7th - 21st day) and Starter (22nd day – weaning) rations were provided to the piglets. Sometime Buffalo milk, Glucose etc. Crealac / Lactogen are also provided to debilitated piglets. Iron therapy in the form of intra muscular injection “Feritas” were given to all piglets at 4th and 14th day after birth to combat the occurrence of piglet anemia.
- **Diarrhoea:** Almost all piglets were suffered from diarrhoea during the pre weaning period and medicine viz. Zinconia, Furoxon /Tetracycline / Cycline D- T bolus / Gentamycine /, Enrofloxacin were used. ORS / Glucose had also been used in affected pigs.
- **Lameness:** A total of 63 piglets and 9 adults were suffered from lameness during the year under report. The animals were treated with Neuroxine and Vetalgin with antibiotics. Injured animals



were dressed and treated accordingly. Nine Pregnant Sows three boars were suffered from lameness due to broken floor.

Prophylactic measures:

- **Vaccination:** The FD Swine Fever Vaccine (Institute of Animal Health & Veterinary Biologicals Hebbal, Kanataka, and Kolkata) was given regularly to the piglets and adult pigs as per schedule. Blood samples were collected after vaccination of Swine Fever for routine screening at the ADMAC, CVSc, AAU, Khanapara. The FMD vaccine is given annually as per schedule.
 - A total of 9 Pre weaned and 7 Post- weaned piglets (1st Crop) showed symptoms like enteritis / and pneumonia and treated accordingly, the Deptt. of Veterinary Pathology CVSc, AAU Khanapara reported the mortality of some piglets may be due to Septicemia/Pneumonia /Enteritis
 - **De worming:** De worming is done to all the piglets after weaning and repeated after one month. The breeding animals were also dewormed before breeding. Fecal examinations are routinely examined.
- iv) Disposal of diseased carcass:** The carcass after conducting PM was disposed to the well available in the premises of AICRP on Pig by mixing common salt / Urea. The commercial urea (2 kg) poured at weekly interval on deep well. The carcass of young pig was disposed off by the Deptt. of Veterinary Pathology, CVSc.

Nutritional experimentation:

Topic of Research: Comparative Study of the Efficacy of Mineral Supplements from Different Sources on the Growth Performance of Crossbred (Hampshire x Local) Growing Pigs.

Eighteen crossbred (Hampshire x Local) pigs of 3 months of age (2nd Crop) attaining about 19-20 kg body weight were randomly divided into 3 treatment groups of 6 pigs each and were replicated twice. The pigs under the different treatment groups were offered *ad libitum* standard grower ration supplemented with three different forms of mineral mixtures i.e. inorganic (T₁) @ 1.5 Kg, organic (T₂) @ 100 g and chelated inorganic (T₃) @ 250 g per 100 Kg of the ration for 90 days. Mean values of weight gain, feed intake and feed conversion ratio were 42.50±0.71^a, 47.17±0.93^b and 41.00±0.93^a kg; 169.44±3.04^c, 162.28±3.00^a and 167.02±3.45^b kg; 3.99±0.08^b, and 3.44±0.06^a and 4.07±0.04^b for T₁, T₂ and T₃ groups respectively (P<0.05). Mean serum levels were dl/ml for calcium (P<0.05), dl/ml for iron, dl/ml for copper, dl/ml for Zinc and dl/lit for Cobalt for T₁, T₂ and T₃ groups respectively. Results indicated that the organic mineral was superior to chelated inorganic and inorganic minerals in terms of weight gain, FCR and serum mineral levels.

Survey on market of pork production:

A Preliminary survey on pork market was carried out in Greater Guwahati as follows:

Qualification of Pork Seller:	Mostly under Metric an uneducated
Residence:	Mostly rented
Occupation:	Pork business
Caste:	50% Tribal and 50% others
No. of Retail Shop:	85
No. of Wholesaler:	6
Type of Sale Booth:	90% open



INFORMATION ABOUT THE PIG:

1. Sources of Pig: Nalbari, Bonda, Boko, Changsari, Chaigaon, Baksha, Mangaldoi, Sonapur, Panikhaiti, Chandrapur & peripheral areas of Guwahati.
2. Breed: Mostly Hampshire Cross, Hampshire x Ghunngroo, Local and Ghunngroo
3. Age: 6 months- 2 ½ Years
4. Type: Male- 20%, Female - 40% Castrated - 40%
5. Weight: 50 - 180 kg
6. Method of Slaughter: Direct Stabbing in most cases, occasionally hammering
7. Price of Pig: Rs.130/kg- Rs.150/kg live wt. basis or Rs.150/ to Rs.160/ kg pork basis considering D.P. 75%.
8. Basis of Price: Either live wt. or total pork basis.
9. No of Pig Slaughtered Per day: 55-60 numbers.
10. Daily Sale: 40- 45 qt.
11. Period of Highest Sale: November and February
12. Period of Lowest Sale: June - September of the year
13. Price per kg of Pork: Retailer Rs. 240/ - 260/kg,
14. Whether Diseased Pig are Slaughtered or not: Sometime disease pigs are also slaughtered.

Disposal pattern of farm waste, pig excreta etc/ Establishment of biogas plant: The sewage materials of AICRP on Pig were disposed at the low lying area in the premises of the project.

Production economics: (Considering Feed & Medicine Cost)

A. Farm Condition:

Cost of production / pig upto slaughter / Market age: (14 castrated male)

- Concentrate feed up to 8 month of age (15-255 days) = 360 kg, Considering @ Rs.22.00/kg feed Rs. 7920/-
- Cost of Medicine & Vaccines Rs. 800/- animal
- Total (i+ii) Cost Rs.8720/ animal at 78 kg live weight/animal

Cost of production / kg live wt.: **Rs 112/ kg live wt.**

Cost of production/kg pork: **Rs.165 kg** pork (considering 68% Dressing Percentage)

B. Field Condition: (Ratul Kalita, Nalbari)

Cost of production / pig upto Market age: (12 Castrated male)

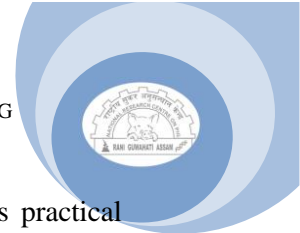
- Cost of piglet (3-4 month of age) and carrying charge = Rs.3000/-
- Cost of feeding - Hotel waste, Vegetable and other available sources of feed including Mineral Mixture and some part of concentrate @ Rs.30/day/animal from 3-8 month (150 days) of age (Rs.4500/)
- Cost of Medicine & Vaccines Rs.800/ animal
- Total (i+ii+iii) = Rs.8300/ animal upto 8 month, considering live wt 85 kg/animal

Cost of production /kg live wt.: **Rs. 98/ kg live wt.**

Cost of production /kg pork: **Rs. 143/ kg pork** (considering 68% Dressing P.C)

Extension programme with success story:

i) **At the institute:** The Extension activities organized by the Associate Director of Extension Education (ADEE), AAU, Khanapara, Guwahati involved the Scientist of the project as Resource



Persons in their different programs. The trainees were given lessons on theory as well as practical demonstration in various aspects of pig production.

Talks/ Demonstration: 11 nos.

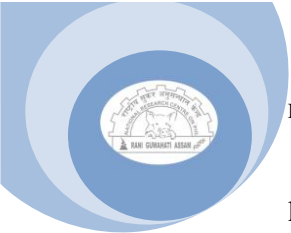
- Talks (4) on Farm Management Practices at AICRP on Pig, AAU, Khanapara, organized by ADEE, AAU, Khanapara for Farm Practical demonstration, sponsored by Deptt. of Animal Husbandry Livestock, Fisheries & Veterinary Services, Govt. of Sikkim on 09.01.2018, 17.01.18 31.01.18 and 07.02.18,
- Talks (4) on Scientific Management of Pig particularly Selection and Breeding System, organized by ADEE, AAU, Khanapara, sponsored by Deptt. of Animal Husbandry Livestock, Fisheries & Veterinary Services, Govt. of Sikkim on 09.01.2018, 17.01.18 30.01.18 and 07.02.18,
- Five days Master's Trainer Training programme on Pig Production & Management was Conducted *w.e.f.* 28th October to 1st November'2017 at AICRP/MSP on Pig under the Sponsorship of M/S Mothonga Agro- Producer Co. Ltd, Baksa, Khandikar, Assam
- A group of 30 progressive farmers of Mokokchang district visited the AICRP and MSP on Pig as exposure visit on 28th July 2017 Conducted by Deptt. Animal Husbandry & Veterinary, Govt. of Nagaland under NLM, 2016-17
- A group of Final year Students of Veterinary College, Nepal Visited the AICRP & MSP on pig, AAU, Khanapara on 9th October 2017.

At Field:

- Training (3) on Scientific Piggery Farm at Mahmora, district Charaidew and Nazira (2) districts Sivsagar were organized by a NGO PHENHUJALI on 4.10.2017 and 5.10.2018 (2).
- An interaction programme was organized at Dhekidol, Sonitpur 10th March'18 and a total of 17 Pig farmers were attended. Out of which 3 were Women farmers.
- An interaction programme was organized by a group of Pig farmers at Nalbari on 13th March'18 and a total of 22 Pig farmers were attended.

Success Story:

- Sri Manoj Basumatary and Sri Khanindra Kalita Dhikidol, Ghoramari started a Piggery farm in the name of Symbiotic Foods Pvt. Ltd in the year 2014. The breeding stocks (75%H) were purchased from the AICRP on Pig, AAU, Khanapara. The farm has expanded with a breeding stock of 90 females and produced 1500 piglets per year during 2016 and 2017. They have a plan to raise 120 female breeding stocks for 2000 piglets' production in 2018. All the breeding stocks and fatteners are accommodated in the three piggsties. The farm has a Feed Mill and has a outlet of feed for local farmers. The piglets and feed are sold to the local farmers at nominal price. The farm also started 7-Days training programme on piggery. The farm supported the



local farmers for feed, treatment /vaccination and marketing. The annual turnover is around 26.00 lakh.

- Jayanta Kr Sarma Chepti Rangia, district Kamrup (R) an unemployed Engineer. age 45 years maintaining 5 Sows and 2 breeding males. He is selling 5 fatteners in every month and 30- 40 piglets / year. He earned Rs. 9.00 to 10.00 lakh annually. He is spending Rs. 12,000/month for concentrate and Rs.3000/ month for hotel waste and broiler waste.
- Kamal Talukdar, Chandkushi, district Nalbari, age 48 year maintaining two herds of pig (70+80). He is spending Rs. 500/day for carrying Hotel/Kitchen waste / left out from Nalbari and Rs. 3000/ pm for two labourours. He is earning Rs.13.00 lakh annually from piggery by regular selling of 5-6 fatteners/pm. and 200 piglets yearly.
- Sri Manash Phukon, City based unemployed youth started piggery with two friends at Topatoli (Sonapur) and small units at Sonari (Sivsagar) and Mekurikushi (Rani) in the name of **ZHARNA**. The organization have 35 adult breeding females The piglets were sold to local farmers at nominal price and have a Network with organizer for support in respect of feed, treatment, vaccination and marketing.

Meeting Attended:

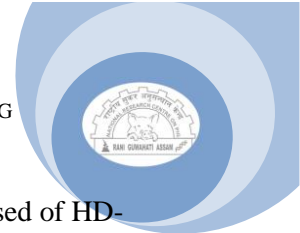
- Participation in the Academic Committee Meeting, SAMETI, Assam held on 10th November, in the Deptt. of Agriculture, Govt. of Assam, Six Mile Khanapara.
- Attended in the Technical Committee Meeting for formulation of Pig Breeding Policy of Assam, on 01.12. 17 in the Directorate of Animal Husbandry & Veterinary, Govt. of Assam, Chenikuthi, Guwahati.

Radio Talk:

- Attended in the Discussion on 27.03.2018 for recording “Role of Reproduction on high production of Pig” for broadcasting on 08.04.2018 under the Krishi Jagat, All India Radio, Guwahati.

Salient achievement during the report period (2017- 18)

- A total of 476 piglets were obtained from the two Crops during 2017- 18. The average litter size at birth, litter weight at birth, litter size at weaning and litter weight at weaning of 1st crop were found to be 6.42 0.21, 6.51 0.22 kg, 5.87 0.23 and 61.06 1.53 kg respectively. The average body weight at birth, at 6th week and at 7 month of age were found to be 1.01, 0.71 kg, 9.90, 3.10 kg and 61.95, 0.94 kg respectively.
- The Pre weaning, Post weaning and adult mortality percentages during the year under report were recorded as 4.43 (9) and 6.40 (13) and 0.39(1) respectively.
- A total of 189 (22+167) pigs of different categories were sold to the farmers during the year under report. 21 farmers and 174 farmers are benefited from the piglets and consultancy service of ICAR-AICRP and ICAR-MSP on Pig respectively.

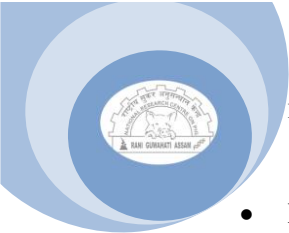


- The department of Animal Husbandry & Veterinary, Govt. of Assam and Sikkim purchased of HD-K75 piglets for breeding stocks.
- An organized Pig (Symbiotic Food Pvt. Ltd) Breeding Farm has developed under Private sector (Sri Manoj Basumatary & Khanindra Kalita) at Dhekidol, Ghoramari, Sonitpur and showing a significant change in Pig farming in the NE Region particularly in Assam. The Firm has outlet of Pig feed and organized 7-Days Training Programme at regular interval..
- Facilities are provided to the M.V.Sc. and Ph. D. students for conducting research in the disciplines of Animal Genetics & Breeding, Animal Nutrition, and Veterinary Epidemiology & Preventive Medicine.
- Farmers of different parts of the state particularly Sonitpur, Sivsagar, Baksa, Kamrup, Nalbari, Karbi Anglong, Nagaon and Morigaon districts witnessed the management of pig farm and different genetic groups of pigs maintained under the ICAR-AICRP/MSP on Pig during their training programme.
- Implementation of ICAR-MSP on Pig and achieved the target of piglet production since 2011-12 and benefited the farmers/, SHG of NE Region and Research Institute/Agencies /NGOs.
- Publication of 8 Research papers during the year 2017-18
- Inclusion as Expert Member for formulation of State Pig Breeding Policy, - Assam
- Two students completed their MVSc degree in Animal Nutrition and two students in MVSc and Ph.D are continuing in the Deptt. of Animal Nutrition, and one MVSc student continuing in Veterinary Epidemiology & Preventive Medicine.
- The Artificial insemination programme in Pig is practiced in collaboration with the Department of ARGO, C.V.Sc., Khanapara. The Semen collection and insemination is practiced under the project entitled "*Capacity building and awareness generation for enhanced productivity of pig through assisted reproductive biotechnology and conservation of biodiversity in North Eastern Region through community participation*". 13 Sows are inseminated at the farmers houses of Sonapur, Kamalpur and Rangia.
- The honourable Chairman and Members of the QRT, ICAR-AICRP on Pig visited the Centre on 28th July.2017. The Chairman Dr. B B Mallick and other members of the team expressed their satisfaction on the performances of the two projects.

Publications: Research Article (8), Abstracts: (3)

Project work of students (M.V.Sc/ Ph.D):

- Performance of Growing Pigs on Corn based diet supplemented with Phytase and Non-Phytase Phosphorus (MVSc)
- Comparative Efficacy of Pro-biotics (Swine & Dairy origin) in Growth and Nutrient Utilization in Growing Pigs (MVSc)

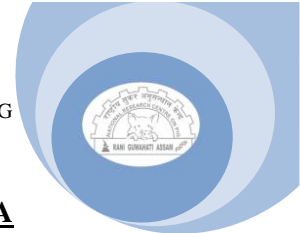


- Effect of dietary supplementation of synthetic amino acids in low protein diet on the performance of crossbred (HD-K75) pigs (PhD)

Distinguish Visitor:

- Dr. B. B Mallick, Honorable Chairman and members of QRT, ICAR-AICRP on Pig visited the two projects of the Centre on 28th July.2017

<p>Sow with piglets of HD- K75,</p>	<p>Weaned Piglets of HD-K75 Sold to Govt. of Sikkim.</p>
<p>Training Programme on Scientific Pig Farming at Nazira</p>	
<p>QRT, ICAR-AICRP on Pig discussed the performances of the Centre on 28th July'2017</p>	<p>QRT, ICAR-AICRP on Pig Visited the Center on 28th July'2017</p>



KERALA VETERINARY AND ANIMAL SCIENCE UNIVERSITY, KERALA

This farm was started on 12-05-1965 as a small pig breeding unit along with an auxiliary pork production scheme under the Department of Animal Husbandry. It was taken up by Kerala Agricultural University in 1972 and renamed as University Pig Breeding Farm. The All India Coordinated Research Project was started in 1993 with the objective of studying the performance of indigenous pigs and to produce a crossbred between indigenous and exotic pigs. The Massive Livestock Development Programme (MLDP) was started in 1993 in collaboration with Department of Animal Husbandry, Kerala with the objective of distributing 2000 piglets to the farmers in Kerala both as breeding and fattener units. The Farm was upgraded to Centre for Pig production and Research in 1995. The Centre has been identified as the lead institution for the World Bank funded National Agricultural Technology Project on “Strategies for enhancing the productivity of pigs for the farming community” with four co-operative institutions at Kattupakkam, Bangalore, Port Blair and Goa. This center is maintaining about 1600 pigs belonging to Large White Yorkshire, Landrace, Duroc, local Desi breed and varieties of crossbred animals. The major activities of this centre are to conduct research on various aspects of pig production, operate as an instructional farm to students, production and distribution of good quality piglets to farmers and to function as a demonstration unit to farmers. Under the AICRP on Pig, two breed (Desi x LWY) and three breed ((Desi x LWY) x Duroc) crosses are produced and supplied to farmers for fattening. So far the Centre has completed various projects including Master’s, Doctoral projects. Academic activities include conducting internship training for under graduate students, providing facilities and technical advice for conduct of research of post graduate and doctorate students.

Herd dynamics:

	Desi			Crossbred 50 %			Crossbred 75 %			LWY		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Opening balance as on 01/04/2017	12	20	32	5	40	45	14	49	63	7	3	10
Birth 1/4/17 to 31/3/2018	2	4	6	75	78	153	165	173	338			
Purchase of animals/transfer	-	-	-	4	5	9	8	10	15	3	6	9
Total	14	24	38	84	123	207	187	232	416			
Mortality	-	1	1	5	8	13	11	15	26			
Sold / Field unit / slaughter	0	0	0	40	48	88	160	155	315			
Total	14	23	37	39	67	106	16	62	75			
Closing balance as on 31/3/2018	14	23	37	39	67	106	16	62	75	10	9	19

Breeding strategy of the farm as approved

75% crossbreds are maintained by inter-se mating



Performance of animals:

1	Traits/Characters	17-18		
		Male	Female	Total
1.	Litter Size at birth (no)	5.38±0.14	4.82±0.16	10.10±0.15
2.	Litter weight at birth (kg)	5.86±0.16	5.58±0.20	11.50±0.14
3.	Litter Size at weaning (no)	5.18±0.14	4.96±0.28	9.32±0.10
4.	Litter weight at weaning (Kg)	44.65±0.18	38.62±0.26	83.50±0.20
5.	Avg. Individual weight at birth (kg)	1.15±0.10	1.14±0.22	1.14±0.10
6.	Avg. Individual weight at weaning (kg)	8.16±0.24	8.87±0.28	8.95±0.20
7.	Number of days for weaning (d)	42	42	42
8.	Pre weaning mortality rate (%)	7.18	7.24	7.20
9.	Pre weaning growth rate(gm/d)	188.24	182.46	185.95
10.	Post weaning mortality rate (%)	1.14	1.14	1.14
11.	Post weaning growth rate (gm/d)	332.46	330.12	330.89
12.	Overall growth rate (up to 9 m) (gm/d)	322.14	314.68	317.26
13.	Body wt at different ages (kg) (n=8)			
	at 1 st month			5.92±0.42
	2 nd month			9.89±0.50
	3 rd month			18.74±0.48
	4 th month			30.20±0.44
	5 th month			41.38±0.48
	6 th month			52.16±0.50
	7 th month			63.38±0.41
	8 th month			78.32±0.62
	9 th month			89.26±0.70
	10 th month			97.84±0.62
14.	Age at slaughter (d)			300
15.	Weight at slaughter(Kg)			97.80±0.74
16.	Dressing Percentage (%)			66.42±0.68
17.	Carcass Length (cm)			77.12±0.68
18.	Back Fat Thickness (mm)			21.94±0.50
19.	Meat Bone ratio (:)			4.24±0.18
20.	Pork produced per sow (kg/year)			1854.32
21.	Feed Conversion efficiency (:)			3.84

Lifetime production traits

Sl No	Traits	Mean
1	Live weight produced /sow/litter at birth (kg)	12.06
2	Live weight weaned /sow (kg)	84.46
3	Live weight produced at slaughter age/sow/litter (kg)	842.54

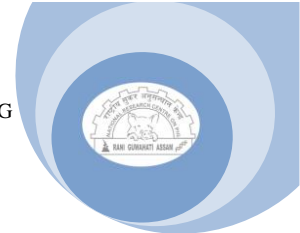
Mortality parameter:

Cross bred 50% -Pre-weaning

Parameter	Age											
	0-14 days			15-28 days			29-45 days			Over all		
	M	F	T	M	F	T	M	F	T	M	F	T
Number died	3	4	7	1	2	3				4	6	10
Mortality %	4	5.12	4.57	1.3	2.56	1.96				5.33	7.69	6.53

Cross bred 50% -Post- weaning

Parameter	45 days - 1 year			Adult			Over all		
	M	F	T	M	F	T	M	F	T
Number died	1	2	3				1	2	3
Mortality %	1.28	2.56	1.96				1.28	2.56	1.96

**Cross bred 75 % -Pre weaning**

Parameter	Age											
	0-14 days			15-28 days			29-42 days			Over all		
	M	F	T	M	F	T	M	F	T	M	F	T
Number died	5	8	13	2	2	4	2	2	4	9	12	21
Mortality %	3.0	4.62	3.8	1.2	1.1	1.1	1.21	1.15	1.18	5.45	6.93	6.2
	3			1	5	8						

Cross bred 75 % -Post weaning

Parameter	45 days - 1 year			Adult			Over all		
	M	F	T	M	F	T	M	F	T
Number died	2	3	5				2	3	5
Mortality %	1.21	1.73	1.47				1.21	1.73	1.47

Causes of mortality:**Pre weaning**

Causes	Number died								
	Desi			Crossbred 50%			Crossbred 75%		
	M	F	T	M	F	T	M	F	T
Gastro enteritis	1	2	3	3	4	7	7	9	16
Hepatosi					1	1	1	1	2
Pulmonary congestion and edema		1	1	1	1	2	1	2	3
Total	1	3	4	4	6	10	9	12	21

Post weaning

Causes	Number died								
	Desi			Crossbred 50%			Crossbred 75%		
	M	F	T	M	F	T	M	F	T
Gastro enteritis				1	2	3	1	2	3
Pulmonary congestion and edema							1	1	2
Total				1	2	3	2	3	5

Measures to taken minimize mortality:**Management measures:**

1. All the pigs were dewormed periodically and regular spraying against ecto-parasites was done.
2. Early treatment to control piglet diarrhea and anemia were undertaken.
3. Farrowing crates to minimize the incidence of crushing of piglets.
4. Artificial light provided at farrowing pen to prevent piglet mortality due to cold shock.
5. Gunny bags were laid over roof and periodically wetted to control the thermal stress.
6. Soft bedding with hay was provided to minimize the incidence of crushing of piglets.
7. Early detection and treatment of Mastitis, Metritis, Agalactia (MMA) syndrome.
8. A disinfectant dip was constructed at the entrance of the centre to control infection from outside.
9. Practice of one time feeding in the early morning of the day was introduced along with provision of shade to minimize the heat stress.
10. Efforts are taken to minimize the pre-weaning mortality with suitable interventions.

(ii) Prophylactic measures:

1. All the animals were vaccinated twice annually for swine fever disease (CSF) and FMD.
2. Weaned piglets were vaccinated against the CSF three days after weaning and FMD after 21 days.



3. The wallowing tanks are routinely cleaned using disinfectants and maintained hygienically.
4. The sows were dewormed and thoroughly scrubbed and cleaned prior to shifting them into the farrowing pens.
5. Pregnant sows were transferred to farrowing pen 2-3 weeks in advance to provide individual care and management.
6. Routine inspection and maintenance of hygienic practices of farrowing pens for preventing MMA.
7. The new born piglets are orally medicated with Digestaron liquid to enhance the immunity and prevent neonatal hypoglycemia.
8. Selenium –Zinc mineral mixture powder is added as a feed additive in adult ration.

Nutritional experimentation:

The feed with following composition is used in the centre.

Sl. No.	Feed Ingredients	18% CP	20% CP
1	Maize	63	55
2	Soya	25	33
3	Wheat Bran	10	10
4	Mineral Mixture	1.5	1.5
5	Salt	0.5	0.5
6	Vitamins	0.02	0.02
7	Lysine	0.02	0.02
8	Methionine	0.02	0.02
9	Zinc oxide	0.02	0.02
	Total	100.08	100.08

Adoption of integrated farming systems:

Facilities are created during the reporting year for the collection and reuse of the shed washings for cultivation and recharging of the water sources.

Disposal pattern of farm waste, pig excreta etc/Establishment of biogas plant:

Solid waste / excreta is collected in the manure pit and sold @ Rs.750/tonn to farmers and government agricultural farms. Liquid waste is collected in the slurry pit and pumped to the grass lands along with water.

Production economics:

Market prices of pork

- Pork : Rs. 260 kg from University meat plant
- Lean pork : Rs. 320 /kg from University meat plant
- Private outlets : Rs. 220/kg.
- Live weight : Rs.110/ kg depends upon the season

The production economics is calculated on the basis of feed cost, the existing price of pork is Rs.220/kg and Rs.110/kg live weight.

Cost of production/pig up to slaughter age: Rs. 9458/-

Cost production /kg pork: Rs. 106/-

Extension programme with success story:

(i) **At the institute:** The Centre could impart scientific knowledge to the progressive pig farmers in establishing the piggery units with respect to health care, feeding and breeding management, waste



disposal and other problems faced on a day to day basis through telephone and by direct personal contact. The Centre could establish 323 piggery units throughout the State of which sizable number of farmers took up this as a full time engagement and this unit is proud to report that it could provide a sustainable income for the farmers and many of them now totally depend on their pig farm as their regular income. Training programmes on “Profitable Rearing of Pigs “were held at Centre for Pig Production & Research, Mannuthy in four batches, during 2018. Sixty one farmers attended the programme. The prospects and problems of pig rearing in Kerala were discussed during these training programmes and many of the pig farmers expressed their success stories.

(ii) At the farmers’ field: Centre had supplied 403 fattening piglets to 57 farmers. Twenty new units have been established during this period.

Salient achievements during the report period:

The centre has successfully fulfilled the demand of the farmers by supplying 403 crossbreds piglets and also generated receipt of Rs.15.08 lakhs during the year 2017-18. Crossbred pigs (75 %) were produced and their production, reproduction and carcass traits were studied. The breeding stock number was increased; health status of farm stock is improved with utmost care and management.

Publications: Research Article 5

Project work of students (M.V.Sc./Ph.D.):

1. Dietary incorporation of cooked barley and spent grapes as energy source in LWY sows.
2. A comprehensive approach for diagnosis of leptospirosis in domestic pigs.

Distinguished visitors:

- Candido Pomar, Swine Research Scientist, Agri-Food Canada.
- Brione Moffitt, National Leadership academy USA
- Heather Bacon, University of Edinburgh
- Cathy Bweyer, Edinburgh

Success story: The centre provides technical knowledge to pig farmers in various aspects of pig farming such as housing, health care, management and other problems. This unit is proud to report that it could provide a sustainable income for the farmers and many farmers have come forward to start pig farms with the technical support from this centre. The success story of two farmers is presented here.

Fattening: Mr. Dasan, Cheruvath House, Avinissery, Mundur, Thrissur is a sole owner of a small pig farm at Mundur, Thrissur. He attended training on scientific pig rearing at AICRP Mannuthy and started one independent pig farm at Mundur, Thrissur with 100 fattener pigs. Dasan started breeding unit on pig with 10 pigs and increased the breeding pigs number to 25 last year. He is using hotel waste for feeding the piglets and has a monthly income of Rs 30000.

Fattening Unit: Mr. George P.A., Padiyil house, Thodupuzha, Idukki district, Kerala is an independent pig farmer having his fattening piggery unit at Thodupuzha, Idukki district. He is maintaining 80 fattening animals now. He acquired training on profitable pig farming from Centre



for pig production and research, Mannuthy. He purchased fattening animals from CPPR and started his own fattening unit. He is now earning Rs. 25000/month.

Macroclimatic Data at Mannuthy

Date	Air Temp (°F)	Relative Humidity (%)	Solar Radiation (W/m ²)	Wind Speed (m/s)	Wind Direction (Degree)	Dew Point Temp (°C)	Wet Bulb Temp (°C)	Thermal Humidity Index (THI)
Apr-17	83.39	0.20	0.70	122.86	0.03	27.62	83.33	113.22
May-17	86.24	0.19	0.64	141.62	0.19	27.07	82.08	115.50
Jun-17	95.36	0.15	0.43	162.12	0.80	26.08	79.38	122.79
Jul-17	94.41	0.17	0.46	176.09	0.47	25.88	79.15	122.04
Aug-17	94.69	0.17	0.51	166.37	0.55	26.27	79.82	122.27
Sep-17	93.35	0.22	0.57	92.55	0.44	26.88	81.03	121.24
Oct-17	92.28	0.22	0.45	83.60	0.20	26.74	80.87	120.38
Nov-17	87.29	0.23	0.53	79.67	0.10	26.34	80.69	116.37
Dec-17	77.41	0.23	0.77	121.33	0.01	24.70	79.09	108.44
Jan-18	71.51	0.24	0.91	186.99	0.00	23.01	76.97	103.70
Feb-18	67.16	0.27	0.96	169.30	0.01	23.62	78.71	100.21
Mar-18	75.73	0.24	0.81	175.65	0.07	25.44	80.63	107.08



ICAR Expert Panel Inspection team to CPPR, Mannuthy



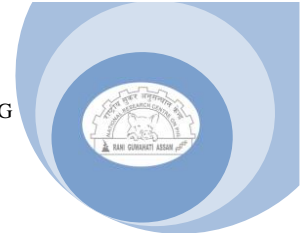
Visit by Candido Pomar, Senior scientist, Agri Food, Canada

Distribution of Piglets under Tribal Sub Plan at Chalakkudi, Thrissur District, Kerala



Farmers Training Session I

Farmers Training Session II



SRI VENKATESHWARA VETERINARY UNIVERSITY, TIRUPATI

The All India Coordinated Research Project on Pigs, (APAU/ANGRAU/SVVU Centre) at College of Veterinary Science, Tirupati was sanctioned on 1.10.1970, started functioning from 20.3.1971, with the main objective of studying the performance of Large White Yorkshire pigs under optimum managemental conditions. During the VI Five Year Plan, research work was conducted to study the performance of indigenous pigs under improved managemental conditions and genetic improvement through selection. During the VII Five Year Plan, research work was initiated on crossbreeding of indigenous pigs with boars of Large White Yorkshire to decide about the optimum level of exotic inheritance best suited to local conditions and is in progress. Since 1985-86 the performance of crossbreds of 50% & 75% LWY produced by interse mating was studied. Presently performance of only 75% LWY crossbreds by interse mating is being studied.

Herd dynamics:

Sl. No	Categories	Opening balance on 1.4.17	Additions		Disposals			Closing balance on 31.3.18
			Births	Transfers/ Purchased	Deaths	Transfer/ Slaughter	Sold	
1	Upto 42 d	-	493	-	12	9	-	230
2	42 d-5 m	99	-	18	29	8	87	120
3	5-8 m	4	-	-	7	-	76	
4	Sow	62	-	-	3	7	10	67
5	Boar	22	-	-	1	17	4	19
Grand Total		187	493	18	51	41	177	429

Breeding strategy of the farm as approved

- Started during IV Five year plan in the year 1970-71 to study performance of LWY pigs and was continued upto the end of V Five year plan.
- During VI Five year plan the performance of indigenous breeds was studied under best managemental conditions.
- Research work on breeding of indigenous gilts with boars of LWY was carried out during VII Five year plan.
- Studies on indigenous pigs were discontinued from 1985-86 and the performance of crossbreds (50% & 75% LWY) by interse mating was studied
- Presently performance of only 75% LWY crossbreds by interse mating is being studied.

Performance of animals: (22nd Generation 1st crop)

Sl. No	Traits/ Characters	Mean±SE (no. of observation)		
		M	F	Total
1	Litter size at birth (no.)	4.26±0.28(31)	3.84±0.32(31)	8.1±0.36(31)
2	Litter weight at birth (kg)	5.4±0.39(31)	4.8±0.43(31)	10.2±0.53(31)
3	Litter size at weaning (no.)	3.97±0.31(31)	3.55±0.31(31)	7.52±0.37(31)
4	Litter weight at weaning (kg)	31.85±2.37(31)	28.51±2.65(31)	60.36±3.07(31)
5	Avg. individual weight at birth (kg)	1.27±0.02(132)	1.25±0.02(119)	1.26±0.02(251)
6	Avg. individual weight at weaning (kg)	8.03±0.12(123)	8±0.11(110)	8.02±0.08(233)
7	Number of days for weaning (d)	42 days	42 days	42 days



8	Pre weaning mortality rate (%)	7.58	6.72	7.17
9	Pre weaning growth rate (gm/d)	160.64±2.73(123)	161.45±2.71(110)	161.02±1.92(233)
10	Post weaning mortality rate (%)	4.88(117)	2.73(107)	3.86(224)
11	Post weaning growth rate (gm/d) (up to 6 months)	271.22±4.13(7)	273.07±3.18(6)	272.07±2.57(13)
12	Overall growth rate (upto 6 m) (gm/d)	248.58±1.72(7)	246.37±2.03(6)	247.56±1.3(13)
13	Body weight (kg)			
	1 month	6.35±0.09(129)	6.35±0.09(113)	6.35±0.07(242)
	2 months	9.78±0.06(123)	9.75±0.06(110)	9.77±0.04(233)
	3 months	14.71±0.05(122)	14.64±0.05(109)	14.68±0.04(231)
	4 months	24.08±0.08(101)	24.29±0.08(88)	24.18±0.06(189)
	5 months	35.19±0.5(61)	35.88±0.12(59)	35.53±0.26(120)
	6 months	46.01±0.3(7)	45.5±0.35(6)	45.78±0.23(13)
	7months:	44.4±5.3(22)	50.0±3.4(16)	46.8±3.4(38)
	8months:	61.8±4.09(17)	63.1±4.09(15)	62.4±2.1(32)
	9months:	71.4±2.1(8)	71.3±.9(11)	71.3±10(19)
	10months	79.3±1.09(4)	75.5±1.0(2)	78.0±1.09(6)
14	Age at slaughter (d)	320±36(8)	345±75(8)	326±30.76(8)
15.	Weight at slaughter (kg)	80.66±4.97(8)	71.5±1.5(8)	78.375±3.95(8)
16.	Dressing Percentage (%)	59.23±5.21(8)	47.6±2.4(8)	56.32±4.28(8)
17.	Carcass Length (cm)	68.16±0.94(8)	66±0.0(8)	67.67(8)
18.	Back Fat Thickness (mm)	1.54±0.15(8)	1.74±0.26(8)	1.59±0.12(8)
19.	Meat Bone ratio (:)	2:1(8)	2:1(8)	2:1(8)
20.	Amount of pork produced per sow (kg)	48.33±6.4(8)	34.5±1.5(8)	44.8±5.21(8)
21.	Feed conversion efficiency (:)	2.98±0.58(8)	4.57±0.77(8)	3.38 (8)

Lifetime production traits

- Average litter siz 8.21
- Aver ter weight at birth per sow: 9.74
- Average litter size 7.8
- Average litter weigh 56.04
- Average litter weigh 78.37

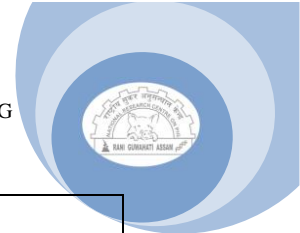
Specific managerial practice:

- Identification is done by ear notching, employing ear notching pliers on fourth day.
- Castration is not followed in the farm.
- Removal of needle teeth is carried out on fourth day using scissors.
- To combat piglet anemia, iron dextran injection will be given on 4th day and repeated on 14th day.
- To reduce the heat stress of the animals in hot summer farmers were advised to reduce the stocking density in sheds.
- As a measure of shelter management farmers are advised to hang gunny curtains to sides of sheds and sprinkle water in morning and evening time to reduce heat stress.

Mortality parameter:

i) Genetic group wise and sex wise mortality rate:

	Male			Female			Total		
	Stock available	No. of deaths	% of mortality	Stock available	No. of deaths	% of mortality	Stock available	No. of deaths	% of mortality
Pre-weaning (Birth-42d)	253	6	2.3	235	6	2.5	493	12	2.4



Post weaning (42d-5m)	297	14	4.7	278	15	5.3	575	29	5.0
Adult (> 5 m)	75	3	4.0	110	7	6.3	185	10	1.5

Causes of mortality:

Pre-Weaning			
	Male	Female	Total
Pulmonary edema	2	2	4
Pneumonia	1	-	1
Pm changes	1	-	1
Pasteurellosis	-	1	1
Parasitic enteritis	-	2	2
Lymphosarcoma	2	1	3
Total	6	6	12
Post-Weaning			
Pneumonia	4	4	8
PM Changes	4	5	9
Pasteurellosis	4	6	10
Pulmonary edema	2	2	4
Parasitic enteritis	1		1
Lymphosarcoma	1	1	2
Suspected for Swine fever	-	1	1
Total	16	19	35
Adult			
Pasteurellosis	1	2	3
Mastitis, Metritis, Agalactiae	-	1	1
Total	1	3	4
Grand Total	23	28	51

Measures taken to minimize mortality:

i. Managemental measures: All possible bio-security measures were adopted including regular sanitation, screening of animals for parasitic diseases, regular deworming, identification of sick animals in time, proper treatment for the sick animals, regular visits of health committee constituted for the purpose comprising of specialists from department of Medicine, Surgery, Gynaecology, Parasitology, Pathology, Microbiology and Epidemiology.

- All measures to prevent the access of causative factors by way of feed and water be regularly checked.
- The parasitic load of the stock be regularly assessed and the animals are properly dewormed. Similarly efforts for controlling ecto-parasitic infection like mange may also be done periodically.

ii. Prophylactic measures:

Vaccination schedule for diseases of HS, Foot and Mouth, Swine fever etc. are rigidly followed. In case of outbreaks the segregation and hygienic measures be put into immediate effect.

Disposal of diseased carcass: The dead animals after conducting the post-mortem will be buried properly as per standard practices.



Adoption of integrated farming systems: At present we are growing tuber crops like sweet potato in the existing land of about 30 cents. About 100 kgs of sweet potatoes were harvested and fed to the animals.

Survey on market of pork: The surplus animals, culled animals which are unfit for further breeding and also experimental animals where nutritional and carcass characteristics need to be studied are slaughtered and the pork is sold at the rate of Rs.180/- per kg.

A directory of pork eaters comprising about 2000 names along with mobile numbers of Tirupati town is being maintained by the station. The consumers get the information of availability of pork through telephone enquiry.

Disposal pattern of farm waste, pig excreta etc/Establishment of biogas plant: The farm waste or pig excreta is used periodically for the plants as manure in the research station premises. The remaining manure being supplied to LPM department of college for growing green fodder. During the year 2013-14 a biogas unit was established in the project. Pig manure was stored in a separate manure pit and used for production of biogas.

Production economics:

i) Cost of production/pig up to slaughter age:

The feed cost is considered for calculation of cost of production per pig. The quantity of feed consumed from 10 days to 10 months is about 294.8 kgs. The average cost of feed per kg is Rs. 25/-. The live weight attained at 10 months of age is around 80 kgs. The dressing percent was taken as 65. The average cost of production per pig upto slaughter age was Rs.7300/-.

ii) Cost of production / kg pork was Rs. 140/-.

Extension programme with success story:

i) **At the institute:** Regularly interested farmers are visiting the center and are being given technical advice about scientific pig rearing and feeding, vaccination *etc.* Importance of sanitization and hygiene and summer management practices to combat heat stress are also explained to the beneficiaries. Problems/constraints faced by the farmers in the field are addressed during the time of their visit to this farm and also through telephone.

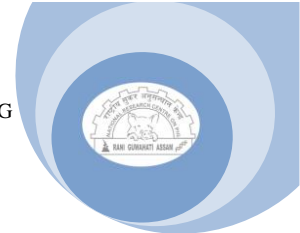
ii) **At the farmers' field:** One training programme on "Economic Pig rearing and marketing of pigs and pork" was conducted on 28.3.2018 to 30 number of pig beneficiaries of Dhamineedu village of Tiruchanur mandal, Chittoor district.

Salient achievement during the report period:

a) Release of new crossbred pig variety called SVVU-T17 was done on 1-7-2017 by the Deputy Director General (Animal Science) ICAR Dr JK Jena.

b) Survey work on conservation of indigenous germplasm was completed in two districts ie. Chittoor and Kadapa.

c) Annual review meet of ICAR-AICRPs and Mega Seed Projects on Pigs were conducted on 1-2 July, 2017 at the administrative office of Sri Venkateswara Veterinary University, Tiruapti.



d) During the period under report 493 piglets were born and 177 were sold.

e) Receipts: During the reporting period a total of 177 pigs were sold to the beneficiaries and a total of Rs.8,86,932/- earned through sale of piglets and sale of pork.

Project work of students (M.V.Sc./Ph.D.): P.G./ Ph.D. Research conducted at the farm: So far 28 M.V.Sc students and 1 Ph.D., student conducted their research in the farm.

At present 3 PG students and 2 PhD students are doing research in the farm.

1. One M.V.Sc., student, Dr. M. Bhaskar, Department of Veterinary Biochemistry is doing research work in this centre on “Dietary supplementation of certain probiotics on growth performance in weaned piglets”.

2. Dr D. Ashok Reddy, PG student Department of LPM, CVSc, Proddatur is doing research on the “Effect of management interventions on growth performance of LWY crossbred pigs under tropical environmental conditions.”

3. Dr Mounica, PG student, Dept. of LPM, CVSc, Tirupati is doing research on “Evaluation of nano chitosan as an alternative to antibiotics in crossbred pigs.”

4. Dr Swathi, PhD Student, Dept. of LPM, CVSc, Tirupati is doing research on: A study on the effect of weaning age on piglet and sow performance in crossbred pigs.

5. Dr prabhakar, inservice phd student is doing research on “A study on the induction and synchronization of oestrous in LWY crossbred gilts.

Distinguished visitors:

Dr J.K. Jena, DDG (Animal Science), ICAR, New Delhi

Dr R.S. Gandhi, ADG, (Animal Science) ICAR, New Delhi

Dr Arjava Sharma, Director, NBAGR, Karnal. Haryana

Dr D.K. Sarma, Director and Coordinator, NRC on Pig, Rani, Guwahati,

Dr BS Prakash, ADG, ICAR, New Delhi, member, Board of management, SVVU

Sri B. Subba Reddy and Sri M.D. Prasad, Members, Board of management SVVU

Mr Ziv Mathlon and Mr Ashwini Raj kumar from TATA Trust have visited the farm

Month	Temperature (°C)		Humidity	THI
	Minimum	Maximum		
April, 2017	26.19	39.75	77.4	73.7
May	27.04	38.98	72.40	64.2
June	27.51	37.82	60.60	51.4
July,	27.09	36.60	68.80	52.9
August	26.88	33.73	68.00	42.6
September	24.18	33.27	88.90	52.4
October	23.63	31.00	89.02	44.3
November	21.43	29.66	89.90	37.0
December	20.53	29.07	87.20	36.4
January, 2018	16.65	29.09	88.20	36.7
February	15.21	31.42	87.10	43.5
March	16.70	28.99	88.20	36.7



Release of SVVU-T17 variety



Distribution of SVVU-T17 to the farmer

Survey on Indigenous pigs for the conservation



Non-descript pigs reared in Chittoor District(Tirupati rural Mandal)



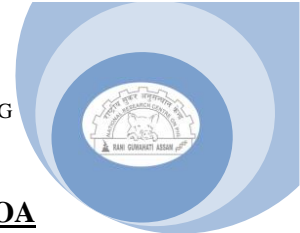
Nondescript pigs herd C.Ramapuram and BNKandriga



Piglets distributed to farmer on 5-5-2017



Distribution of SVVU-T 17 by DDG(AS) ICAR, New Delhi to the farmer at the farm



ICAR-CENTRAL COASTAL AGRICULTURAL RESEARCH INSTITUTE, GOA

Goa is traditionally recognized as one of the leading consumer of pork in the country with more than 50% of its population consuming pork. Goa and coastal states are having more per capital income in the country. Being tourism hub these states have continuous demand of meat, beef, sausages, chicken etc. The crossbreed pigs developed by ICAR-CCARI are hugely popular amongst producers and consumers alike. This improved breed will help rural population to double the income which will help them to be more sustainable. Availability of higher quantity of pork for preparing the products will help to make the activity self-sustainable. Suitable breed, crossbreeding of local pig breed, controlled breeding using synchronization and AI, standard balanced feeding, comfortable housing of pigs will lead to improved pig production and benefit the growers. AICRP on pig Goa centre is attempting to provide these know how to the pig farmers of the region through training's and demonstrations and also providing them with quality breeding stock. Owing to such an intervention of ICAR-CCARI through AICRP on Pigs brought big positive change in people's attitude towards piggery. Over the last 5 years there has been substantial increase in number of commercial pig farms in Goa and entire Konkan Coast. Crossbreed Pigs developed by the ICAR-CCARI are the most preferred breed in these farms.

Herd dynamics:

Crossbreed 75% (LWY X AG)

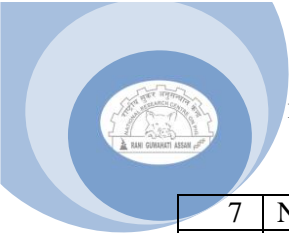
SIN.	Categories	Opening		Additions		Disposals		Closing
		balance	Births	Transfers	Deaths	Transfer	Sold	balance
1	Piglet(upto 42d)	56	140	-	9	115	-	72
2	Grower(42d-5m)	32	X	115	7	10	95	28
3	Finisher(5m-8m)	9	X	10	-	9	6	4
4	Breeding female	44	X	7	1	-	19	31
5	Boar	29	X	2	1	-	11	19
	Grand Total	170	140	134	25	134	131	154

Breeding strategy of the farm as approved

Four breeds namely Agonda Goan (Local), Large White Yorkshire, Crossbred 50% and crossbred 75% are maintained at the farm. Breeding policy is followed as per the technical program of AICRP where experimental animals are crossbred 75 %. One breeding boar is allotted for three breeding females. AI is the strictly followed practice for breeding. Presently the farm is maintaining 30 breeding females and 10 sires with 3:1 ratio.

Performance of animals (Tabular form) crossbred 75%

Sl. No	Traits/Characters	Mean±SE		
		M	F	Total
1	Litter size at birth (24)	4.32±0.85	3.89±0.95	8.21±0.89
2	Litter weight at birth (kg)(24)	4.423±0.65	3.83±0.59	8.258±0.78
3	Litter size at weaning(no.)(24)	4.23±0.46	3.77±0.36	8.0±0.48
4	Litter weight at weaning(kg)(24)	34.81±3.40	29.59±2.92	64.32±4.51
5	Individual weight at birth (kg)	1.024±0.29(106)	0.986±0.38(90)	1.005±0.23(196)
6	Individual weight at weaning(kg)	8.23±3.00(101)	7.85±4.47(86)	8.04±2.56(188)



7	Number of days for weaning(d)	40 days (all breeds)		
8	Preweaning mortality rate (%)	4.71%	4.44%	4.59%
9	Preweaning growth rate(mg/d)	180.25±7.71	171.61±12.33	175.59±8.86
10	Post-weaning mortality rate (%)	4.13%	3.74%	3.93%
11	Post-weaning growth rate(g/d) (8m)	366.13±11.07	351.7±10.30	358.85±7.41
12	Overall growth rate mg/d	339.29±13.68	325.79±12.45	332.52±13.06
13	Body weight (Kg)			
	1 month	6.43±0.19	6.15±0.16	6.29±0.13
	2 month	11.87±0.37	11.45±0.49	11.54±0.43
	3 month	20.85±0.56	19.35±0.78	20.10±0.46
	4 month	31.65±1.01	28.15±1.58	29.90±0.88
	5 month	43.46±2.49	40.84±2.00	42.15±1.64
	6 month	55.89±1.90	54.65±2.02	55.27±1.38
	7 month	68.78±2.02	65.82±2.03	67.30±1.43
	8 month	81.43±2.10	78.19±2.58	79.81±1.61

5) Lifetime Production traits

- Average litter size at birth per sow - 8.23±0.422 nos.
- Average litter weight at birth per sow - 1.04±0.044 kgs
- Average litter size at weaning per sow - 7.79±0.340 nos.
- Average litter weight at weaning per sow - 8.36±0.15 kgs

Specific managemental practice:

Identification method – Microchip Tagging

Castration Method - Surgical method from 30- 40 days of Age.

Mortality Parameters:

Parameter	Male	Female	Total
Pre-weaning mortality rate (%)	4.71%	4.44%	4.59%
Post weaning mortality rate (%)	4.13%	3.74%	3.93%

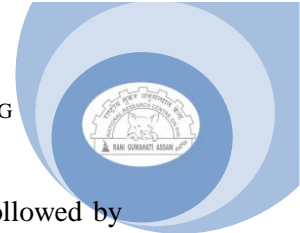
Causes of death- no specific cause (mostly stamping)

• **Measures taken to minimize mortality**

1. **Managemental Measures-** Bird netting, Paddy straw bedding, halogen light for heat, milk replacer, clean water through water nipples, regular lime wash of farrowing pens.
2. **Prophylactic Measures-** Vitamin oral suspension for 3 days, deworming of sow on 105th day of pregnancy to prevent transplacental and transcolostrol transmission of parasite from sow to piglets as well as it reduces worm egg passed in feces from pregnancy after pregnancy there by prevents postnatal transmission to piglets. This reduces piglet mortality.

Disposal of diseased carcass- Post mortem report followed by burial by digging deep pit along with adding of lime powder and salt for faster decomposition at institute designated diseased carcass burial site.

Adoption of integrated farming systems: An upland model of area 0.8 ha comprising of enterprises such as Plantation crops: Cashew (variety Bhaskara) + Pineapple (Variety Giant Kew), Coconut (benaulim) + Pineapple (Giant Kew) + Noni + Tapioca, Areca nut (Mangala) + Banana (G-9), piggery, poultry, vermicompost unit, compost unit was evaluated for upland situations of Goa. After fifth of year of start of the IFS model, the gross return of the system was around Rs. 1,60,550 and the net profit



was Rs. 89,510. The highest contribution to net profit was from the piggery unit (38%) followed by cashew-pineapple system (20%) as both the crops started yielding. As the orchard is young the gross return and net return was found less, over the year the contribution from individual system will increase significantly. The benefit cost ratio of the system was 1.25.

Disposal pattern of farm waste, Biogas is constructed in 2011 and all the excreta is drained to biogas and digested slurry is used for horticultural plantations of the institute.

Production economics:

- i) **Cost of production/pig up to slaughter age:** Rs. 5570/- per pig (8 months)
- ii) **Cost of production/kg pork:** Rs. 120/- per kg pork (if dressing is 70%)
Rs. 112.76/- per kg pork (if dressing is 75%)

Extension programmer with success story:

- i) **At the institute:** Care of farrowing pigs with bedding of paddy straw has improved piglet survival (reduced stamping deaths).
- ii) **At the farmers' field:**

Scientific publications:

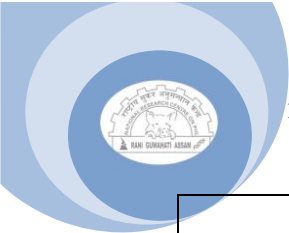
Peer reviewed: 1

Distinguish visitors:

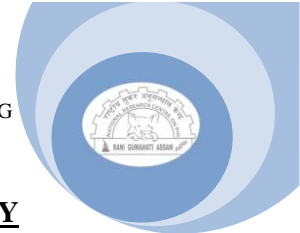
1. **Dr. V. N. Sharda**, Member, Agricultural Scientist Recruitment Board, New Delhi, visited institute Pig unit on 1st April 2017.
2. **Dr. Pramod Sawant**, Hon Speaker, Goa Legislative Assembly, visited institute Pig Unit during his visit to Animal Science section on 18th April 2017.
3. **Dr. J. C. Katyal**, ex-DDG (Education), ICAR, New Delhi visited ICAR-CCARI, Old Goa, Piggery Unit on 09th January 2018.

Success story:

Mr. Roque Fernandes from Salem, Bhatem, Salvador-do-Mundo, Bardez Goa. Mob-9765644474; is a progressive pig farmer. Back in 2016 Mr. Roque was maintaining 3-4 nos. Agonda Goan pigs as backyard farming without much return out of it financially. After attending the training programme on Scientific Pig Rearing and Artificial Insemination in Pigs at the ICAR-CCARI under AICRP on Pigs he decided to start up Piggery as a business. On suggestion and guidance of PI AICRP on Pigs Mr. Roque set up Pig unit with holding capacity of approximately 75 pigs. It was recommended to him to maintain 75% Crossbreed Pigs and Agonda Goan. Presently he is maintaining 60-70 Pigs with 10 breeding female. He is exclusively using Artificial insemination for breeding with conception rate of 84% and average litter size 11 nos. He is selling around 5-6 Pigs monthly fetching around Rs.50, 000/- all around the year. He is feeding his animals with restaurant waste from in and around his village and on recommendation of Scientist from ICAR-CCARI he is now mixing 50% rice/wheat bran/maize powder for better results. Today his piggery is completely self-sustainable owing to timely intervention of ICAR-CCARI through its extension work of the project AICRP on Pigs.



	
<p>3rd generation 75% CB female with litter</p>	<p>AI at Mr Roque Fernandes</p>
	
<p>Visit of Pramod Sawant</p>	<p>Visit of Dr VN Sharda</p>
	
<p>Visit of Dr. JC Katyal</p>	<p>75% CB piglets with paddy bedding and milk replacer</p>



INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR, BAREILLY

IVRI Centre of All India Coordinated Research Project on Pig came into existence during the year 1971 (IV Five Year Plan) in order to study the performance of Landrace pigs under farm conditions. However, subsequently the technical programme was modified time to time to evaluate the indigenous and crossbred genotypes with Landrace blood of 75% and 50%. Further, in Sept 1994, it was recommended to merge them to produce a single group of Landrace crossbred pigs. Selection was carried out further on the basis of body weight at 8 and 24 weeks. The crossbreds were further crossed with newly established purebred Landrace stock in the year 2006 due to gradual deterioration of the performance, as per the recommendations made in Scientists' Meet at Goa (2001-02) to produce crossbred stock (81.25% L x 18.75% D). They were evaluated for their performance in the light of the recommendations made in Scientists' Meet at Guwahati in February, 2010. However afterwards, it was felt and decided at AICRP Meet at Jabalpur in November, 2011 to replace the crossbred stock (81.25% L x 18.75% D) with crossbreds (75 % L x 25 % D) in order to bring uniformity across the AICRP centers to have exotic blood of 75%. In order to produce stock of 75% exotic blood line, efforts were initiated in 2012 to cross pure Landrace with desi and further backcrossed with purebred Landrace. Hence, at present this farm has 75 % crossbred pigs of 186 numbers.

Herd dynamics Herd strength of 75% Crossbred pigs

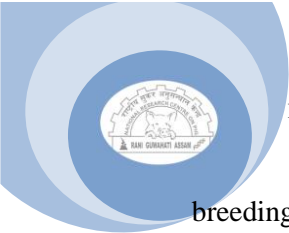
Sl.No	Age (months)	Opening Balance	Additions	Disposals				Closing balance
			Births	Deaths	Transfers	Sold	Slaughter	
1	Piglet (up to 42 days)	108	374	58	7	-	-	89
2	Grower (42 d-5 m)	44	-	10	5	242	-	15
3	Finisher (5 -8 month)	41	-	4	-	60	2	21
4	Breeding female	54	-	1	-	42	-	46
5	Boar	18	-	-	-	22	-	15
	Total	265	374	73	12	366	2	186

Herd strength of Landrace pigs

Sl.No	Age (months)	Opening Balance	Additions	Disposals				Closing balance
			Births	Deaths	Transfers	Sold	Slaughter	
1	Piglet (up to 42 days)	-	56	7	-	-	-	11
2	Grower (42 d-5 m)	-	-	1	-	-	-	11
3	Finisher (5 -8 month)	-	-	-	-	11	-	15
4	Breeding female	7	-	-	-	-	-	7
5	Boar	3	-	-	-	-	-	3
	Total	10	56	8	-	11	-	47

Breeding strategy of the farm as approved

In order to maintain 75% exotic blood line by *inter-se-* mating, minimum 30 breedable sows unit are maintained with a sex ratio of 1:3 with 10 sires (2 sires from each 5 unrelated lines). During this year, a total of 374 CB (75%) animals were born. Selection of male animals was done based on weaning weight and 8 month body weight, based on two stage sequential selection. The selection of



breeding animals was done considering cyto-genetic screening of population. Selection of female animals should be based on dam's litter size at birth and weaning weight and number of functional teats. Three numbers of farrowings per sow completed in 2 years were recorded. The Landrace herd which was procured from Mannuthy last year was strengthened with addition of 56 more farm born pigs. The duly filled up registration format has been submitted to NBAGR for registration of local porcine germplasm of Bareilly region.

Performance of animals (75% Crossbreds Pigs)

Sl. No.	Traits/characters	CB75%		
		M	F	Total
1.	Litter size at birth (no.)	3.7±0.26(50)	3.82±0.32(50)	7.52±0.38(50)
2.	Litter weight at birth (kg)	3.92±0.30(50)	3.78±0.30(50)	7.71±0.40(50)
3.	Litter size at weaning (no.)	2.8±0.29(40)	2.85±0.31(40)	5.65±0.45(40)
4.	Litter weight at weaning (kg)	26.74±2.65(40)	27.04±2.82(40)	53.78±3.84(40)
5.	Avg. individual weight at birth (kg)	1.02±0.03(183)	0.99±0.03 (191)	1.04±0.02(374)
6.	Avg. individual weight at weaning (kg)	10.06±0.55(112)	8.96±0.48(114)	9.37±0.44(226)
7.	Number of days for weaning (d)	42	42	42
8.	Pre weaning mortality rate (%)	10.12%	14.04%	12.03%
9.	Pre weaning growth rate (gm/d)	210.61±1.22(172)	197.09±1.27(154)	204.22±0.62(326)
10.	Post weaning mortality rate (%)	3.89%	2.36%	3.08%
11.	Post weaning growth rate (gm/d) (up to 24 w)	496.95±30.10(19)	480.60±0.01(37)	487.01±0.01(56)
12.	Overall growth rate (up to 8 m) (gm/d)	469.27±0.01(16)	423.80±15.41(27)	451.02±10.37(43)
13.	Body weight (kg)	6.42±0.11(176)	6.22±0.13(159)	6.33±0.09(335)
	1 Month			
	2 Month	12.86±0.26(158)	12.74±0.0.29(135)	12.81±0.19(293)
	3 Month	24.43±0.49(93)	24.28±0.56(83)	24.36±0.37(175)
	4 Month	39.97±1.00(35)	37.12±0.83(51)	38.26±0.65(86)
	5 Month	57.08±1.33(20)	48.55±01.55(32)	51.83±1.20(52)
	6 Month	70.6±1.96(16)	59.91±21.75 (27)	63.89±1.54(43)
	7 Month	84.06±2.88(11)	73.19±2.66(21)	76.92±2.01(32)
	8 Month	96.42±3.41(11)	86.81±2.40(21)	90.11±2.12(32)
	9 Month	107.53±3.72(11)	98.19±2.73(21)	101.40±2.34(32)
	10 Month	118.35±3.40(11)	108.00±2.76(21)	111.55±2.34(32)
14.	Age at slaughter (d)	-	201(2)	201(2)
15.	Weight at slaughter (kg)	-	85±3.54(2)	85±3.54(2))
16.	Carcass weight (kg)	-	62.2±2.69(2)	62.2±2.69(2))
17.	Dressing percentage (%)	-	73.15±0.10(2)	73.15±0.10(2)
18.	Carcass length (inch)	-	75±1.41(2)	75±1.41(2)
19.	Back fat thickness (cm)	-	3.35±0.14(2)	3.35±0.14(2)
20.	Loin eye area (sq cm)	-	35±0.85 (2)	35±0.85 (2)

Lifetime production traits

S. no	Sow no.	Total Farrowing	Total Litter size at Birth	Avg Litter size at Birth	Total Litter Weight at Birth	Avg Litter Weight at Birth	Total Litter size at Weaning	Avg Litter size at Weaning	Total Litter Weight at Weaning	Avg Litter Weight at Weaning
1.	197	5	33	6.6	34.7	6.94	33	6.6	268.4	53.68
2.	C-260	5	33	6.6	33.7	6.74	26	5.2	227.9	45.58
3.	448	3	23	7.66	26.3	8.76	14	4.66	135.8	45.26
4.	220	3	32	10.66	32.7	10.9	32	10.66	281.2	93.73



5.	240	3	21	7	23.3	7.76	19	6.33	194	64.
6.	286	3	30	10	27.5	9.16	27	9	186.2	62.0667
7.	289	3	17	5.66	21.4	7.13	17	5.66	189.9	63.3
8.	447	3	28	9.33	27.5	9.16	25	8.33	220.5	73.5
9.	C-198	3	25	8.33	21.6	7.2	23	7.66	172.3	57.43
10.	342	3	20	6.66	23.8	7.93	20	6.66	185.4	61.8
11.	204	3	24	8	26	8.66	22	7.33	175.9	58.63
Mean±SE		26±1.60	7.86±0.45	27.13±1.35	8.21±0.36	23.45±1.70	7.10±0.50	203.40±12.34	61.78±3.86	

Specific managemental practices:

- i) **Identification method:** Four percent silver nitrate solution is being used for marking the body in white pigs. The black piglets as well as adult's pigs are identified by plastic/brass tags. Presently, plastic tags are also being used for the new stock.
- ii) **Age:** Age in pigs is determined by recording the date of birth and duration of their stay at farm.
- iii) **Castration:** The piglets are usually not castrated on farm, however, in feed efficiency trial, the castrated barrows are used. The castration is done by open method at the age below 60 days.

Measures taken to minimize mortality

a. Managemental measures: Round the clock farrowing management to minimize piglet mortality.

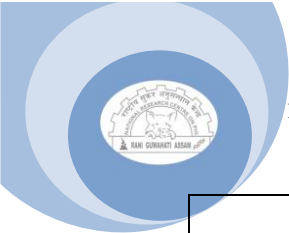
b. Prophylactic measures: The iron and Vitamin B-Complex injections were given regularly at 4th and 14th as well as at 5th and 15th day of age, respectively, in all piglets. Besides, the vaccination of FMD and Swine Fever is regularly done in all the stock. During the year, 323 animals were vaccinated against FMD and 150 animals were vaccinated against Swine Fever. The deworming of animals and disinfection was also done. Treatment of ailing cases is also being done regularly.

iii) Disposal of diseased carcass: NA

iv) Disposal of diseased carcass: Dead animals are sent to PM Section where incineration is done after the PM examination.

Causes of mortality in pigs during 01.04.17 to 31. 03. 18.

Sl. No.	Causes of mortality	Landrace	CB 75%
1.	NSD	1	11
2.	Pneumonia	-	4
3.	enteritis		4
4.	Pneumoenteritis	-	5
5.	Catarrhal entities	-	31
6.	Septicemia	2	3
7.	Hepatitis	-	1
8.	Polyserositis	-	1
9.	Hemorrhagic enteritis	1	2
10.	Hemorrhagic colitis	-	1
11.	Hemopericardium	-	1
12.	Lung abscess	-	1
13.	Trauma	-	1
14.	Pulmonary edema	2	5
15.	Shock		1
16.	Hematoma	-	1



17.	Pericarditis	2	-
18.	Aborted fetuses	-	17
19.	Still birth	1	9
20.	Mummified	-	16
	Total	9	115

Health care management of practices at SPF during 2017-2018

Sl. No.	Symptoms/ Ailments	Number of cases
1.	Wound/Injury	595
2.	Lameness	49
3.	Digestive problem/ Diarrhea	145
4.	Skin lesions/ Dermatitis/ Pox like lesions	57
5.	Fever	18
6.	Weakness/ Dullness	114
7.	Hernia	08
8.	Abscess	23
9.	Hypoglycemia	14
10.	Anorexia	04
11.	MMA syndrome	07
12.	Abortion	03
13.	Prolapse	01
14.	Fracture	3
	Total:	1041

Disposal pattern of farm waste, pig excreta etc. / Establishment of biogas plant: The farm waste in the form of pig excreta is being disposed of through water splashing and carrying the same out of the farm through drainage or sewerage channel. The excreta, mixed with water and disposed off to the farm, are being utilized for the agricultural land. The formation of biogas utilizing the pig done is being studied by postgraduate research programmes.

Extension programme with success story:

At Institute: Training lectures -7 nos.

Salient achievement during the report period:

- Piglet production and supply: Produced 374 piglets with 75% exotic blood in the current year for supply to the farmers’ field as well as to select future breeding stock.
- Gurrah pig registration: The Local pig of Bareilly region (Gurrah) has been characterized, documented and application has been submitted to NBAGR for its registration.
- Landlly pig release: A new crossbred pig variety suitable to agro-climatic conditions of North India was developed with stabilized inheritance level of 75% Landrace and 25 % Bareilly Local Pigs. The same was released on 8th March 2018 on the occasion of Annual Conference of Vice Chancellors of SAUs and Directors of ICAR institutes.

Scientific publications Research Article: 4; Others: 4

Project work students (M.V. Sc. / Ph. D.):

1. Cultivation of indigenous microorganism (IMO) for inoculated deep litter system in pigs (M.V.Sc.)



2. Principal component analysis of pre weaning and post weaning traits and effect of meat quality genes on growth in crossbred piglets (M.V.Sc.)
3. Evaluation of Betaine as a Feed Additive for Pigs (Ph.D.)

Distinguished visitors:

- Prof. P. K. Uppal, Adviser Animal Husbandry Dairy and Fisheries, Punjab govt. Chandigarh
- Shri. R.P. Singh, Honorable Member ICAR Governing Body.
- Dr. Manoj Kandpal, Director JPM, PG Collage Barilly.
- Sri. Gaurav Dayal Balmiki, Member/State Minister SC/ST Commission Lucknow

Details of the construction work/ infrastructural development work:

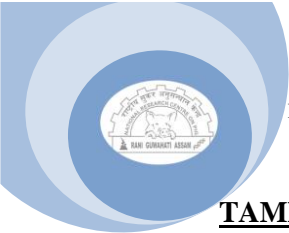
Eighteen boar pens of shed no 7 were renovated during this period.

Constraints faced during the reporting year: Nil

Any specific suggestion/ recommendation for the overall progress of AICRP on Pig: NA

Success story, if any: Twenty one farmers were provided piglets during the year.

<p>Release of Landlly Crossbred Pig Variety for North India by honorable Union Agriculture Minister on the occasion of Annual Conference of Vice Chancellors of SAUs and Directors of ICAR institutes</p>	<p>Visit of Honorable Member ICAR Governing Body Shri. R.P. Singh to ICAR-AICRP, IVRI unit</p>
<p>Crossbred (75 % L x 25 % D) gilts at ICAR-AICRP, IVRI unit</p>	
<p>ICAR-AICRP staffs doing regular farm activities like Measurements feeding and watering</p>	



TAMILNADU VETERINARY AND ANIMAL SCIENCE UNIVERSITY, KATTUPAKKAM

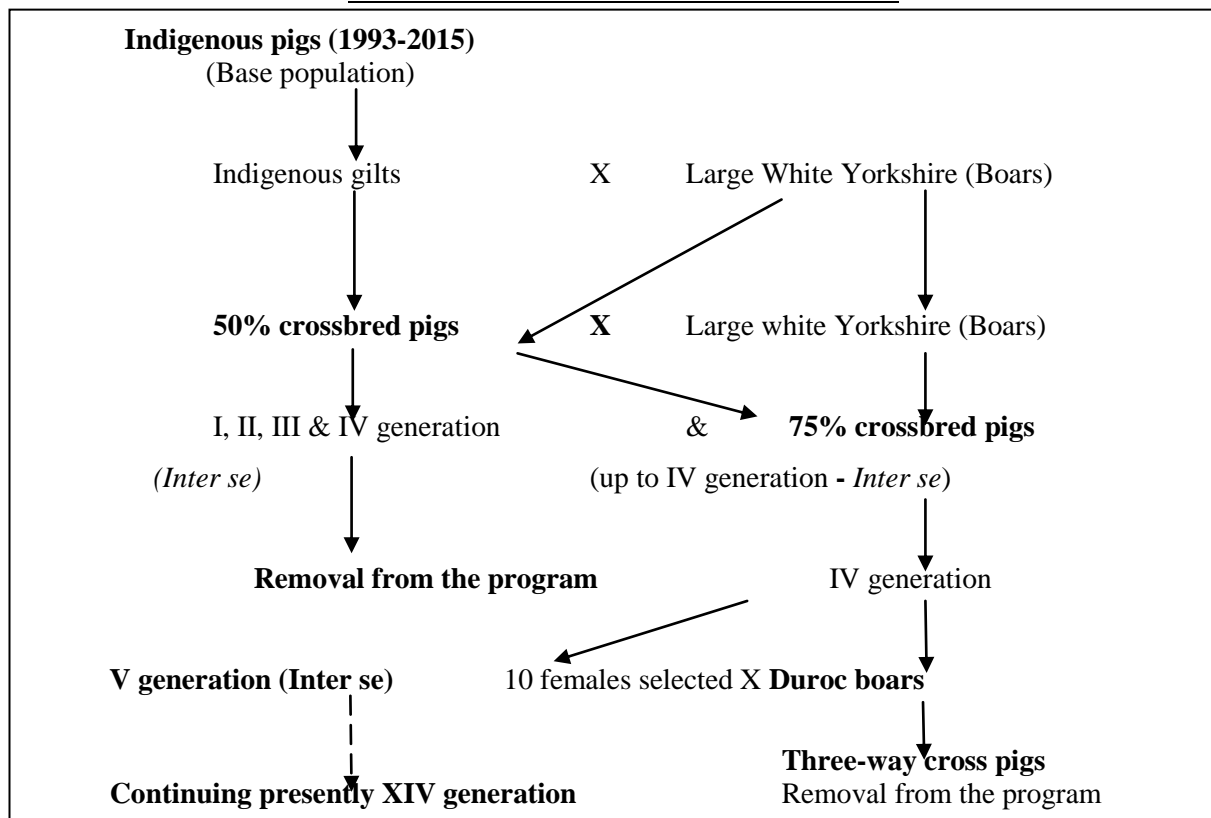
The scheme on “AICRP on Pigs” is functioning at Livestock Research Station, Kattupakkam since 1993-1994. The herd strength as on 01.04.2017 was 164 crossbred pigs. The closing balance on 31.03.2018 was 131 crossbred pigs. During the period under report, parent stock were *inter se* mated to produce IX generation progenies (IV and V crop), X generation progenies (II and III crop), XI generation progenies (I crop and II crop) and XII generation progenies (I crop).

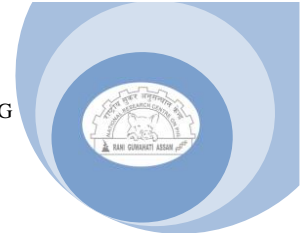
Herd dynamics on 31.03.2018

Particulars	Adult		Grower		Suckling		Total
	M	F	M	F	M	F	
Opening Balance	14	47	27	43	-	-	131
Additions							
Birth	-	-	-	-	296	292	588
Internal transfer	20	34	260	244	-	-	558
Purchase	-	-	-	-	-	-	-
Total Additions	20	34	260	244	296	292	1146
<i>O.B + T.A</i>	34	81	287	287	296	292	1277
Deletions							
Death	-	1	9	3	11	21	45
Sold for breeding	-	-	153	145	25	27	350
Sold for slaughter	24	53	30	28	-	-	135
Internal transfer	-	-	20	34	260	244	558
Total Deletions	24	54	212	210	296	292	1088
Closing Balance	10	27	75	77	-	-	189

1) Breeding strategy of the farm as approved

FLOW CHART OF BREEDING STRATEGY





Breeding strategy followed: The unit has *inter se* population of 75% crossbred pigs.

- | | | | |
|-------|-----------------------|---|-----------------------------|
| (i) | Sex ratio | : | 1: 3 |
| (ii) | No. of breedable pigs | : | 10: 30 |
| | 75% crossbred | : | 10: 30 |
| (iii) | Selection procedure | : | Sequential selection |
| (iv) | Traits considered | : | 1. Litter size at birth |
| | | | 2. Litter size at weaning |
| | | | 3. Litter weight at birth |
| | | | 4. Litter weight at weaning |
| | | | 5. Birth weight |
| | | | 6. Weaning weight |
| | | | 7. Fifth month weight |
| | | | 8. Eighth month weight. |

Performance

XIIth generation II crop

Sl.no	Traits / Character	Mean±SE (No. of observation)		
		Male	Female	total
1	Litter size at birth(No.)	3.75±0.50(12)	3.50±0.5(12)	7.25±0.66(12)
2	Litter weight at birth (kg)	4.47±0.52(12)	4.15±0.68(12)	8.66±0.75(12)
3	Litter size at weaning(No.)	3.50±0.48(12)	3.16±0.51(12)	6.66±0.56(12)
4	Litter weight at weaning (kg)	30.20±4.35(12)	25.70±3.85(12)	55.87±45(12)
5	Avg. Individual weight at birth (kg)	1.19±0.02(45)	1.19±0.02(42)	1.19±0.04(87)
6	Avg. Individual weight at weaning (kg)	8.63±0.18(41)	8.11±0.25(38)	8.38±0.15(79)
7	Number of days for weaning (d)	42 nd		
8	Pre weaning mortality rate (%)	8.88	9.52	9.19
9	Pre weaning growth rate (gm/d)	177.0	164.0	171.0
10	Post weaning mortality rate (%)	4.87	-	2.53
11	Post weaning growth rate (upto 8 m)(g/d)	316.0	346.0	333.0
12	Overall growth rate (upto 8 m)(g/d)	292.0	314.0	304.0
13	Body weight (Kg)			
	1 month	7.88±0.34(9)	6.65±0.16(10)	7.23±0.23(19)
	2 month	17.30±0.68(9)	16.25±0.65(10)	16.76±0.47(19)
	3 month	27.28±0.62(7)	25.94±1.24(9)	26.53±0.74(16)
	4 month	37.14±1.20(7)	36.00±1.71(9)	36.5±1.07(16)
	5 month	47.64±1.00(7)	45.68±2.03(8)	46.6±1.17(15)
	6 month	55.57±1.1(7)	54.62±2.17(8)	55.06±1.25(15)
	7 month	63.66±1.30(6)	67.50±2.29(8)	65.85±1.77(14)
	8 month	71.33±1.33(6)	76.62±2.27(8)	74.35±1.55(14)

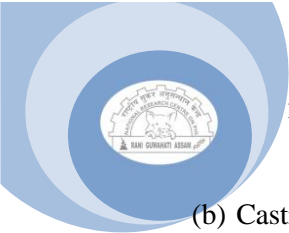
Life Time Production Traits

Traits	Mean±SE (No. of observation)
Average litter size at birth per sow (No.)	24.00±0.73 (16)
Average litter weight at birth per sow (Kg.)	30.15±1.22 (16)
Average litter size at weaning per sow (No.)	21.12±2.83 (16)
Average litter weight at weaning per sow (Kg.)	170.00±5.74 (16)
Average litter weight at slaughter per sow (Kg.)	269.25±5.38 (10)

Specific Managemental Practice

(a) Identification: The newborn piglets are identified by temporary ear notching procedure on left ear.

The permanent ear tagging is done at the time of weaning (42 day) by polyurethane ear tag



(b) Castration: Only a few selected male piglets were kept as potential sires (boars) for future breeding and remaining males were castrated and put for fatter pig production. Castration was performed by open method prior to weaning or at the time of weaning.

Mortality Parameter

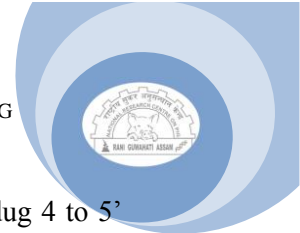
	Pre-weaning (1 days to 42 days)			Post-weaning (42 days to 1 year)		
	M	F	T	M	F	T
Animals at risk	296	292	588	287	287	574
Animals died	11	21	32	9	3	12
Mortality (%)	3.71	7.19	5.44	3.13	1.04	2.09

Causes of Mortality

Suckler		
1	Crushing	10
2	Miscellaneous (Weaklings, Runt, Anorectic)	7
3	Enteritis	10
4	Atresia ani	3
5	Nervous	2
Total		32
Grower		
1	Enteritis	3
2	Miscellaneous (Weaklings, Runt, Anorectic & Debility)	5
3	Paralysis	4
Total		12
Adult		
1	sudden death shock	1
Total		1

Measures to taken minimize mortality

- Health problems such as anorexia, lameness, maggot wound, metritis, mastitis, enteritis, etc. were treated with appropriate medicines and efforts were taken to minimize mortality through prophylactic measures.
- All the pigs were dewormed periodically using Ivermectin 0.08% suspension @ 2.5 ml per 10 kg body weight to prevent the re infection because of intensive rearing.
- Routine health cover measures viz., vitamin and oral calcium supplementation, disinfecting the pig sties and premises, etc. were also carried out.
- Strict supervision and summer managemental practices like foggers were followed.
- Growth promoters such as yeast extract, nicotinic acid, cyanocobalamin and amino acids or combination of calcium, phosphorus and vitamin D₃ and vitamin B₁₂ were given to the weak or runt piglets, pregnant and lactating sows to boost growth and health.
- The unit premises were disinfected with sodium carbonate (10%) solution
- Animal sheds were disinfected with potassium permanganate solution/kohrsolin
- Water sanitizer viz. sokrena was used routinely for water purification.
- Field units were advised appropriately.



Disposal of diseased carcass: The carcasses of dead pigs were buried in the disposal pit dug 4 to 5' feet depth after post-mortem and samples were regularly sent for haematological, histopathological and virological examination.

Managemental measure

Particulars	2017-2018
No. of pigs treated	64
No. of pigs dewormed	574
No. of growers castrated	98
No. of animals vaccinated against Swine Fever	312
No. of animals vaccinated against Foot and Mouth Disease	360
No. of animals Vaccinated against Circo virus	618

Nutrition trails conducted

Evolving Milk Replacer Based Feeding Strategies for Early Weaned Piglets

- Treatment 1 with MR 1 (cow milk + skim milk powder + ghee)
- Treatment 2 with MR 2 (cow milk + skim milk + coconut oil)
- Treatment 3 with MR 3 (cow milk + whey protein + ghee) and
- Treatment 4 with MR 4 (cow milk + whey protein + coconut oil)

The experiment was carried for the duration of 42 days (weaning age)

Among the four treatments; the piglets fed with MR1 (cow milk+ skm + ghee) has gained 5.3 ± 0.15 kg with FCE 0.61 ± 0.05 when compared with other groups. BWG is highest in T1 (5.3 ± 0.15) when compared to T2 (4.42 ± 0.75), T3 (4.2 ± 0.5) and T4 (4.32 ± 0.26) at the end of 42 days.

No mortality was reported

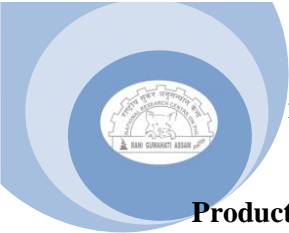
Adoption of integrated farming systems:

Horti – Silvi – Pasture component

Horti-component	
Guava	120 nos
Lemon	69 nos
Mango	145 nos
Sapota	49 nos
Total	383 nos
Pasture compoent	
Desmanthus virgatus	2.5 ac.
Seed collected	350.0 Kg.
Stylosanthus hamata	2.5 ac.
Seed collected	320.0 Kg.
Vegetables	
Pumpkin, Ladies finger, Bitter guard, bottle guard, Brinjal, Spinach, Snake guard	436 kgs

Disposal pattern of farm waste, pig excreta etc/establishment of biogas plant:

Pig solid waste collected from pig sty was regularly disposed in the manure pit. Pig urine and shed cleaned water along with urine into collection tank through the drainage channel located at the rear side of each shed. Waste water treatment plant work is completed and treated water is used for irrigation and efforts are taken to install a biogas unit.



Production Economics:

1	Cost of production/pig up to slaughter age	
	Concentrate feeding	Rs.8194.00
	Swill feeding	Rs.3194.00
2	Cost of production/ kg pork	
	Concentrate feeding	Rs.126.00
	Swill feeding	Rs.71.00

Extension programme with success story:

Farm advisory service on Pig farming	436
No. of. New farms Established	8
No.of. seed stock supplied to the farmers	458
swine fever vaccine supplied to the farmers	550 doses

Training conducted

DATE	BENEFICIARIES	PLACE
One month Training on pig farming		
13.07.2017 to 24.08.2017	1	PGRIAS, Kattupakkam
22.01.2018 to 10.03.2018	2	
One day training on Pig Farming		
13.04.2017	13	PGRIAS, Kattupakkam
14.06.2017	14	
19.07.2017	17	
18.08.2017	30	
14.10.2017	60	Javathu Hills
13.12.2017	17	PGRIAS, Kattupakkam
31.01.2018	25	Azhisoor
15.02.2018	14	PGRIAS, Kattupakkam
22.03.2018	23	
Total	213	

ICAR- TRIBAL SUB PLAN

Distribution of piglets to Tribals of Jawathu Hills, Tiruvannamalai district on 14.10.2017

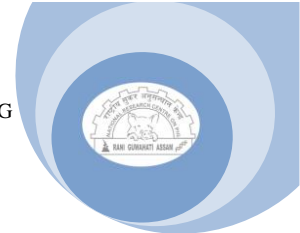
No.of Beneficiaries : 56
 No.of. piglets distributed : 168
 Quantity of feed given : 5 tons (100 kg each beneficiary)

Distribution of piglets to Tribals of Azhisoor Village, Kanchipuram district on 05.02.2018

No.of. Beneficiaries : 14
 No.of.piglets distributed : 70
 Quantity of feed given : 700 kgs (50 kg each beneficiary)

Salient Achievement during the Report Period

1. X, XI, XII and XIII generation parents of 75 % crossbred pigs were pen mated to produce XI, XII, XIII and XIV generation progenies and produced 469 progenies.
2. Breeding sale of 298 piglets to needy farmers and four new field units were established.
 1. TANUVAS KPM GOLD (75% LWY + 25 % Desi) – Breed Released on 30.06.2017
 2. Released Monograph of AICRP on Pig
 3. Phenotypic Characterization of native pig
 4. Developed Piggery Management Software
 5. Documented Success stories of pig farmers
 6. Established Waste Water Treatment Plant



Number of farrowing and piglets obtained

Sl no.	Breeds	No. of farrowings	Piglet obtained
1	Desi	143	1079
2	50% LWY crossbred	123	771
3	75% LWY crossbred	487	3942

Per Cent improvement of 75 % LWY from base population

Traits	Base population	75 % LWY	%Improvement
Number of farrowing	143	258	44.50
Litter size at birth (No.)	6.18±0.42	8.09±0.39	23.65
Litter weight at birth (No.)	2.39±0.21	10.36±0.03	76.93
Litter size at weaning (No.)	4.74±0.49	7.45±0.49	36.30

Per cent improvement of body weight in 75% LWY crossbred from base population

Weight at	Based population	75% LWY	Per cent improvement
Birth (kg.)	0.46	1.27	58.26
8thweek (kg.)	6.27	8.30	23.41
16th week (kg.)	12.27	17.36	29.32
24th week (kg.)	20.35	33.05	38.42
32nd week (kg.)	28.40	49.41	73.97

DOCUMENTATION OF SUCCESS STORIES OF PIG FARMERS

Sl. No.	Name	Address	Economic Impact
1.	Mr. Murugan,	Uthiramerur, Kancheepuram Dt, Tamilnadu	House Constructed at the cost of 15 lakhs, Purchased 10 cents of land at the cost of 10 lakhs
2.	Mr.Varadhan	Araneri Village, Sriperumputhur, Kancheepuram Dt,	4 new pig sties were built, purchased a tractor for collecting swill feed, purchased a car (Hyundai Accent) at the cost of 7.2 lakhs. Constructed a RCC roof house for Rs.3.0 lakh
3.	Mr. Sathya Moorthy	Kolla Gounden Village, Erode Dt, Tamilnadu	Established a Modernized Pig farm with nipple drinker and fogger. Established a exclusive retail outlet for sale of pork.
4.	Mr.Suresh	Kandigai, near vandalur, Kancheepuram Dt., Tamilnadu	Purchased one deep freezer, Earning daily Rs.1000 from the sale of pork.
5.	Mr.Shivakumar	Padappai, Kancheepuram Dt., Tamilnadu	Constructed house in 5 cents of land. Purchased 2 numbers of four wheeler and a two wheeler at the cost of 1.4 lakhs (Royal Enfield)
6.	Mr.N.Sakthivel	Mycal Palayam, Anthiyur, Erode Dt.	Purchased one four wheeler.
7.	Mr.koottaimuthu	Kancheepuram, Dt., Tamilnadu	Constructed house at the cost of 10 lakhs and also purchased one four wheeler (TATA ACE).
8.	Mr.Vasu	Madurandhagam, Kancheepuram Dt., Tamilnadu	Constructed house at the cost of 5 lakhs and also purchased one four wheeler (TATA ACE) and a two wheeler.
9.	Mr.Balasubramani	Vandhavasi, Tiruvannamali Dt., Tamilnadu	Money earned from pig farm was utilized for his marriage and as well as for his sister's marriage. Purchased 2 acre of land, 5 Cows, digged one well and one four wheeler.
10.	Mr.Chandran	Tiruttani, Thiruvallur Dt.	Purchased a deep freezer and also having fishery unit (cat fish)

Scientific publications: Research Articles: 6; Abstract: 6; Popular articles – Tamil 2

Project work of students (M.V.SC./PH.D.)

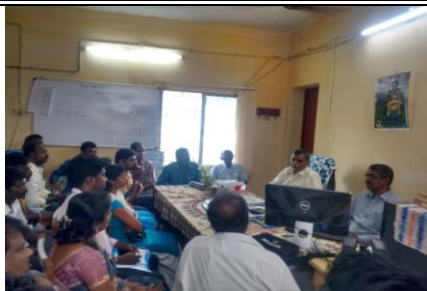
1. Performance analysis of large white Yorkshire X Desi crossbred pigs reared under farm conditions.
2. Mathematical modeling of growth performance in large white Yorkshire pigs.
3. Phenotypic and Morphological characterization of indigenous pigs in northern districts of Tamil Nadu.

Ongoing research

1. Evolving milk replacer based feeding strategies for early weaned piglets

Distinguished visitors

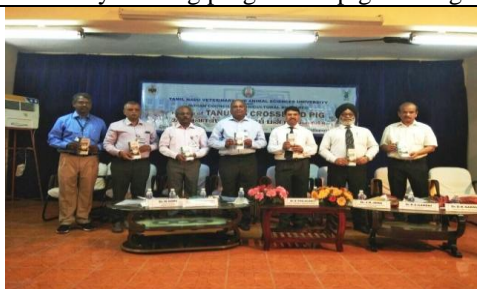
Date	Name of Visitor	Designation
02.09.16	M.V.N Surya Prasad I.P.S(Retd)	SEMBEJU, Lavanya Agro farms.
23.05.17	Ameer Khusro	Dubai (U.A.E)
21.07.17	Noah Pavlisko & Virginia Tech Students	Blacksburg, VA USA.
04.10.17	Fanny Mthuzi	Macani, Universities Development Programme Secretarial



One day training program on pig farming



TANUVAS KPM Gold breed



Release folder of TANUVAS KPM Gold breed



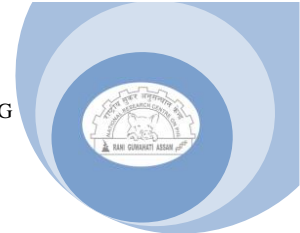
Distribution of piglet to tribal



Deputy Director General (Animal Sciences), ICAR, New Delhi Dr.J.K.Jena released the pig management software



Integrated farming system



COLLEGE OF VETERINARY SCIENCES, CAU, AIZAWL, MIZORAM

In the state of Mizoram, pig is by far the most popular livestock. The pig population of the state was 245238 as per 19th Livestock Census, 2012 and shows the highest percentage of growth of its population. The cross bred population make up for 85 % of the total population, the rest 15 % was of indigenous pig. Considering vast potentialities and economic importance, Memorandum of Understanding was signed between Central Agricultural University and National Research Centre on Pigs, ICAR to establish a Centre of All India Coordinated Research Project on Pigs at College of Veterinary Sciences and A.H. (C.V.Sc. & A.H.), Selesih, Mizoram during XIth Five Year Plan w.e.f. 1.10.2008. The basic principle of the project is to start a comprehensive study at institutional level to develop a farmers' friendly package of practices creating more assets and better opportunities for cash-starved populace. Initially, researches are being considered to conserve of local indigenous pigs for preserving the indigenous gene pool and promote low input animals for rural and less developed areas.

Herd Dynamics:

Age-wise and sex-wise herd strengths of 75% Crossbred ($\frac{3}{4}$ LWY x $\frac{1}{4}$ Zovawk), Zovawk, 50% Crossbred ($\frac{1}{2}$ LWY x $\frac{1}{2}$ Zovawk), and LWY at the end of reporting period (31.03.2018) were presented in Table 1, 2, 3 and 4 respectively. It was revealed that a total of 227 were available at the end of reporting period.

Herd Strength of 75% Crossbred as on 31.03.2018

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 d)	-	119	-	8	-	-	24	24
2	Grower (42 da-5 m)	4	-	-	3	-	12	1	8
3	Finisher (5-8 m)	3	-	-	-	-	3	10	10
4	Breeding female	33	-	-	-	-	22	30	
5	Boar	22	-	-	-	-	18	15	
	Grant total	69	119	-	11	-	55	122	

Herd Strength of Zovawk as on 31.03.2018

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 days)	9	17	-	-	-	-	10	7
2	Grower (42days-5 m)	-	-	-	-	-	6		
3	Finisher (5-8 months)	-	-	-	-	-	-		
4	Breeding female	10	-	-	-	-	9	3	
5	Boar	4	-	-	-	-	2	3	
	Grant total	23	17	-		-	17	23	

Herd Strength of 50% Crossbred as on 31.03.2018

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 days)	-	-	-	-	-	-		



2	Grower (42d-5 m)	-	-	-	-	-	-	-
3	Finisher (5-8 m)	-	-	-	-	-	-	-
4	Breeding female	12	-	-	-	-	3	9
5	Boar	8	-	-	-	-	5	3
	Grant total	20	-	-	-	-	8	11

Herd Strength of Large White Yorkshire as on 31.03.2018

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 d)	19	52	-	6	13		23	29
2	Grower (42d-5 m)	-	-	-	-	-	-	-	-
3	Finisher (5-8 m)	5	-	-	-	-	-	-	-
4	Breeding female	9	-	-	-	-	3		7
5	Boar	5	-	-	-	-	4		5
	Grant total	38	52	-	-	-	7		71

Breeding Strategy of the Farm as Approved:

Initially, the centre maintained Mizo Local Pig (Zovawk) and Large White Yorkshire. From the reporting year 2012-2013, cross breeding of Large White Yorkshire with Zovawk for the production of cross –bred pigs (50% LWY x 50% Zovawk) has already been done to generate cross-bred pigs of 75% LWY x 25% Zovawk. Presently, four breeds namely Zovawk, 50% Crossbred, 75% Crossbred and Large White Yorkshire are maintained at the farm. At present a total of 30 breeding sows and 15 boars of 75% LWY and 25% Zovawk genetic group are available as a closing balance. In addition to these, a finisher group (5- 8 months of age) of 20 (10 males and 10 females) had been generated during the reporting year. Regular heat detection has been done with teaser and/or by visual observation. Artificial Insemination has been followed as per the approved technical programme.

Performance of Animals: 75 % Crossbred (Parent generation)

SL.NO.	TRAITS/CHARACTERS	¾ LWYx ¼ ZOAWK (MEAN±S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	3.16±0.40 (6)	3.83±0.30 (6)	7.00±0.44 (6)
2	Litter weight at birth (Kg)	4.68±0.59 (6)	4.23±0.68 (6)	8.91±0.68 (6)
3	Litter size at weaning (no.)	3.00±0.51 (6)	3.83±0.54 (6)	6.80±0.60 (6)
4	Litter weight at weaning (Kg)	17.93±2.00 (6)	22.43±1.99 (6)	40.36±2.99 (6)
5	Avg. Individual weight at birth (Kg)	1.08±0.04 (19)	1.10±0.04 (23)	1.09±0.03 (42)
6	Avg. Individual weight at weaning (Kg)	5.66±0.28 (18)	5.85±0.29 (23)	5.76±0.20 (41)
7	Pre weaning growth rate (g/day)	159.59±7.71 (18)	135.39±8.10 (23)	147.20±5.84 (41)
8	Post weaning growth rate (g/day)	276.16±18.05 (10)	255.53±5.40 (25)	268.42±11.56 (35)
9	Body weight (Kg) at 5 th month	31.50±1.45	31.75±1.23	31.66±1.37
10	Body weight (Kg) at 8 th month	61.50±2.93	58.66±0.92	60.43±1.85

Performance of Animals: 75 % Crossbred (1st Generation 1st Crop)

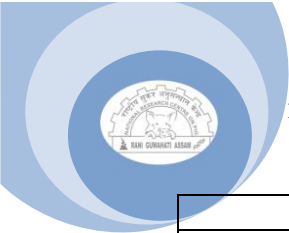
SL.NO.	TRAITS/CHARACTERS	¾ LWYx ¼ ZOAWK (MEAN±S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	3.77±0.61 (9)	4.66±0.70 (9)	8.4±0.8 (9)
2	Litter weight at birth (Kg)	3.60±0.59 (9)	4.34±0.70 (9)	7.94±0.88 (9)



3	Litter size at weaning (no.)	3.85±0.67 (7)	4.57±0.71 (7)	8.4±0.94 (7)
4	Litter weight at weaning (Kg)	23.91±5.82 (7)	26.32±3.68 (7)	50.24±6.9 (7)
5	Avg. Individual weight at birth (Kg)	0.95±0.03 (34)	0.93±0.03(42)	0.94±0.02(76)
6	Avg. Individual weight at weaning (Kg)	6.2±0.39 (27)	5.75±0.29 (32)	5.96±0.24 (59)
7	Number of days for weaning (d)	42	42	42
8	Pre weaning mortality rate (%) (As on 31.03.2018)	4.7	1.58	6.3
9	Pre weaning growth rate (g/day) (As on 31.03.2018)	124.44±9.19 (27)	115.71±7.06 (32)	119.71±5.67(59)
10	Post weaning mortality rate (%) (As on 31.03.2018)	1.5	3.17	4.7
11	Post weaning growth rate (g/day)	294.43±11.72 (25)	281.68±7.86(18)	287.56±6.81 (43)
12	Overall growth rate (upto 9 m) (g/d)	276.44 ±12.72(25)	275.04 ±20.45(18)	261.44 ±6.98 (43)
13	Body weight (Kg) (Average)			
	1 month	4.30±1.21 (34)	4.60±0.55 (42)	4.54±0.18(76)
	2 month	10.37±1.24 (27)	7.58±1.28 (32)	8.7±0.96 (59)
	3 month	17.27±1.25 (27)	17.89±1.15 (32)	17.64±0.84(59)
	4 month	26.62±2.30 (20)	23.88±2.24 (27)	24.7±1.69 (47)
	5 month	30.27±2.33 (20)	32.63±1.96 (27)	31.84±1.51 (47)
	6 month	42.94±3.35 (20)	42.25±2.32 (27)	42.54±0.85 (47)
	7 month	52.28±1.94 (20)	50.55±1.4 (27)	51.1±1.14 (47)
	8 month	60.76±3.22 (20)	61.60±2.29 (27)	61.31±1.81 (47)
	9 month	73.40±3.13 (25)	69.98±2.38 (18)	71.56±1.91 (43)
14	Age at slaughter (d)	300	NA	300
15	Weight at slaughter (Kg)	86.00±2.7(5)	NA	86.00±2.7(5)
16	Dressing percentage (%)	70.14±0.96 (5)	NA	70.14±0.96 (5)
17	Carcass length (cm)	109.40±2.87(5)	NA	109.40±2.87(5)
18	Back fat thickness (mm)	2.63±0.24 (5)	NA	2.63±0.24 (5)
19	Feed conversion efficiency	4.17±2.13	NA	4.17±2.13

Performance of Animals: 75 % Crossbred (1st Generation 2nd Crop)

SL.NO.	TRAITS/CHARACTERS	¾ LWYx ¼ ZOVAWK (MEAN±S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	5.8±0.96 (5)	2.8±1.24 (5)	8.60±1.02 (5)
2	Litter weight at birth (Kg)	5.07±1.10 (5)	2.49±1.26 (5)	7.56±0.83 (5)
3	Litter size at weaning (no.)	5±1.08 (4)	2.25±1.43 (4)	7.25±0.85 (4)
4	Litter weight at weaning (Kg)	31.89±7.70 (4)	12.95±9.02 (4)	44.84±3.46 (4)
5	Individual weight at birth (Kg)	0.87±0.04 (29)	0.89±0.10 (14)	0.88±0.04(43)
6	Indiv. weight at weaning (Kg)	6.37±0.36 (20)	5.75±0.85 (9)	6.18±0.36 (29)
7	Number of days for weaning	42	42	42
8	Pre weaning mortality rate (%) (As on 31.03.2018)	9.3	-	9.3
9	Pre weaning growth rate (g/day) (As on 31.03.2018)	123.36±10.02 (20)	111.56±17.78 (9)	119.82±8.70(29)
10	Post weaning mortality rate (%) (As on 31.03.2018)	-	-	-
11	Post weaning growth rate (g/day)	274.43±8.5 (15)	251.68±6.66(7)	259.26±5.42 (22)
12	Overall growth rate (upto 9 m)	252.42	240.05	246.12



	(g/d)	±10.12(15)	±18.54(7)	±13.45 (22)
13	Body weight (Kg) (Average)			
	1 month	4.28±1.11 (29)	4.12±0.15 (14)	4.19±0.38(43)
	2 month	10.25±1.54 (20)	8.88±1.22 (9)	9.7±0.93 (29)
	3 month	17.22±1.32 (20)	16.99±1.22 (9)	17.01±0.45(29)
	4 month	26.21±2.30 (15)	24.18±2.24 (7)	25.6±1.88 (22)
	5 month	30.34±2.33 (15)	32.25±1.66 (7)	31.64±1.21 (22)
	6 month	42.75±3.65 (15)	41.65±2.46 (7)	42.25±0.79 (22)
	7 month	53.28±2.14 (15)	51.05±1.4 (7)	52.22±1.52 (22)
	8 month	59.98±3.22 (15)	59.40±2.29 (7)	59.67±1.63 (22)
	9 month	72.15±3.25 (15)	69.46±2.63 (7)	71.46±1.87 (22)
14	Age at slaughter (d)	300	NA	300
15	Weight at slaughter (Kg)	80.16±5.18	NA	80.16±5.18
16	Dressing percentage (%)	69.08±1.65	NA	69.08±1.65
17	Carcass length (cm)	107.33±3.92	NA	107.33±3.92
18	Back fat thickness (mm)	3.49±0.63	NA	3.49±0.63
19	Feed conversion efficiency	4.20±2.1	NA	4.20±2.1

Lifetime Production Traits:

- Average litter size at birth per sow was 8.5±2.25, 5.6±1.36 and 9±1.21 in 75% crossbred, Zovawk and LWY respectively.
- Average litter weight (Kg) at birth per sow was 8.34±0.82, 2.86±0.27 and 11.89±1.55 in 75% Crossbred, Zovawk and LWY respectively.
- Average litter size at weaning per sow was 8.00±0.67, 5.50±0.50 and 8.25±2.13 in 75% Crossbred, Zovawk and LWY respectively.
- Average litter weight (Kg) at weaning per sow was 48.28±4.50, 16.20±1.00 and 53.21±6.26 in 75% Crossbred, 50% Crossbred and LWY respectively.

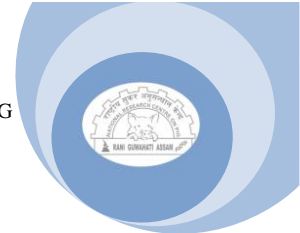
Specific managemental practice:

Presently, pigs are being reared and managed in intensive housing system with adequate floor space as per BIS standards. There is provision of separate feeding trough and water facility. Following activities are being considered to achieve optimum production level at the Unit.

- Needle teeth cutting and ligation of naval cord of piglets has been done on very first day of birth
- Iron injection to the newborn piglets carried out on day 4th and 14th of birth.
- Vitamin B-complex injection done on day 5th and 15th of birth
- Separate arrangement for creep feeding of piglets has been started from 2nd week to weaning
- Weaning of piglets at 6 weeks of age
- Castration at weaning (2-3 months)
- Cross fostering and artificial milk feeding of piglets undertaken if necessary.
- Newly born/ young piglets have been provided with artificial heating arrangement.

Identification Method: Identification is done when the piglets are a day old using plastic ear tags.

Castration Method: Castration has been/was done surgically by open uncovered method.



Mortality Parameter

Group Wise and Sex Wise Mortality Rate (Pre and Post Weaning):

Pre- and Post-weaning Mortality Rate (%) (As on 31.03.2018)

Age (Month)	MIZO LOCAL			50% CROSSBRED			75% CROSSBRED			LWY		
	M (%)	F (%)	Total (%)	M (%)	F (%)	Total (%)	M (%)	F (%)	Total (%)	M (%)	F (%)	Total (%)
0-2	-	-	-	-	-	-	7.29	1.04	8.3	2.8	5.6	8.4
2-6	-	-	-	-	-	-	1.4	2.81	4.2	-	-	-
6-12	-	-	-	-	-	-	-	-	-	-	-	-
12 &>	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	09	8.69	3.85	12.5	-	-	-

Causes of Mortality:(As per Post-mortem report) (As on 31.03.2018)

S.N.	CAUSES	Zovawk			50%Crossbred			75%Crossbred			LWY		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
1	Pneumonia (Acute/ Haemorrhagic/ Interstitial)	-	-	-	-	-	-	6	4	10	2	4	6
2	Enteritis	-	-	-	-	-	-	1	-	1	-	-	-
3	Lymphadenitis	-	-	-	-	-	-	-	-	-	-	-	-
4	Accident	-	-	-	-	-	-	-	-	-	-	-	-
5	Dehydration	-	-	-	-	-	-	-	-	-	-	-	-
	Total	-	-	-	-	-	-	7	4	11	2	4	6

Managemental Measures Taken to Minimize Mortality:

- All the sheds were disinfected twice weekly with disinfectants (Phenol or Clinar)
- Use of water sanitizer (Sokrena - WS)
- Use of foot dip (KMnO₄) at all the entrance of pig shed
- Restriction of entry of outsiders

Prophylactic Measures: The following prophylactic measures have been taken up-

Sl. No.	Prophylactic Measures	Zovawk			75% crossbred			LWY		
		M	F	Total	M	F	Total	M	F	Total
1	Vaccination CSF	13	10	23	67	89	156	18	32	50
2	Deworming	13	10	23	70	92	162	18	32	50
3	Iron Injection	10	7	17	63	56	119	23	29	52
4	Vitamin B-complex Inj.	10	7	17	63	56	119	23	29	52

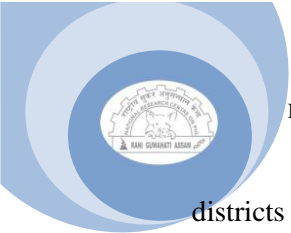
Disposal of Diseased Carcass: All the diseased carcasses were sent to Department of Veterinary Pathology for post-mortem examination and were incinerated in an incinerator to avoid spreading of infectious diseases.

Nutritional Experimentation:

A nutritional trial was conducted to study the performance of growing pigs of 75 % Crossbred fed with diet having silage prepared from a locally available feedstuff ie. Banana pseudostem, J apanhlo, Colocasia leaves and Squash fruit at the ratio of 2:1:1:1. In this experiment, the animals are divided into two groups-one control and the other treatment group. The control group are fed with normal diet and in the treatment group, there is replacement of 25% normal feed with silage.

Adoption of Integrated Farming System: Initiated in collaboration with the College KVK.

Survey on market of pork production: Survey on pork production in Aizawl, Kolasib and Mamit



districts showed that almost all the household reared pigs as backyard system of farming by providing the kitchen waste mixed with locally available feed ingredients such as Colocasia, Japan hlo, banana pseudo stems, squash fruits, sweet potato leaves etc. Most of the farmers rear the breed like LWY, Hampshire and their crossbred with local pigs. Farmers usually preferred to rear fatteners pig rather than rearing the breeders. Farmers usually sold out the finisher pig at the age of 12 – 14 months to the butchers directly by fixing the price based on the chest girth measurement.

Most of the pigs are being slaughtered unscientifically in the open area. The market rate of pork is Rs.280.00/Kg. The demand of the pork remains almost same throughout the year. To fill up the gap between the demand and supply of porks, pigs are being imported from the neighbouring states.

Disposal pattern of farm waste, pig excreta etc/establishment of biogas plant: Biogas plant is yet to be set up. At present, disposal of pig excreta is done by keeping them in manure pit. The pig urine and cleaning water were drained into the drainage channel which was located at the rear side of each shed.

Production economics:

- i) Cost of Production/Pig up to Slaughter Age is Rs. 12000/- to Rs. 15,000/-
- ii) Cost of Production/Kg Pork is Rs. 170/- to Rs.190/-

Extension programme with success story:

i) **At the Institute:**

1. The members of the ICAR-AICRP (pig) acted as resource persons in the training programme (31st January to 2nd February,2018) on Scientific Management of Pig conducted by the parent organization on following aspects-
 - 1) Housing requirements of various categories of pig by Dr. Zosangpuii
 - 2) Practical on cleaning and disinfection of the sty by Dr. Zosangpuii
 - 3) Theory and Practical on feeding of pigs By Dr. A.K. Samanta&Dr. Zosangpuii

ii) **At the Farmers' Field:**

1. Fifty seven (57) piglets had been supplied to 10 farmers at subsidized rate.
2. The staff of the centre regularly visited the nearby pig farmers and give advisory services to them about the improved farming system.
3. Scientists of the project attended the Animal Health Camps conducted from time to time by the College. They interacted with the pig farmers during the camps and provided scientific inputs for better productivity of the piggery.
4. Conducted hands-on training for the pig farmers under Distance Education Certificate Course (DECC) on Piggery farming.
5. Distributed booklets on Piggery farming in Mizo languages (Module I and Module II)

Salient achievement during the report period:

- i. Zovawk had been registered to ICAR-NBAGR, Karnal with the accession no. INDIA_PIG_2700_ZOVAWK_09007



- ii. A total of 122 Crossbred (75%) and 23 Zovawk pigs are stock position to fulfil the objectives at the end of the reporting year.
- iii. Conducted Hands on Training for the pig farmers on 31st January- 2nd February, 2018
- iv. In the diet of cross bred pigs, silage made from a locally available feedstuff such as banana pseudostem, japanhlo, colocasia and squash fruit up to 25% can be incorporated in the diet without adverse affect the growth performance and blood biochemical parameters in pigs.

Project work of students (M.V.Sc. /Ph.D):

1. Effect of feeding palm oil (*Elaeisguineensis*) Sludge as a partial replacement of maize on the performance of growing- Finishing Pigs
2. Reproduction performance of weaned sows after fixed time Artificial Insemination.
3. Effect of herbal supplement Shatavari (*Asparagus racemosus*) on performance of Large White Yorkshire Sow.

Distinguished visitors:

- i) Neuhoff English Medium School, Chanmari, Aizawl on 10.11.2017
- ii) A team of hundred Middle School Headmasters, Mizoram on 22.11.2017

Details of construction work/infrastructural development work(If any): Extension of the existing pig sty was carried out costing Rs. 5,00,000/- (Rupees Five lakhs) only and renovation of the existing pig sty was carried out costing Rs. 2,96,700/- (Rupees Two lakhs ninety sixthousandseven hundred) only.

	
<p>Newly Registered Zovawk Breed (Accession No. INDIA_PIG_2700_ZOVAWK_09007)</p>	<p>PREGNANT SOW (75% LWY x 25% Zovawk)</p>
	
<p>Farmer's Training (Participants with Resource Persons)</p>	<p>Preparation of Silage</p>

**NAGALAND UNIVERSITY, SASARD, MEDZIPHEMA, NAGALAND**

Nagaland is an agrarian state where 80% of the population depends on agricultural crops and livestock for their living and economy. With increase in human population and limited availability of land for food grain production, awareness of livestock benefits especially piggery as a source of ready income for family maintenance. Among the livestock, piggery has been a constant interest of the farmers as pork is a delicacy for the Naga tribal. However, there are still lacunae in scientific rearing of pig, which requires strategic planning and execution such as state pig policy, breeding policy, awareness creation, motivation and capacity building.

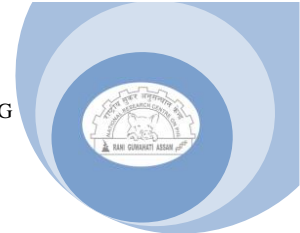
Considering the popularity of pig rearing and importance of pork in Nagaland the Indian Council of Agriculture Research (ICAR) sanctioned the All India Coordinated Research Project on pig (AICRP-Pig) Nagaland Centre during 2008-2009 to the School of Agricultural Sciences & Rural Development, Nagaland University, Medziphema Campus. The ICAR-AICRP on pig, Nagaland centre started the project maintaining local Indigenous pig (Tenyi vo) in the year 2009-2010, and studied the performance of the local breed and up-grade the local germplasm by crossing with exotic Hampshire boar. Since the inception of the project in the campus, a deliberate continuity of cross breeding of Indigenous local female Tenyi vo (TV) with Hampshire (H) boar producing 50%TV50%H by Inter-se-mating. Presently the centre is maintaining 75% upgraded Tenyi vo (25%TV75%H) by inter-se-mating as per ICAR guidelines.. Seeing the popularity of pig rearing and importance of pork in Nagaland the Indian Council of Agriculture Research (ICAR) sanctioned the All India Coordinated Research Project on pig (AICRP-Pig) Nagaland Centre during 2008-2009 to the School of Agricultural Sciences & Rural Development, Nagaland University, Medziphema Campus.

The ICAR-AICRP on pig, Nagaland centre started the project maintaining local Indigenous pig (Tenyi vo) in the year 2009-2010, and studied the performance of the local breed and up-grade the local germplasm by crossing with exotic Hampshire boar. Since the inception of the project in the campus, a deliberate continuity of cross breeding of Indigenous local female Tenyi vo (TV) with Hampshire (H) boar producing 50%TV50%H by *inter-se*-mating. Presently the centre is maintaining 75% upgraded Tenyi vo (25%TV75%H) by *inter-se*-mating as per ICAR guidelines.

Herd dynamics: As on 31.03.2018

a. Naga Indigenous pig (Tenyi vo)

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing Balance
			Births/ purchase	**Transfer	Deaths	transfers	sold	
1.	Piglet (up to 42 d)	0	8	0	4	0	4	0
2.	Growers(42 d- 5 m)	3	4	0	1	0	0	6
3	Finisher(5 m -8 m)	0	1	3	0	0	0	4
4	Breeding female	3	0	0	0	0	1	2
5	Boar	2	0	0	0	0	0	2
	Grand total	8						14

**b. Upgraded Tenyi vo 50%**

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing Balance
			Births/purchase	**Transfer	Deaths	transfers	sold	
1.	Piglet (up to 42 d)	0	30	0	12	0	10	8
2.	Growers(42 d- 5 m)	0	0	7	0	0	0	7
3	Finisher(5 m -8 m)	10	0	0	0	0	0	0
4	Breeding female	4	0	10	1	0	1	12
5	Boar	0	0	0	0	0	0	0
	Grand total	14						27

c. Upgraded Tenyi vo 75%

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing Balance
			Births/purchase	**transfer	Deaths	transfers	sold	
1.	Piglet (up to 42 d)	2	120	0	18	0	64	40
2.	Growers(42 d- 5m)	100	0	0	5	0	95	2
3	Finisher(5 m -8 m)	78	0	0	1	0	0	77
4	Breeding female	30	0	1	0	0	1	30
5	Boar	12	0	0	1	0	0	11
	Grand total	222						160

d. Hampshire

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing Balance
			Births/purchase	**transfer	Deaths	transfers	sold	
1.	Piglet (upto 42 d)	0	30	0	10	0	20	0
2.	Grower(42 d- 5m)	9	10	0	0	0	9	10
3	Finisher(5 m -8m)	0	0	0	0	0	0	0
4	Breeding female	8	0	0	0	1	2	5
5	Boar	5	0	0	0	1	0	4
	Grand total	22						19

Breeding strategy of the farm as approved:

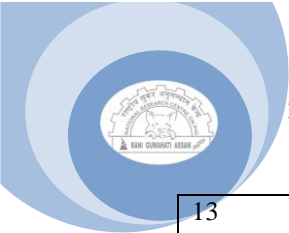
Nagaland Indigenous gilts Tenyi vo X Hampshire boar

Up-Graded Tenyi vo 50% X Hampshire boar

Up-Graded Tenyi vo gilt (75%) X Upgraded Tenyi vo (75%) boar

Performance of Animals: 75% Upgraded Tenyi vo

Sl.No.	Trait/Characters	Mean±SE (no of observation)		
		Male	Female	Total
1	Litter size at birth (no)	4.58±0.31	3.79±0.28	8.37±0.37(23)
2	Litter weight at birth (kg)	5.11±0.36	3.98±0.28	9.09±0.04(23)
3	Litter size at weaning (no)	3.69±0.27	3.23±0.37	6.92±0.006(23)
4	Litter weight at weaning (Kg)	17.87±1.52	15.47±0.52	33.34±0.81(23)
5	Avg. Individual weight at birth (Kg)	1.01±0.03	1.04±0.05	1.03±0.00(188)
6	Avg. Individual weight at weaning (kg)	4.84±0.13	4.79±0.15	4.81±0.01(158)
7	No of days for weaning	42	42	42
8	Pre weaning mortality rate (%)	19.05	18.07	18.56
9	Pre weaning growth rate (gm/d)	91	89	90
10	Post weaning mortality rate (%)	3.52	2.46	2.99
11	Post weaning growth rate (gm/d)	169	168	
12	Overall growth rate (upto 10 m) (gm/d)	163	163	



13	Body weight (Kg)			
	1 month	3.92±0.11(34)	3.86±0.19(32)	3.89±0.10(64)
	2 month	9.00±0.08(34)	8.91±0.17(32)	8.70±0.99(64)
	3 month	14.06±0.18(34)	13.96±0.15(32)	14.01±0.01(64)
	4 month	19.12±0.12(34)	19.03±0.23(32)	19.07±0.12(64)
	5 month	24.18±0.49(34)	24.09±0.22(32)	24.14±0.24(64)
	6 month	29.31±0.43(30)	29.17±0.41(30)	29.22±0.30(60)
	7 month	34.39±0.33(30)	34.24±0.33(25)	34.32±0.25(55)
	8 months	39.64±0.28(30)	39.64±0.31(25)	39.41±0.21(55)
	9 months	44.92±0.27(25)	44.86±0.32(23)	44.89±0.20(58)
	10 months	50.16±0.64(18)	50.05±0.68(36)	50.11±0.46(36)
14	Age at slaughter (d)	10 months		
15	Weight at slaughter (Kg)	50		
16	Dressing percentage (%)	70		
17	Carcass length (cm)	85		
18	Back fat thickness (cm)	2.5		
19	Amount of pork produced per sow up-graded (Kg)	125		
20	Feed conversion efficiency (:)	4.2:1		

Life time production traits:-

- a) Average litter size at birth per sow : 8.37±0.37(23)
- b) Average litter weight at birth per sow : 9.09±0.04(23)
- c) Average litter size at weaning per sow : 6.92±0.006(23)
- d) Average litter weight at weaning per sow : 33.34±0.81(23)

Specific management practices:

Sl. No.	Management Practices	Age in days
1.	Cutting of needle teeth & naval cord at birth	0-1
2.	Creep feeding	10-25
3.	Iron injection	1 st . Injection - 7 ; 2 nd injection - 14
4.	Castration	14-21
5.	De-worming	21-25
6.	Ear tagging	30-35
7.	Weaning	42

Mortality parameters:

i) Pre-weaning mortality

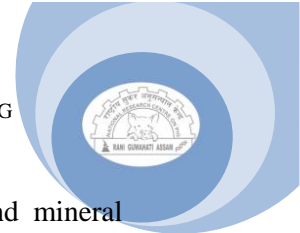
Sl. No.	Traits/Characters	Pre-weaning		
		male	female	Causes of mortality
1	Nagaland Indigenous (Tenyi vo)	3	1	Enteritis
2	Upgraded pigs	13	8	Pneumonia
3	Hampshire pigs	4	6	Pneumonia, gastro-enteritis, anaemia, pulmonary oedema

ii). Post-weaning mortality

Sl. No.	Genetic group	Post-weaning		
		male	female	Causes of mortality
1	Nagaland Indigenous (Tenyi vo)	-	-	-
2	Upgraded pigs	3	2	Enteritis, Pneumonia
3	Hampshire pigs	-	-	-

iii) Measures taken to minimize mortality:

a) **Management measures:** After farrowing providing warm bedding, gunny bags slings and 100 watt electrical bulb in the creep area to control cold stress during winter season and chilled weather even during summer. Helping the weak piglets to suckle mother's first milk colostrums within 24 hours and later bottle feedings



Second week provide creep ration. Toning up weak animals with vitamins, glucose and mineral supplements. Daily morning and evening cleaning of pig pen and change the litter materials in the creep area, use of disinfectants twice a week

b) Prophylactic measures:

Iron injection on 4th and 14th day was given to pigs. Deworming done at 21-25 days old piglets, deworming of adult pig at six month interval. Segregation of sick animal for symptomatic treatment. Swine Fever Vaccination of all 3 months old pigs and repeat after 6 months, vaccination of adult pig at 6 months interval.

iv) Disposal of diseased carcass: Burial of dead carcass of any kind at a depth of 3 feet below the ground with lime & phenyl application

Nutritional experimentation: Feeding of sliced fermented tapioca tubers replacing 30% concentrate ration successful

Adoption of integrated farming system: Tapioca plantation using pig manure gave a good harvest of 6-8 kg tubers per plant within eight to ten months

Survey on market pork production: survey of pork production conducted at Medziphema area of Dimapur district recorded Rs 200/- per Kg raw retail cuts. Daily slaughtering six to eight pigs with average live weight of 90-110 kg of supplied pigs, coming from Uttar Pradesh, Bihar, Assam etc. at Medziphema town with 4 retail outlets. Kohima has 2 municipal identified slaughter house and 3 localised slaughter place. Altogether about 100-110 pigs is slaughtered daily. There are about 21- 24 regular pork retail outlets and 12 irregular retail outlets. The average slaughtered live weight is 90 kilogram and 70% dressing percentage. Pork is sold at the rate of Rs. 200 for imported pigs and Rs.220 for locally reared pigs.

Disposal pattern of farm waste, pig excreta etc: The farm washing and excreta is channeled into the fish-pond which is dry from December to May, natural decomposition of manure is collected on to a shallow pit and used for the farm garden. The remaining manure utilized by Agricultural research Scholars and Horticultural farms, flower- beds and animal fodder plots for pigs and cattle.

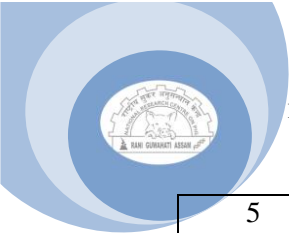
Production economics:

- i) Cost of production of a fattened pig up to 10 months of age = Rs 10,060
- ii) Cost of production of a kg of pork = Rs 200

Extension program with success stories:

Events organized:

Sl.	Name of Events	Date
1.	One day on Campus Awareness Programme on “Offsetting Carbon emission for Eco-friendly livestock Farming I”	09.11. 17
2.	One day on Campus Awareness Programme on “Offsetting Carbon emission for Eco-friendly livestock Farming II”	21.11. 17
3.	One day hands on training on pig Deworming schedule	15.12. 17
4.	On Campus programme for piggery staff and SHG on preservation of pig farm manure grown vegetables	07.02. 18



5	Interaction with piggery farmers and survey the performance of upgraded Tenyi vo at farmers field	18.01. 18 05.02. 18 20.02. 18
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Salient achievement during the reporting period:

- a. Successful up-gradation of Indigenous Tenyivo and producing healthy Upgraded piglets suitable by the resources poor rural farmers, and the Upgraded Tenyivo is performing well in farm and in the farmer’s field condition.
- b. Sale proceeds amounting to Rs. 5, 55,072/-from sale of Upgraded piglets, fattened, culled adult pig to the Rural Farmers.
- c. Conducted five out-reach programs for the Rural Farmers, Livestock Health Workers, Faculty staffs and Subject matter specialist.
- d. Facilities provided to the Students of under Graduate B.Sc. (Ag) for practical demonstration P.G. and Ph.D. research work of the department of Livestock Production & Management.
- e. Ensilaged (fodder and fermented sliced tapioca) incorporated in the pig ration replacing concentrate feed up to 20-30% successful.

Project work of students:

Effect of substituting concentrate feed with *Manihot esculenta* silage on the performance of Up-graded Tenyivo pig

Distinguish visitors:

1. Dr. S. Bandyopadhyaya, SIC, ERS,IVRI
2. Professor S.K. Chaturvedi, RDC, Nu, Lumami
3. T. Lanusosang, Pro Vice chancellor, NU, SASRD, Medziphema
4. R.C. Gupta, Dean NU, SASRD, Medziphema
5. Farmers above 200

	
<p>Awareness programme on offsetting carbon emission for eco-friendly livestock farming-I</p>	<p>Awareness programme on offsetting carbon emission for eco-friendly livestock farming-II</p>
	
<p>NAAC Peer Team visiting farm</p>	<p>Hands on training on preservation of Pig farm manure grown vegetables</p>



ICAR-CENTRAL ISLAND AGRICULTURAL RESEARCH INSTITUTE, PORT BLAIR

Looking to the high demand of pork and scope of piggery in the region, the AICRP programme of the centre has recently initiated. The AICRP programme was initiated in XIIth Plan and technical programme was finalized in review meet of AICRP Project in 2015. The objective of the centre is to study the performance of indigenous pigs (Andaman Local pigs)

Herd dynamics (Andaman Local Pigs):

Details	Male	Female	Total
Opening balance as on 31/3/2017	11	8	19
Birth 1/4/2017 to 31/3/2018	22	21	43
Total	33	30	63
Mortality	7	1	8
Sold	10	3	13
Total	18	5	21
Closing balance as on 31/3/2018	15	25	42

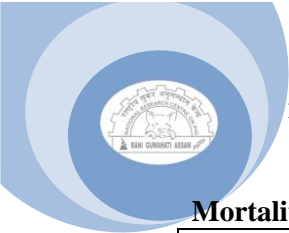
- The present breed able stock is 21 in numbers with 14 female and 7 male and 21 piglets.

Breeding strategy of the farm as approved:

As per the technical programme a foundation stock of indigenous pigs were established in the centre and generation of the same were raising. The method selected for crossing is natural and pure stock of desi animals is maintained.

Performance of animals:

Sl.No	Traits/ Characters	Mean±SE		
		Male	Female	Total
1	Litter size at birth (no.)	2.8±0.73	2.57±0.43	5.4±1.4
2	Litter Weight At birth (Kg)	5.82±1.55	4.5±0.82	9.92±1.74
3	Litter size at weaning (no.)	2.4±0.81	2.6±0.67	5.0±1.49
4	Litter weight at weaning (kg)	49.32±13.39	46.12±9.42	92.45±13.76
5	Avg. Individual weight at birth (Kg)	1.53±0.10	1.31±0.09	1.42±0.10
6	Avg. Individual weight at weaning(Kg)	13.90±0.53	14.25±0.33	14.01±0.45
7	No. of days for weaning (d)	56	56	56
8	Pre weaning mortality rate (%)	14.28	0	7.40
9	Post weaning mortality rate (%)	15	3.3	9.52
10	Pre weaning growth rate (Kg/d)	0.29±0.005	0.31±1.56	0.35±0.003
11	Post weaning growth rate (Kg/d)	0.36±0.009	0.37±0.008	0.36±0.006
12	Overall growth rate (gKg/d)	0.35±0.01	0.41±0.031	0.39±2.50
13	Body weight at different ages (Kg)			
	Birth weight	1.53±0.10	1.31±0.09	1.42±0.10
	1 Month	5.67±0.15	5.96±0.2	5.82±0.11
	2 Month	14.23±0.37	15.13±0.33	14.15±0.23
	3 Month	19.41±0.95	20.42±0.51	19.05±0.48
	4 Month	28.25±0.25	27.25±0.25	28.62±0.23
	5 Month	44.40±2.13	41.93±4.25	43.78±3.25
	6 Month	58.40±3.15	57.93±5.31	58.87±4.52
	7Month	75.45±2.13	70.81±4.25	72.25±3.25
	8 Month	85.40±3.27	75.45±9.45	78.5±6.89
	9 Month	80.50±5.56	78.93±6.35	79.78±5.26



Mortality parameter:

Animal	Pre weaning mortality			Post Weaning Mortality		
	Male	Female	Total	Male	Female	Total
Total animals	14	13	27	33	30	63
Animals Died	02	0	2	5	1	6
Mortality %	14.28	0	7.4	15.0	3.3	9.52

Post Weaning Mortality is six

Causes of Mortality:

- The major cause for mortality at preweaning stage is overlaying.
- Post weaning mortality is due to foot rot.

Measures to taken minimize mortality:

Managemental measures:

- Sheds were regularly sanitizing with potassium permanganate
- All pigs were dewormed periodically
- Screening of parasitic diseases and their health
- Early treatment to control piglet diarrhea and anemia
- Efforts to be taken to minimize pre weaning mortality rate.

Prophylactic measures:

- To overcome pre weaning mortality giving enrofloxacin oral suspension and imferon injection.

Disposal of diseased carcass:

- Disposal of diseased carcass-the dead animals after conducting the post mortem buried properly as per standard practices.

Adoption of integrated farming systems: The same has been introduced in the IFS.

Disposal pattern of farm waste:

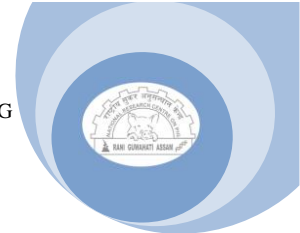
- Pig manure was collected from pig sty and stored in separate manure pit
- The stored pig manure was used as fertilizer for fodder production
- Pig urine and cleaned water drained into manually

Scientific publications: Research Article: 1

Distinguish visitors: Chairman ASRB and Chief Secretary, A & N Administration visited the farm

Budget allocation and utilization: Total fund allotted utilized except the amount allotted for Livestock could not be procured due lack of space. The pig shed is under construction.





COLLEGE OF AGRICULTURAL, CAU, IMPHAL, MANIPUR

The National Research Project on Pig, ICAR, has sanctioned All India Coordinated Research Project on Pig, Manipur Centre, on 12th November, 2014 at the Department of Animal Sciences, College of Agriculture, Central Agricultural University, Imphal with the objective of upgrading the indigenous locally available pigs of Manipur, so as to see the improvement in body weight gain, litter traits, survivability at weaning, disease resistance, sexual maturity etc. As per the proceedings of the Annual Review Meet (2015-16) held at NASC complex, Pusa, New Delhi, the breeding programme of the Centre has been changed to maintain Rani breed (50% Hampshire X 50% Ghungroo). At the end of the reporting year, the centre is maintaining 181 nos. of Rani Pig, and 75 nos. of Hampshire pig of different age group.

Herd dynamics

a) Herd strength of Rani pig as on 31.03.2018

Sl. No.	Age (months)	Opening Balance as on 1.4.17	Additions		Disposal			Closing balance as on 31.3.18
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglets (up to 42 d)	6	54	-	6	-	-	54
2	Growers (42 d-5 m)	37	63	-	4	-	49	47
3	Finisher (6 m-8 m)	29	35	-	1	-	7	56
4	Breeding female	21	-	-	2	-	-	19
5	Boar	6	-	-	-	-	1	5
	Total	99	152	-	13	-	57	181

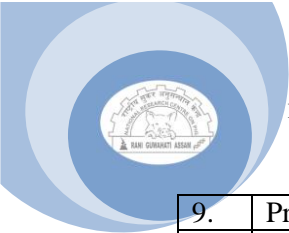
b) Herd strength of Hampshire pigs as on 31.03.2018

Sl. No.	Age (months)	Opening Balance on 1.4.17	Additions		Disposal			Closing balance on 31.3.18
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglets (up to 42 d)	25	24	-	2	-	-	47
2	Growers (42 d-5 m)	24	20	-	1	-	22	21
3	Finisher (6 m-8 m)	-	15	-	-	-	11	4
4	Breeding female	7	-	-	1	-	3	3
5	Boar	2	-	-	-	-	2	0
	Total	58	59	-	4	-	38	75

Breeding strategy of the farm as approved: To maintain Rani pig (50% HS X 50% Ghungroo)

Performance of animals Rani Pig (Parent 2nd Generation)

Sl. No.	Traits/characters	Mean±SE (no. of observation)		
		M	F	Total
1.	Litter size at birth (no.)	4.56±0.22(18)	3.88±0.24(18)	8.44±0.02(18)
2.	Litter weight at birth (no.)	4.64±0.03(18)	4.12±0.04(18)	8.76±0.07(18)
3.	Litter size at weaning (no.)	4.25±0.30(16)	3.63±0.27(16)	7.88±0.02(16)
4.	Litter weight at weaning (kg)	26.15±0.26(16)	22.78±0.29(16)	48.93±0.02(16)
5.	Av. individual weight at birth (kg)	1.02±0.01(82)	1.06±0.02(70)	1.04±0.01(152)
6.	Av. individual weight at weaning(kg)	6.15±0.13(68)	6.28±0.15(58)	6.21±0.10(126)
7.	Number of days for weaning(d)	42		
8.	Pre-weaning mortality rate (%)	6.21%	3.42%	9.63%



9.	Pre-weaning growth rate (g/d)	122.05±2.91(68)	123.76±3.46(58)	122.90±0.15(126)
10.	Post weaning mortality rate (%)	0.6%	0.58%	1.18%
11.	Post weaning growth rate (g/d) (6 wks to 5th months of age)	198.80±4.50(30)	214.88±4.77(28)	206.84±0.06(58)
12.	Overall growth rate (0 to 5th months of age) (gm/d)	173.75±3.10(30)	182.07±3.61(28)	177.91±0.20(58)
13.	Body weight (kg)			
	1 month	3.26±0.09(69)	3.19±0.08(59)	3.23±0.08(128)
	2 month	8.51±0.21(48)	8.84±0.21(45)	8.67±0.01(93)
	3 month	11.27±0.22(38)	12.38±0.25(36)	11.83±0.01(74)
	4 month	15.11±0.33(32)	16.04±0.24(36)	15.57±0.03(68)
	5 month	26.95±0.48(31)	28.37±0.50(31)	27.66±0.01(62)
	6 month	38.47±0.68(28)	40.63±0.55(30)	39.55±0.06(58)
	7 month	49.64±0.68(28)	51.69±0.50(30)	50.66±0.06(55)
	8 month	59.67±0.47(25)	60.61±0.48(25)	60.14±0.01(50)

Specific managemental practices

(a) Identification: The piglets are identified by temporary ear notching procedure on left ear. The permanent ear tagging is done at the time of weaning (42 day) by polyurethane ear tag.

Mortality parameters

i) Genetic group wise (2017-18) & ii) Causes of mortality

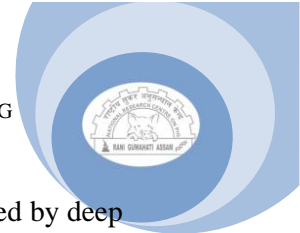
Sl. No.	Causes of mortality	Genetic group			Total
		CB 50%	Hampshire	Siamese local	
1	Pneumonia	2	-		2
2	Crushing	1	1		2
3	Enteritis	2	-		2
4	Cannibalism	3	-		3
5	General weakness	1	-		1
6	Diarrhoea	1	2		3
7.	Cardiac failure	-	1		1
8.	Pyelonephritis	1	-		1
9.	Shock	1	-		1
10.	Endometritis	1	-		1
	Total	13	4		17

i) Measures taken to minimize mortality.

Managemental measures:

- Daily cleaning, washing, sanitization & drying.
- Pig sheds were disinfected twice weekly with disinfectants (Pot. Permanganate, phenyl etc.)
- Use of water sanitizer (Sanipro-ws)
- Use of foot dip (KMnO4) at the entrance of pig shed.
- During cold season, the piglets are provided with straw bedding and for adult animals the animals are sprayed/bathed with cold water during the hottest part of the day in order to reduce heat stress.

ii) **Prophylactic measures:** The iron injection is given on 4th & 14th day (Feritas/Inferon) while Vitamin B-complex (Belamyl) on 5th & 15th day respectively, in all piglets. Besides, the vaccination against Swine Fever and FMD is regularly done in all the stock at 6 month interval. The deworming is done every 4 months interval (Parid/ Panacur®). Treatment of sick pigs is also regularly done.



iv) Disposal of diseased carcass: The diseased carcass is disposed far away from the pig shed by deep burial and covered with lime. Afterwards, the gap is filled with thick earth.

Adoption of integrated farming system: The work on the adoption of integrated farming system have been initiated by growing winter vegetables using manure of pig excreta around the AICRP pig farm.

Survey on market of pork production: A survey on pork market was carried out in Imphal East, Imphal West, Senapati District and salient points are given below:

Qualification of pork seller:	Mostly under-metric in proper Imphal and uneducated in the hill areas
Residence:	50% rented
Occupation:	Pork business
Category:	75% tribal and others SC
No. of retail Shop	20
No. of wholesaler:	9
Type of sale booth:	Mostly open market

Information about the pigs

1. Source of pig:	Mostly from local pig rearers
2. Breed:	Crossbred
3. Age:	1 year above
4. Weight:	80- 160 kg
5. Method of slaughter:	Hammering/heart puncture
6. Price of pig:	170-185/kg live weight basis
7. Daily sale:	1, 000- 1, 500 kg per day
8. Period of highest sale:	November-March of the year
9. Period of lowest sale:	June-September of the year
10. Price per kg of pork:	Rs. 230- Rs.280/kg in most of the market

Disposal pattern of farm waste, pig excreta: Manual cleaning of the pig excreta has been carried out time to time for removal from the pig farm and disposed in the low lying part through drain.

Extension programme with success story:

i) **At the Institute:** Farmers from different parts of the State visited the AICRP on Pig Farm, time to time during the training programme as field exposure, organized by various institutions, NGO's etc., such as College of Agriculture, AICRP-pig project, ICAR, Lamphelphat; KVK, Hengbung; NGO, YVU & others. In this way technical know- how of scientific pig rearing such as scientific feeding, breeding, health care, vaccination programmes to be followed, sanitation practices were demonstrated and taught to the farmers during their visit.

(i) **At the farmer's field:** Four (4) training programmes and four (4) Health camp were organized. The details of the location and dates were given as below:

Sl.no	Particulars	Date	Place
1.	Health camp cum Vaccination program	19.03.18	Keirak village, Kakching district
2.	Health camp cum Vaccination program	20.03.18	Tarung village, Imphal West
3.	Health camp cum Vaccination program	22.03.18	Loitang Sandum village, Imphal West
4.	Health camp cum Vaccination program	26.03.18	Awang Sekmai, Imphal West
5.	Training on scientific pig rearing	19.03.18	Keirak village, Kakching district
6.	Training on scientific pig rearing	20.03.18	Tarung village, Imphal West
7.	Training on scientific pig rearing	22.03.18	Loitang Sandum village, Imphal West
8.	Training on scientific pig rearing	26.03.18	Awang Sekmai, Imphal West



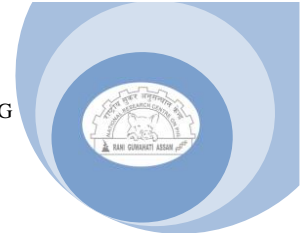
Salient achievements during the reporting period:

- A total of 256 pigs, consisting of 181 Rani crossbred pigs and 75 Hampshire are being maintained at the end of the reporting year.
- 152 nos. of Rani piglets were produced.
- Four (4) training programmes were organized at Keirak, Kakching district, Tarung, Imphal West district, Loitang Sandum, Imphal West district area on scientific pig rearing and four (4) health camp cum vaccination programme of swine fever was conducted at Keirak, Kakching district, Tarung, Imphal West district, Loitang Sandum, Imphal West district and Awang Sekmai, Imphal West.

Distinguished Visitors:

- Shri. Shankar Lal Meena, Joint Secretary, Ministry of DoNER, Government of India, (2nd May, 17).
- Shri. Naveen Verma, Secretary, Ministry of DoNER, Govt. of India, v(23rd May, 17).
- Deputy Director General (Horticulture), ICAR, New Delhi, along with Prof. M. Premjit Singh, Vice-chancellor, CAU, Imphal (1st June, 17).
- Shri Karam Shyam Singh, Hon'ble Minister, Revenue, Food and Consumer Affairs, Government of Manipur (January, 18).
- Shri Th. Radheshyam Singh, Hon'ble Minister, Education, Govt. of Manipur (29th Jan, 18).

<p>Rani (HSXGh) sow with piglets</p>	<p>Training at Keirak village, Kakching District</p>
<p>Vaccination of SF vaccine at Loitang Sandum village</p>	<p>Training programme at Tarung</p>
<p>Visit of Shri. Naveen Verma, DoNER Secretary,GOI</p>	<p>Visit of Shri Th. Radheshyam, Hon'ble Education Minister, Govt. of Manipur</p>



ICAR RESEARCH COMPLEX FOR NEH REGION, BARAPANI

Pig husbandry is important and integral component of farming system practiced in North Eastern Hill (NEH) region India. It has a special significance as it can play an important role in improving socio-economic status of the farmers in the region. Almost every tribal house hold rears 2–3 pigs in their backyard. In spite of considerable pig population and interest of people to rear pig, the pork production in the state is lower than the requirement. But the pig production system in the region is mainly subsistence oriented and the farmers based on the local resources. The traditional pig production system is mainly dependent on local non-descriptive pig and feeding with locally vegetation, crop residues and kitchen waste. All India coordinated Research Project (AICRP) on Pig has played important role the development of local specific pig variety and improved management practices. In order to improve the pig productivity in the region, AICRP on Pig, ICAR Research Complex for NEH region has successfully developed crossbred pig variety with Niang Megha (Khasi local) as indigenous germplasm and Hampshire as exotic germplasm for better adaptability and performance in hill ecosystem of the north eastern region of India. The planned crossbreeding program with rigorous selection resulted in developed “crossbred pig variety called “Lumsniang” with better adaptability in hill ecosystem, climatic resilient traits, promising growth rate, good mothering ability with higher litter size. It has better adaptability and performance in hill ecosystem of the north eastern region of India. Further the institute has been studying the performance, adaptability and stability of different economic traits and popularization of the pig variety in the tribal production system.

Herd dynamics:

Herd Strength of Crossbred pig “Lumsniang”

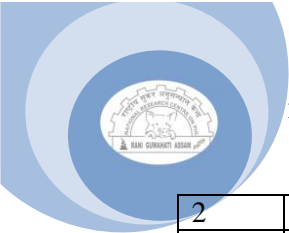
Sl.No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglets (upto 55 d)	14	286		35		183	32
2	Grower(56 d- 5 m)	11			6		18	16
3	Finisher(5-8 m)	6			2		13	10
4	Breeding female	20						20
5	Boar	4						6
	Grant total	55	286		45		214	84

Herd dynamics: Herd Strength of Crossbred (50% Hampshire X 50% Niang Megha inheritance)

Sl.No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglets (upto 55 d)	32	210		29		91	27
2	Grower(56 d- 5 m)	6			5		46	15
3	Finisher(5-8 m)	6					18	12
4	Breeding female	18						19
5	Boar	3						4
	Grant total	56	210		34		155	77

Herd dynamics: Herd Strength of Local pig (Niang Megha)

Sl.No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglets (upto 55 d)	21	193		27		96	26



2	Grower(56 d- 5 m)	6			9		13	19
3	Finisher(5-8 m)	16					16	15
4	Breeding female	17					3	18
5	Boar	5					1	6
	Grant total	56	193		36		129	84

Breeding strategy of the farm as approved:

A number of selected Niang Megha (Local pig) was maintained in the ICAR-NEH Pig farm since year-1987. A group of indigenous gilts was bred with pure Hampshire boars to get 50% Hampshire inheritance crossbred pigs. Another group of indigenous gilts were maintained for indigenous line. The progeny of F₁ crossbred 50%H X 50%I was again backcrossed with male Hampshire boar to produce crossbred (F₂) with (75% Hampshire X 25% Khasi local pig inheritance). The crossbreeding program *i.e. inter-se-mating* was adopted to maintain 50%H: 50%I and 75%H: 25%I genetic groups. Recommendation was maintained in order to avoid inbreeding effect in the farm.

Selection of crossbred (75% Hampshire X 25% Niang Megha inheritance) female for *inter-se-mating* and breeding based on the life-time productivity and performance. Selection of crossbred boar (75% Hampshire X 25% Khasi local pig inheritance) for *inter-se-mating* based on index methods which include its pedigree records, body conformity, well developed testicles, birth weight, weaning weight and individual body weight as per age. For female animals will be based on litter size at birth and weaning, litter weight at birth and weaning and no. of functional teats etc. Artificial Insemination (AI) was carried out to produce F₁ crossbred (50% H X 50% I) and F₂ crossbred (75% Hampshire X 25% Khasi local pig inheritance) pigs, besides for *inter-se-mating* between F₂.

Performance of animals:

Performance of crossbred pigs “Lumsniang”

Sl. No.	Traits/ Characters	Mean±SE (no. of observation)		
		M	F	Total
1	Litter size at birth (no.)	4.79±0.32	4.78±0.25	9.57±0.21
2	Litter weight at birth (kg)	4.11±0.24	4.14±0.31	8.25±0.42
3	Litter size at weaning (no.)	4.47±0.37	3.89±0.21	8.36±0.37
5	Avg. Individual weight at birth (kg)	0.83±0.11	0.82±0.18	0.83±0.61
6	Avg. Individual weight at weaning (kg)	9.43±0.02	9.46±0.05	9.44±0.24
7	Number of days for weaning (d)	56		
8	Pre- weaning mortality rate (%)	12.04		
9	Pre weaning growth rate (gm/d)	145.50±2.73		
10	Post weaning mortality rate (%)	5.87		
11	Post weaning growth rate (gm/d)	321.32±3.29		
12	Body weight (kg)			
	1 month	5.54±0.04	5.58±0.07	5.56±0.44
	2 month	9.50±0.04	9.42±0.03	9.46±0.26
	3 month	14.38±0.02	14.18±0.01	14.28±0.52
	4 month	23.38±0.04	22.68±0.03	23.03±0.32
	5 month	35.54±0.07	34.59±0.03	35.07±0.42
	6 month	44.18±0.01	45.08±0.02	44.63±0.24
	7 month	54.72±0.03	56.84±0.08	55.78±0.76
	8 month	67.63±0.01	67.59±0.04	67.61±0.28
	9 month	74.21±0.09	72.71±0.03	74.18±0.32



	10 month	87.43±0.04	86.83±0.09	87.13±0.19
14	Age at slaughter (d)	300		
15	Weight at Slaughter (kg)	88.12±0.48		
16	Dressing Percentage (%)	73.12		
17	Carcass Length (cm)	72.12±0.12		
18	Back Fat Thickness (mm)	2.30		
19	Feed conversion efficiency (:)	1:4.30		

Lifetime production traits of crossbred pigs "Lumsniang"

Life time production traits (Average of 6 farrowing/sow)		
1.	Total litter size at Birth	52.23±1.70
2.	Average litter size at Birth	9.43±0.57
3.	Total Litter Weight at Birth (kg)	46.27±1.43
4.	Average Litter weight at Birth (kg)	7.85±0.64
5.	Total Litter size at weaning	49.04±2.12
6.	Average Litter size at weaning	8.29±0.20
7.	Total Litter weight at weaning (kg)	448.59±5.23
8.	Average Litter weight at weaning (kg)	81.06±1.31

Heritability and repeatability of reproductive traits in crossbred pigs "Lumsniang"

Sl.No.	Reproductive traits	Heritability	SE	Repeatability (%)	SE
1	Litter size at Birth	0.12	0.12	0.76	0.50
2	Litter size at Weaning	0.93	0.21	0.26	0.53
3	Av. Weight at Birth	0.56	0.13	0.57	0.43
4	Av. Weight at Weaning	0.86	0.24	0.73	0.03
5	Litter Weight at Birth	0.42	0.16	0.15	0.53
6	Litter Weight at Weaning	0.76	0.24	0.52	0.46

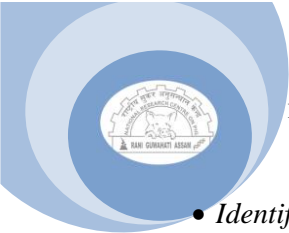
Generation wise performance for 75% Hampshire× 25 % Local crossbred Pig

Traits	1 st generation	2 nd generation	3 rd generation
Litter size at birth (kg)	8.11±1.04	8.52±1.21	9.02±0.55
Litter size at weaning (kg)	7.41±0.25	8.09±0.21	8.12±0.81
Av. individual weight at birth(kg)	0.74±0.26	0.81±1.46	0.85±0.16
Av. individual weight at weaning (kg)	8.87±0.48	9.21±2.07	9.46±1.14
Av. litter weight at birth (kg)	7.42±0.84	8.17±1.05	8.56±1.39
Av. litter weight at weaning (Kg)	73.29±1.05	74.55±1.38	75.73±1.23

Traits	Heritability	Selection differential (1 st year)	Selection differential (2 st year)	Overall genetic gain
Litter size at birth (kg)	0.12	0.41	0.50	0.054
Litter size at weaning (kg)	0.93	0.68	0.03	0.330
Av. individual weight at birth(kg)	0.56	0.07	0.04	0.030
Av. individual weight at weaning (kg)	0.86	0.34	0.25	0.254
Av. litter weight at birth (kg)	0.42	0.75	0.39	0.239
Av. litter weight at weaning (Kg)	0.76	1.26	1.18	0.926

Specific management practice:

Presently pigs are being reared and managed in organized intensive housing system with adequate floor space as per BIS standards. There is provision of separate feeding trough and water facility. Different groups of animals kept in separate pens under uniform housing and managerial conditions. The pigs were fed with balanced concentrate mesh feed twice daily at 9.0AM and 3.PM. The following Specific management practice followed in the pig breeding farm.



- **Identification:** In pig breeding farm, pigs were identified using both permanent plastic ear tags. The permanent ear tags were provided with uniform coding for different genetics groups. The uniform code starting from 1 represents as Pure Hampshire, 2 represents local pig, 3 denotes crossbred with 50% Hampshire (F1), 4 indicates crossbred with 75% Hampshire (F2) and 5 represents crossbred with 87.5% Hampshire respectively.
- **Needle teeth cutting:** Needle teeth regularly clip by using tooth cutter at the age of 7-10 days of birth, which prevent teat/udder damage of sow during milk suckling. It also prevents injuries from fighting among piglets/littermates.
- **Weaning:** The piglets were separated from month at the age of 56-60 day depend on body condition of piglets. If the piglets are good body condition, weaning carried out at early age.
- **Creep feeding:** Creep feeding was practiced to feed a solid diet to piglets during suckling. The creep feed provided to piglets 20-35 days of age. Creep feeding initiates and promotes gut and digestive enzyme development, which enables the piglet to digest nutrients from food sources other than that of milk. The specific practice reduces pre weaning piglet mortality particularly where the sow had low milk yield.
- **Castration:** It has been carried out at the age of 2-2 ½ month by open surgical method.
- **Artificial Insemination:** Estrus detection was carried out twice daily and the sows exhibiting standing estrus were inseminated with a golden pig catheter (IMV Technologies, France) and cock-screw catheter (mini-tube, Germany). The cervical insemination was carried out at 30 onset of oestrus with 2-3 billion sperm in 95 ml of extended liquid semen in a sachet per insemination. The pregnant sow/gilts were separated from the non-pregnant sows after confirmation of pregnancy and kept in individual pens. The farrowing rate and litter size at birth were calculated after farrowing.

Mortality parameter:

(i) Pre weaning mortality

Parameter	Age											
	0-14 days			15-28 days			29-55 days			Overall		
Number of animal died	M	F	T	M	F	T	M	F	T	M	F	T
		13	15	28	20	21	41	9	13	22	42	49
Mortality %	12.04											

ii). Post weaning mortality

Parameter	Age								
	56 days to 5 month			Finisher(5-8 month)			Overall		
Number of animal died	M	F	T	M	F	T	M	F	T
		6	9	15	3	4	7	13	9
Mortality %	5.87								

iii). Cause of mortality:

Sl.No.	Conditions/disorders	Total No.
Pre-weaning		
1.	Crushing	15
2.	Piglets Diarrohea	12
3.	Enteritis	8
4.	Pneumonia	4



5.	Weak piglets	14
6	FMD	38
	Total	91
Post- weaning		
1.	Enteritis	4
2.	Pasteurellosis	2
3.	Debility	2
4	FMD	14
	Total	22

Measure to be taken for minimizes mortality:

i. Management measures

Care during pregnancy: Farrowing pens were thoroughly cleaned and flushed with water and disinfected by Phenyl. The farrowing pens were provided with creep box for feeding creep ration to sucking piglets which was provided from 3rd week i.e. 15 days. A few days before farrowing the pregnant sows were separated from the herd and transferred to farrowing pens. She was then confined to farrowing pen till the weaning of their piglets.

Care during the time of farrowing: Mostly sows did not need any help at the time farrowing. Just after birth each piglets was cleaned with clean cloth and the mucous was removed from its mouth and nostrils. The needle teeth of the piglets were nipped and ligation of naval cord of piglets has been done on very first day of birth. The piglets were given identification mark through plastic ear tags. The piglets were assisted to suckle their dam and allowed to remain with her. New born young piglets have been provided with artificial heating arrangement. The placenta after farrowing removed immediately and sow was not allowed to eat it.

Pre-weaning care: As a preventive measure against anaemia, one ml. of an iron dextran injection (Imferon) was given intramuscularly to the new-born piglets on day 4th and 14th of the day of birth. Vitamin B-complex injection was done on 5th and 15th of birth. Separate arrangement for creep feeding of piglets was done started from 2nd week to weaning. Castration has been done surgically by open uncovered method on surplus male piglets at the age on 3-4 weeks. Weaning of piglets was done at 56 days. The newly born piglets were provided with paddy straw during winter season as a bedding material to protect the piglets against cold effects. The piggery shed was cleaned daily and the manure removed completely from the floor and wall through manual scraping.

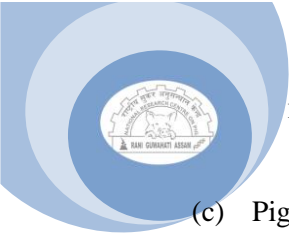
Post-weaning care: The piglets were vaccinated against swine fever. Deworming was also carried out soon after weaning and repeated if needed.

Solar based lighting system: Solar based light system with battery backup installed in the pig shed for energy saving.

Prophylactic measures

Following drugs as a prophylactic measures are given to prevent the mortality of piglets

- All the pigs were vaccinated against the Swine Fever vaccine and FMD vaccine.
- Animals are allowed to feed with balance ration twice daily and water at-libitum.



- (c) Pig sheds were clean daily and kept dry to prevent from any abnormal disease condition.
- (d) Regular Veterinary service and treatment to disease condition/ disorder to prevent from mortality.
- (e) Special Crest was fitted in the furrowing pen to prevent from piglet crushing by mother.
- (f) Regular vaginal dosing with 2% potassium permanganate solution within 12 hour of furrowing to prevent from MMA syndrome.
- (g) The furrowing pens were kept clean and dry to prevent from piglet diarrhoea.
- (h) The iron injection (Inferon) to all the piglets at 4th and 14th days of age and weaned at 56 days.
- (i) The pigs were dewormed regularly (Albendazole, Fenbendazole, Ivermectin alternatively) to control parasitic infestation.
- (j) For ecto-parasite, regular administered Ivermectin either injection or oral, besides dipping with 2% Butox before winter season.

Disposal of disease carcass: Trench burial method: Carcass of pigs disposed of by trench burial method. Usually, a trench was made large enough to accommodate the carcasses. Once buried, pigs were slowly decomposed. The minimum depth of trench pit was 3- 4 feet length and minimum depth of 6 feet. The carcass completely covered with enough quantity of belching powder and lime powder.

Nutritional experimentation

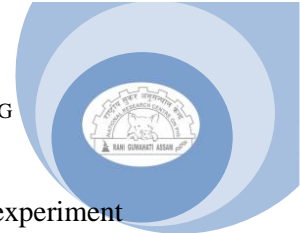
Inclusion of Banana pseudo-stem as ingredient in pig feed ration for low-cost feed formulation:

The study was carried out to evaluate the effect of banana pseudo-stem feeding as a partial replacement of concentrate feed on growth performance of pigs. A total of six samples of Banana pseudo-stem (*Musa Spp.*) were collected randomly from different villages viz., Umroi, Mawbri, Umsninag, Umsaw, Nongpathaw, ICAR livestock Farm, respectively from Ri- Bhoi district of Meghalaya. Proximate analysis was evaluated for different section of upper, middle and lower portion of banana pseudo-stem (Outer and inner) are presented in Table 2. The average percent of moisture, dry matter (DM), crude protein (CP), crude fibre (CF), ether extract (EE), nitrogen free extract (NFE) and Ash were found to be 93.35±1.03%, 6.64±1.03%, 4.60±1.19%, 31.15±0.24%,0.99±0.24%,45.46±0.24%,21.81±5.42%, respectively while average gross energy was found as 3231±4.14(Cal/g).

Proximate analysis of locally available banana pseudo-stem samples.

Parameters		Moisture (%)	Nutrient content (%)						Gross Energy (Cal/g)
			DM	CP	CF	EE	NFE	ASH	
Upper portion	Inner	90.65	9.35	2.38	40.59	0.40	46.45	12.43	3570
	Outer	93.75	6.25	3.60	23.00	1.92	55.74	33.47	3188
Middle portion	Inner	89.97	10.03	2.96	34.31	0.77	38.91	10.90	3478
	Outer	94.40	5.6	3.30	19.21	0.86	42.11	24.34	2944
Lower portion	Inner	94.96	5.04	5.09	46.98	0.51	63.79	16.25	3184
	Outer	96.40	3.60	10.31	22.83	1.49	25.78	33.47	3023
Mean±SE		93.35±1.03	6.64±1.03	4.60±1.19	31.15±0.24	0.99±0.24	45.46±0.24	21.81±5.42	3231±4.14

The feeding experiment was conducted on (18) eighteen weaned growing pigs and were divided randomly into three groups (I, II and III) having six in each group. Pigs of all the three groups were fed



iso-calorie and iso-nitrogenous diets as per NRC (1988) recommendation. The design of experiment was completely randomized arrangement of three treatments. Banana pseudo-stem were chopped into small pieces (1-2 cm in length), dried under sun light and crushed into mesh/dry powder form before use (Fig.2). Pigs were fed with banana pseudo-stem (20% level) + standard concentrate mixture (80% level), banana pseudo-stem (40% level) + standard concentrate mixture (60% level) and in control group with standard concentrate mixture (100% level) for 90 days. Body weight gain and feed conversion efficiency was recorded in different groups of pigs. Results revealed that the average daily gain (ADG) in Group I was significant higher than that group II (Table 3).

Growth performance of grower pigs fed with Banana Pseudo stem on dry matter basis

Parameter	Treatment		Control
	Group -I (20%)	Group-II (40%)	Group-III
Initial body weight (kg) at 45 days	8.35±0.36	8.15±0.28	8.55±0.28
Body weight at 75 days (kg)	14.97±0.67	12.75±0.51	18.33±0.76
Body weight at 105 days (kg)	19.86±0.68	16.65±0.26	23.07±0.67
Body weigh at 135 days (kg)	24.35±0.62	20.36±0.27	28.00±0.80
Average daily weight gain (gm)	245.55±10.56	214.38±5.14	298.05±15.90

However, the growth rate of grower pigs reduced significantly when the banana pseudo-stem incorporated up to 20% and 40% with concentrate feed. Therefore the experiment on fermented and fortification of banana pseudo-stem with different locally available ingredients has been conducting in pigs. The experimental on fermented and fortification of banana pseudo-stem is under progress.

Pig based integrated farming System: Pig-Fish integrated model

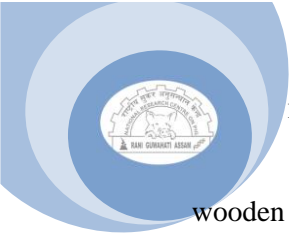
Performance of pigs and fish: The growth rate of different components in pig-fish integration was estimated. The fingerlings density was 7000/ ha with 30 piglets/ha. The fish yield obtained was 2, 112 kg/ha in integrated pig – fish culture. The average pig bodyweight obtained was 87kg.

Manure production and quality assessment: On an average, 1121 kg of fresh manure was added to the fish pond by a single pig. The average dung production by pig weighing less than 50 kgs and 50 – 90 kg was 2.46 kg and 4.76 kg dung per day, respectively. Pig manure contained approximately 37.12 per cent dry matter. The average levels of N, P and K in dried pig manure was 0.87, 0.63 and 0.57 per cent, respectively.

Monetary input: output pattern: The input: output ratio was calculated for both the systems. The input costs comprised both of nonrecurring (animal sheds, pond preparation) and recurring costs (animal, feed and veterinary expenses). The results revealed that both the systems were economically viable. Both the systems were economically viable with input: output ratio of 1:1.06 for pig-fish system.

Survey on market of pork production:

Characteristic of small holder pig production system of Meghalaya: Among the 152 households surveyed, 78.8 % of the farmers were smallholders having only one to two pigs, and the remaining farmers practiced pig farming in either semi commercial (18 %) or commercial (3.2 %) scale. In the study area, the majority of pig population (77 %) was of nondescript local type. In general, the pigsties were made up of locally available materials. The floor of pigsty was made-up of concrete (36 %),



wooden plank (26 %), bamboo pole (22 %), or earthen floor. The sidewalls were made of wooden plank (62 %), bamboo pole (26 %), stems of some plants (9 %), and brick-cement (11 %). Tin roof (68 %) was the most commonly used material in covered area of the house, followed by thatched roof with locally available grass and weeds (23 %), and other materials like plastic, etc. (9 %). Generally, the pigs were fed with local vegetation, agro-wastes, and household kitchen wastes. About 73.8 % of farmers fed the pigs solely with locally available materials. Remaining farmers fed their pigs with different level of concentrate purchased from market in addition to the locally available agro-waste.

Holding type	Hard size	Breeds	Purpose	Housing system	Feeding
Backyard-small (78.8%)	1-2 pigs	ND local (80%) Cross bred (20%)	Fattening (91%) Breeding (9%)	Simple Local available material, wooden plank, Bamboo pole	Local available material, vegetations, agro-wastes, household and kitchen wastes.
Small (18%) (Semi commercial)	3-5 pigs	Cross bred (56.4%) ND local (44.6%)	Fattening (67%) Breeding (33%)	wooden plank, Bamboo pole with concert floor	vegetations, agro-wastes, household with rice bran and wheat bran
Medium (3.2%) (Commercial)	7-20 pigs	ND local (22%) Cross bred (78%)	Breeding (84%) Fattening (16%)	Pucka house with recommended floor space	rice bran and wheat bran, or Balanced readymade feed

In the surveyed area, only 29.7 % of farmers reared the pigs for breeding purpose and remaining farmers reared the pigs for fattening purpose. About 67.7 % of the pig holders kept only one to two females for breeding, but no boar was maintained for breeding. They depended totally on the community boar, which are nondescript type with poor health and body condition. About 90 % of the farmers did not have detailed knowledge about heat cycle and its duration, however 60 % of farmers knew about the signs of heat.

Cost benefit analysis at village level (Piglets per farrowing per unit)

Cost of piglets for 1 unit (3 female and 1 male) @ 2500/ piglets: **10,000/-**

Feeding cost per day per piglets

- i. Rice bran @ 0.5/day @ Rs. 10/kg: Rs.5/-
- ii. Pig concentrate feed @ 0.5 kg @ Rs.22 /Kg: Rs.11/-
- iii. Broken rice/low quality rice @ 0.4 kg @ Rs. 15/kg: Rs.7.5/-
- iv. Kitchen waste(vegetable and peels)/Colacasia @ 3kg

Feeding cost per piglet/day: Rs. 23.5/-

Feeding cost per unit/day (3+1 piglets): Rs.94/-

Feeding cost unto 10 month of age (60-300 days): **Rs.28, 200/-**

Cost of Veterinary service @ Rs.350/ pig: **Rs.1400/-**

Monetisation labour @ 1 hours per day for 37.5 man-days @ Rs.300/man-days: **Rs. 11,250/-**

Total piglets born 8 (litter size)/sow: 24; considering 10% mortality

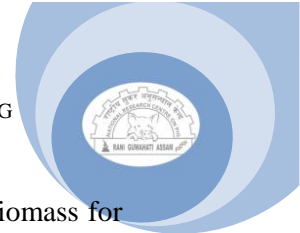
Total number of piglets per farrowing per unit: 22

Cost of piglets @ Rs.3000: **Rs. 66,000/-**

Net profits of piglets per farrowing/ unit: **Rs. 26,550/-**

Disposal pattern of farm waste, pig excreta:

Manure pit: Pig waste/excreta are disposed in scientifically constructed manure pit along with pig-washing. The pig dung allowed for maturation about 6-8 months and it is used for agriculture field.

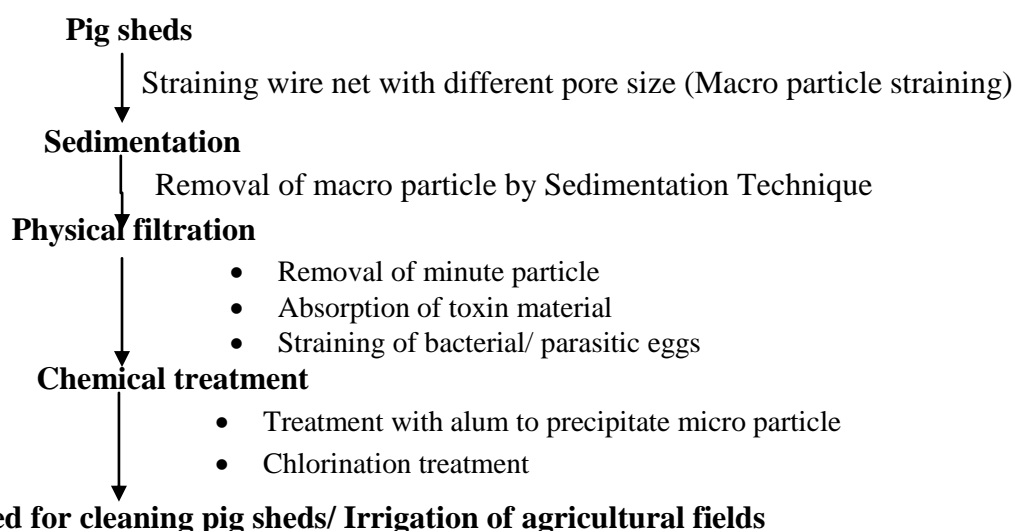


Pig dung based vermicomposting unit: Pig dung utilized along with the locally available biomass for vermicomposting using low cost vermibed. Three vermibed were established and yielded seven quantal vermicompost. The earth worm sold @ of INR 0.5 /worm for INR10,000/- for the current year.

Established water recycling plan from pig-washing

The main aim for established for water recycling plan is recycling of pig wastewater from cleaning pig sty. Waste water is first pass in manual bar screen with different size of pore for removal of big particle suspended solid and impurity and then pass to sedimentation tank which allow to sediment minute solid particle and then pass to the purification tank which content suitable sand and charcoal for removing waste particle. Then pass water to the water treatment tank for chemical treatment process. Outcome water can be used for cleaning water at farm and other purposed.

Model for Water recycling from pig-washing



Production economics in organized farm

Cost of production/ pig up to slaughter age: 10 Month
 Concentrate feed up to 10 month of age (15-300 days)=315kg/ pig
 Considering @ Rs. 22/kg of feed for 315 kg=Rs 6930/-
 Cost of medicine and Vaccines Rs. 350/animal
 Laborer charge per pig for 300 days=Rs 1800/ animal
 Total cost Rs. 9080/animal at 89 Kg live weight
 Cost of production Rs102/ kg live weight
 Market live weight Rs.140/ kg pork, Gross income: Rs 12,460/-, **Income: Rs 3380/-**

Extension programmed with success story

At institution:

Establishment of mobile base artificial insemination (AI) delivery model for the smallholder pig production system: Transport cost is the major cost involved the insemination cost in the hilly terrain of the tribal pig production system. Therefore mobile based portable AI delivery models at door step of farmers/farm gate level established in smallholder tribal pig production system for improving the livelihood of tribal farmers. A total of 270 numbers of AI were carried out in two districts of Meghalaya viz., Ri-Bhoi and East Khasi Hill at farmer's doorstep by using mobile base AI delivery model system. The collected superior quality semen was kept at laboratory at 17 °C. Whenever receive



any phone call from farmers to official number, AI van/unit containing inseminating kit, semen sachet, catheter and other necessary items, timely inseminated at farmer's doorstep by the trail technician. AI card also provided to the farmers which included type of breed, age of the animal, estrus sign and symptom and date of insemination. After insemination sow was monitor regularly at monthly intervene and recorded its changes. The farrowing rate was estimated and the reproductive traits like litter size at birth, litter size at weaning, litter weight at birth, litter weight at weaning were also recorded. The farrowing rate was 73% with litter size at birth of 8.84 and maximum 15 numbers of piglets were found. The tribal farmers were benefited by AI in several ways: (1) timely availability of superior germplasm to produce crossbred piglets; (2) saved the mating cost of INR 1,000–1,500 and transport of cost (INR 300–400) of female to the boar premises and (3) controlled mating to prevent inbreeding. The present study clearly demonstrates the feasibility and potential benefit of AI technique to smallholder backyard pig production system in tribal rural areas. In addition to genetic improvement of nondescript local pigs, this technology can help in overcoming breeding constraints in smallholder backyard pig production for increasing productivity

- Under AICRP on Pig organized one day workshop on “Livestock value chain management” to enhance income of the farmer and to promote entrepreneurship development in the piggery sector. A total of 77 small scale livestock entrepreneur and 17 service providers were participated, besides Meghalaya state agencies like Department of Animals Husbandry & Veterinary Science, Meghalaya Basin Development, Meghalaya Institute of Entrepreneurship, Meghalaya Rural Livelihood Mission, and NGOs has participated in the programme. Linkage was established among entrepreneurs, input suppliers, service providers, state line departments/agencies and NGOs to reduce input cost and enhance productivity and increase the profitability of the livestock enterprise in this region
- A total of three training were organized for improved housing, feeding, breeding and health management practices of pig for tribal farmer including 130 beneficiaries. Regularly farmers are visiting the farm and are being given technical advises about scientific pig rearing and feeding, vaccination etc. Importance of sanitation and hygiene and winter management practices of piglets are also explained to the beneficiaries and visitor farmers.
- To promote viable and sustainable small scale rural pig enterprises, two training (7 days) were organized for educated tribal youth (54) and provided technological backup for small scale rural enterprise. Total of 34 pig breeding unit were established with improved crossbred pigs in different villages of Meghalaya and demonstrated the benefits crossbred pig variety in term of productivity and economic benefit. Further, training and capacity building on pork processing to 12 potential educated youth for entrepreneurship development.

At the farmers' field:

- Demonstrated improved management practise in housing, feeding, breeding and disease management practices in different villages of Meghalaya. Provided technological backup with critical inputs like

crossbred pig variety of 277 piglets for 120 beneficiaries with feed and medicine. The piglets were regularly monitored and performances were evaluated. The cost-benefit was analyzed in the small holder pig production system. Breeding farmers harvested 2-3 extra piglets per litter than earlier system and farmers sold each piglet @INR3000/-. The beneficiaries got INR 16000-18000/unit through selling the piglet/ farrowing and Rs 8000-9000/ extra per unit than earlier system. The productivity of the crossbred pig increased in two fold than in traditional variety. The farmers were highly satisfied with the upgraded pigs and high demand for the crossbred piglets.

Scientific publications In peer-reviewed journals: 4

Success stories on livelihood improvement through improved crossbred pig variety

Mr Adoresing Pakyntein is around 24 years old who is an inhabitant of Umroi, Ri-Bhoi District, Meghalaya which is at a distance of 5 km from ICAR. He has farming land of 1.5 acre in the village and his main farming is agriculture like vegetable, paddy, ginger etc. In allied farming, he was rearing backyard piggery of three local nondescript pigs. He was never done vaccination, deworming, supplement of mineral mixture and feed with locally available feed like kitchen waste cook with broken rice. The local nondescript pig attained body weight of 40-45 kg and sold @ Rs. 7000- 8000 only.



After he got training about piggery management under AICRP on Pig like feeding, housing and health care management and got critical input like improve pig variety (Lumsniang pig). ICAR staff went for routine health care check-up, vaccination and deworming was done. Lumsniang pig attained 87 kg at the age of 10th month. In the first farrowing he got ten piglets. He sold the six piglets after three month at a rate of Rs 3000 each, and four piglets they kept for further breeding. Till date, in the piggery venture, a total of two farrowings have been completed. The pigs are being fed with concentrate feed with kitchen wastes. However, they are also purchasing rice husk as feed from the market at a rate of Rs 500 per 50 kg bag. After considering the expenses on feed and maintenance the approximate annual income of the family from agriculture and allied farming is Rs 1.2 lakhs to 1.5 lakhs. The income is being spent primarily in the purchase of household stuff like grocery, food, clothes, etc. A part of the income is also being used in the construction of new pig sheds to expand the pig farm.

Mean temperature, mean relative humidity, THI and total monthly rainfall of 2017

Month	Mean Temperature (°C)	Mean Relative Humidity (%)	THI	Total monthly Rainfall (mm)
January	13.79	65.3	56.78	26.4
February	16.28	61.3	60.57	0
March	17.41	67.0	62.33	60.3
April	20.52	68.7	67.01	206.1
May	22.24	76.5	70.18	200.8
June	23.1	83.6	72.15	475.9
July	24.41	81.5	74.07	381.2
August	24.3	83.4	74.09	752.7

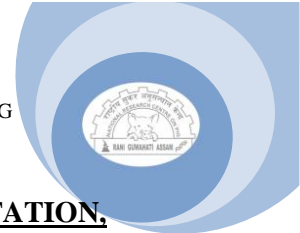
September	24.05	82.7	73.62	348.4
October	21.82	79.4	69.74	254.1
November	18.04	69.3	63.35	20.8
December	16.25	70.5	60.68	3.0



Pig-shed-wash water recycle unit through physical filtration technique



Organized one day workshop on “Livestock Value Chain Production of



ICAR-INDIAN VETERINARY RESEARCH INSTITUTE EASTERN REGIONAL STATION,
KOLKATA

Ghungroo is one of the best Indian pig breed so far recognized by ICAR-National Bureau of Animal Genetics Resources, Karnal, Haryana. The breed is well known for better litter size, good mothering ability, better growth and docile nature. ICAR-IVRI, Eastern Regional Station, Kolkata was entrusted to implement ICAR-AICRP on Pig, by Director, ICAR-NRC on Pig, Rani, Guwahati in 2014 with an idea to develop an elite flock of Ghungroo germplasm through selective breeding, propagate and supply the superior germplasm to cliental which indirectly increase the pork production.

Herd Dynamics: Ghungroo Pig:

Sl. No	Age (months)	Opening Balance			Addition		Deduction		Closing Balance		
		M	F	T	Births	Purchase	Death	sold	M	F	T
1	Piglet (upto 42 d)	3	9	12	62	-	6	-	2	2	4
2	Grower (42 d-5 m)	12	5	17		7	1	30	2	0	2
3	Finisher (5 m – 8)	0	0	0		-	-	18	5	8	15
4	Adult	7	17	25		-	1	6	10	32	40
5	Total	22	31	54	62	7	8	54	19	42	61

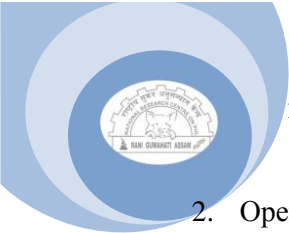
Breeding strategy of the farm as approved: As per the guidelines of NRC (P), the approved breed of pig (Ghungroo) is being maintained for conservation, improvement, propagation and distribution to the cliental. Two stage sequential selection is being followed for male as recommended - initially based on weaning weight (>11kg) and finally based on 8 month body weight (>68 kg). For selection of female, dam's litter size at birth (>7), weaning weight (>9kg) and number of functional teats (at least 6 pairs) are considered. Owing to small population size less stringent selection is followed during this period.

Performance of animals 2nd Generation (first crop)

Sl. No.	Traits / Characters	M	F	Overall
1	Litter size at birth (no.)	3.50±0.90	3.25±0.87	6.75±0.65
2	Litter weight at birth (kg)	4.30±0.88	3.80±0.80	8.10±0.45
3	Litter size at weaning (no.)	3.25±0.80	2.75±0.87	6.00±0.43
4	Litter weight at weaning (kg)	33.72±2.23	30.77±2.55	64.50±1.71
5	Individual weight at birth (kg)	1.0±0.12	0.95±0.12	1.01±0.11
6	Individual weight at weaning (kg)	8.50±0.87	8.02±0.92	8.28±0.57
7	Number of days for weaning (d)	42	42	42
8	Pre-weaning mortality rate (%)	7.14	7.67	7.40
9	Pre-weaning growth rate (gm/day)	176.91±12.15	168.33±16.66	173.09±11.54
10	Post weaning mortality rate (%)	0	4.0	4.0
11	Post weaning growth rate (gm/d)			
12	Overall growth rate (upto 9 m) (gm/day)			
13	Body weight (Kg)			
	1 st month	7.63±0.45	7.80±0.54	7.2±0.32
	2 nd month	11.6±0.78	12.05±0.72	11.86±0.22
	3 rd month	16.50±0.79	16.81±0.85	16.65±0.77

Specific management practice:

1. Animals are identified through ear tagging methods which are widely used as a method of pig identification.



2. Open method of castration generally is followed at the early age. But, it can't be practiced due male selection at breeding farm. Therefore, open methods of castration are followed.

Mortality parameter: Pre-weaning 4.83 per cent and post weaning 3.22 per cent.

Genetic group wise and sex wise mortality rate (pre and post weaning)

Group	Pre weaning		Post weaning	
	Male	Female	Male	Female
Parent population	-	-	-	-
First generation	3.22	1.61	0	3.12
2 nd Generation	7.14	7.67	0	4.0

Causes of mortality: Due to piglet diarrhea, acute enteritis, compression by the mother and hip dislocation (adult).

Measures taken to minimize mortality:

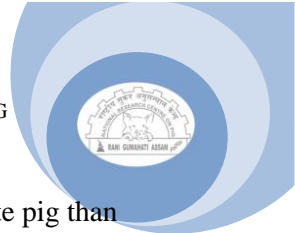
- a. Management measures: Apart from routine management practices, furrowing pen is washed with disinfectant thoroughly to prevent piglet diarrhea.
- b. Prophylactic measures: As prophylactic measures, swine fever, Swine pox and FMD vaccination followed as per recommended scheduled.
- c. Routine treatment

Adoption of integrated farming system: An Institute sponsored project entitled “*Occurrence of common zoonotic pathogens and heavy metals vis-à-vis productivity in fish integrated pig-cum-fish farming system*” with following objective

- i) To investigate the occurrence of common zoonotic pathogens in the farm components of integrated pig-cum-fish farming system.
- ii) To assess the common heavy metals in the farm components of integrated pig-cum-fish farming

A total of 72 samples (pig-cum-fish rearing in field condition) including slurry from pig shed (24); water (12 each) and fish (12 each) from the fresh and slurry added ponds. *Clostridium perfringens* A was detected in 16.7% (4/24) of pig slurry followed by Enterotoxigenic and Shigatoxic *E.coli* [(8.33% each) 2/24]. *C. perfringens* were recovered both in slurry added and not added pond water (8.33% each (1/12) and in fish samples (8.33% each) (1/12) of that ponds. NaOH (8%) solution was effective decontaminant in cleaning of organized pig farm floor. After cleaning with plain water, the farm floor was subsequently washed with NaOH (8%) and found considerable difference and reduction of TBC from 1.9×10^4 to 1×10^4 per unit of floor area; however, efficacy of Na_2CO_3 (8%) was found comparatively less than NaOH (8%).

Survey on market of pork production: Survey was carried out in some localities of two districts i.e. in 24 parganas, and Nadia on pork production system. Primary markets are located at Bhatpara, Sodhpur, kangkinara and Halisahar of 24 Parganas and Phulia, Chakdaha and Ranaghat of Nadia district. There is no organized market for processing and marketing of pork. The butchers purchase pigs from farmers of the same and adjacent districts. Farmers get Rs. 70-100 per kg of live weight



depending on the breed, age and sex of the pig. There is comparatively more demand for white pig than the black coloured pig. Market price per kg of pork varies Rs150-230 depending on season and quality.

Disposal pattern of farm waste, pig excreta etc/ establishment of biogas plant: We use certain quantity of pig excreta/slurry in the pond as feed for fish which is a part of our integrated farming. Rest of the excreta is decomposed first and then used as manure in the agriculture field.

Extension programme with success story:

- i) At the institute: Training programmes were conducted on 31st Jan 2018 to 2nd Feb 2018 for farmers, progressive farmers and unemployed youth.
- ii) Imparted training on pig production and management was provided to Diploma in Animal Husbandry student from 1st February 2018 to 28th February 2018.
- iii) More than 200 tribal farmers visited at Pig farms at ERS, IVRI, Kalyani from different districts.
- iv) At farmers' field: Health camp cum awareness programme was organized at Sapkhali and Pathorpratima village of Sagar Island of south 24 Parganas of WB under MGMG programme..

Distinguish Visitors:

- a) Director, ICAR-IVRI, Joint Director (Research) and Joint Director (Academic)
- b) Dr. D K Sarma, Director, NRC on Pig, Guwahati.

<p>Piglet: second generation</p>	<p>Grower pig</p>
<p>Tribal Farmers visited Pig farm</p>	<p>Imparted one month training to Diploma in Animal Husbandry students, ERS, NDRI.</p>
<p>Newly Constructed Pig shed</p>	<p>Farmers, unemployed youth and entrepreneurs from Tripura visited pig farm</p>



KVK-GOALPARA, ICAR-NRC ON PIG

Pig is one of the major sources of animal protein besides being most-efficient food converter after broiler chicken. Pig production in India has enormous potential to upscale the economics of rural masses of the country due to its high fecundity, good feed conversion efficiency, shorter generation interval and relatively smaller space requirement.

As compared to the other states of India, Assam and other NER states are performing well in pig production. Pig population in the NER is above 38.42 percent of country’s total and in Assam it is 15.89 percent. The pig population in Assam is comprised preponderantly of non-descript local varieties and genetically graded pigs and hybrids. Local pigs are small sized with low prolificacy, but are highly adaptable to the harsh management conditions. Traditionally, these pigs in Assam are reared as scavengers under zero-input system. These animals are not profitable as commercial venture. Crossbreds and graded pigs are, therefore, slowly gaining popularity. However, the indigenous animals are well-adapted to hot and humid environment and supposed to have better disease tolerance. The indigenous pigs are identified as a distinct group as a result of gradual domestication of wild pigs to their surroundings. These pigs differ in their characteristics and colour from region to region within the country depending on the topography and climatic conditions. The Doom Pig is one of the registered pig breed of Assam.

Looking to importance of local germplasm in Assam, the AICRP on Pig unit was sanctioned to Krishi Vigyan Kendra, Goalpara in XIIth Five Year Plan with the initial objective to conserve Doom pig of Assam.

Herd dynamics:

Sl no	Age(months)	Opening balance			Addition			Deduction			Closing balance		
		M	F	T	Birth	transfer	purchase	death	transfer	sold	M	F	T
1	Upto 42 d	2	4	6	6			3					2
2	42 d-5 m	3	-	3			34				2		2
3	5-8 months	-	-	-							11	4	15
4	Adult	8	22	30				4		17	10	28	40
5	Total	13	26	39	6		34	7		17	23	32	55

Breeding strategy of the farm as approved: As recommended by review meet the center was mandated to maintain the Doom pigs of Assam for conservation purpose. The breed was maintained by selective breeding.

Performance of animals:

Sl No	Traits/ characters	Mean±SE		
		M	F	Total
1	Litter size at birth(no)	1.57±0.07 (4)	2.63±0.08 (4)	4.20±0.10 (4)
2	Litter weight at birth(Kg)	1.07±0.06 (4)	1.68±0.07 (4)	2.75±0.13 (4)
3	Litter size at weaning	1.57±0.07 (4)	2.63±0.08 (4)	4.20±0.10 (4)
4	Litter weight at weaning(Kg)	5.13±0.29 (4)	8.15±0.32 (4)	13.28±0.30 (4)
5	Individual weight at birth(kg)	0.68±0.04 (7)	0.64±0.08 (9)	0.66±0.08 (16)



6	Individual weight at weaning (Kg)	2.90±0.06 (7)	2.77±0.12 (9)	2.85±0.18 (16)
7	Number of days for weaning	45 days		
8	Pre weaning mortality rate (%)	4.85		
9	Pre weaning growth rate(gm/d)	50.13±3.66(10)	46.71±4.21 (11)	48.96±4.01 (21)
10	Post weaning mortality rate (%)	4.92		
11	Post weaning growth rate(gm/d)	213.21±15.11(10)	200.11±11.21(11)	208.62±15.39(21)
12	Overall growth rate (upto 9 m) (gm/d)	187.22±15.29(8)	181.72±15.12(6)	183.31±15.22(14)
13	Body weight(Kg)			
	1 month	1.52±0.04 (10)	1.43±0.05 (11)	1.48±0.10 (21)
	2 month	3.32±0.14 (10)	3.17±0.13 (11)	3.21±0.25 (21)
	3 month	8.91±0.54 (10)	8.25±0.82 (11)	8.52±1.32 (21)
	4 month	15.28±0.68 (10)	14.92±0.87 (11)	14.99±1.76 (21)
	5 month	20.90±0.54 (10)	20.01±0.91 (11)	20.62±1.99 (21)
	6 month	28.96±1.89 (10)	27.51±1.99 (11)	28.26±2.51(21)
	7 month	35.86±2.02 (10)	33.91±2.06 (11)	34.89±3.22 (21)
	8 month	42.96±2.89 (10)	40.62±2.69 (11)	41.44±3.90 (21)
	9 month	50.02±3.66 (8)	46.87±3.22 (6)	48.21±4.52 (14)
	10month	53.91±3.51 (8)	50.42±3.66 (6)	52.99±5.20 (14)
14	Age at slaughter(d)			8 months
15	Weight at slaughter (kg)			42 Kg
16	Dressing percentage (%)			77.54%
17	Carcass length(cm)			48 cm
18	Back Fat Thickness(mm)			28 mm

Lifetime production traits

Average litter size at birth per sow: 12.9±0.60

Average litter weight at birth per sow: 8.25±0.8

Average litter size at weaning per sow: 12.75±0.66

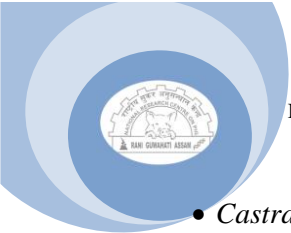
Average litter weight at weaning per sow: 39.60±2.54

Average litter weight at slaughter per sow: 534.06±16.73

Specific management practice:

Presently pigs are being reared and managed in organized intensive housing system with routine scientific managemental practice. However, the animals of these breed/variety are ferocious in nature and difficult to handle, following routine managemental practice are being followed at the farm.

- *Identification:* In pig breeding farm, pigs were identified using both permanent plastic ear tags. Tagging is done during the time of weaning.
- *Needle teeth cutting:* Needle teeth regularly clip by using tooth cutter at the age of 7-10 days of birth, which prevent teat/udder damage of sow during milk suckling. It also prevents injuries from fighting among piglets/littermates.
- *Weaning:* The piglets were separated from months at the age of 42-49 days depend on body condition of piglets.
- *Creep feeding:* Creep feeding was practiced-feeding a solid diet to piglets during suckling. The creep feed provided to piglets 20-35 days of age.



- **Castration:** It has been carried out at the age of 2-2 ½ month by open surgical method.
- **Feeding:** The animals are fed concentrate feed as per BIS standard.
- **Mating system:** Doom pigs are mostly allowed to naturally mate due to its ferocious nature. Training to boars and collection of semen is difficult in this breed.
- **Artificial Insemination:** Besides conservation of Doom pig, the centre is also engaged in popularizing the improved crossbred Rani Pig developed by ICAR-NRC on Pig. The Rani crossbred variety was distributed at farmers' field and maintained by artificial insemination by the semen produced from ICAR-NRC on Pig.

Mortality parameter: Mortality is very less. The pre- weaning mortality was 4.85 percent whereas, post weaning mortality was observed is 4.92 percent.

Causes of mortality:

- a) Poor mothering ability of the sow along with poor milk production caused weak and debilitated piglets resulting to death.
- b) Crushing injury to piglets caused preweaning mortality
- c) Heat stroke caused post weaning mortality

Measure to be taken for minimizes mortality:

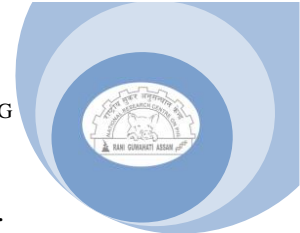
Management measures

1. Apart from routine management practices, farrowing pen is washed with disinfectant thoroughly by Phenyl to prevent piglet diarrhea.
2. Sows are very ferocious during farrowing. Sows did not need any help at the time farrowing. Just after birth each piglets was cleaned with clean cloth and the mucous was removed from its mouth and nostrils.
3. Intramuscular injection of iron (dextran injection/ Imferon) was given to the new-born piglets on day 4th and 14th of the day of birth.
4. The newly born piglets were provided with bedding material during winter season to prevent cold effects.
5. The piggery shed was cleaned daily and the manure removed completely from the floor and wall through manual scraping.
6. To reduce heat stress water is sprinkled over the animal during summer season.
7. The piglets were vaccinated against swine fever. Deworming was also carried out soon after weaning and repeated if needed.

Prophylactic measures

Following drugs as a prophylactic measures are given to prevent the mortality of piglets

- (a) All the pigs were vaccinated against the Swine Fever vaccine and FMD vaccine.
- (b) Lactating sows are given Increlac bolus to increase milk production.
- (c) Animals are allowed to feed with balance ration twice daily and water *ad-libitum*.



- (d) Pig sheds were clean daily and kept dry to prevent from any abnormal disease condition.
- (e) Regular Veterinary service and treatment to disease condition/ disorder to prevent from mortality.
- (f) The farrowing pens were kept clean and dry to prevent from piglet diarrhoea.
- (g) The iron injection (Inferon) to all the piglets at 4th and 14th days of age.
- (h) The pigs were dewormed regularly (Albendazole, Fenbendazole, Ivermectin alternatively) to control parasitic infestation.
- (i) For ecto-parasite, regular administered Ivermectin either injection or oral, besides dipping with 2% Butox before winter season.

Disposal of disease carcass: Trench burial method: Carcass of pigs disposed of by trench burial method approximately 100 meter away from the shed. Generally, a trench was made large enough to accommodate the carcasses. Once buried, pigs were slowly decomposed. The minimum depth of trench pit was 3- 4 feet length and minimum depth of 6 feet. The carcass completely covered with enough quantity of belching powder and lime powder.

Extension programme with success story:

Training programmes are organized by KVK, Dudhnoi, Goalpara for scientific management and popularization of pig breeding farms in the district. Besides conservation of local germplasm, popularization of crossbreed animal, Rani, developed by ICAR-NRC on Pig was initiated at farmers' field. After distribution of animal, further propagation was done by extensive artificial insemination at farmers' field. A pig village was adopted in the district for increasing numbers of quality piglets in Goalpara district. More than 900 numbers of piglets were produced through AI at farmers' field. Three years back a society named as Sarpak Livelihood Society was formed to look after the whole methodology of piglet production. At present the society has enhanced their areas of operation from one village to three villages. It is expected that there will be no shortage of quality piglets for starting a new pig farm in the near future.

Training programs at Institute:

- a) Hygienic and scientific slaughter of pig for Veterinary officials of Govt., A.H and Veterinary Deptt., Meghalaya on 17.04.17.
- b) 3 days training on pig rearing practices in Garo hills area of Meghalaya on 28.08.017 to 31.08.17

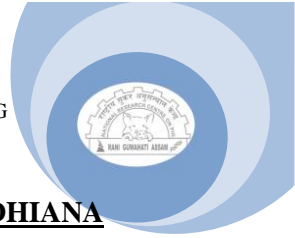
At the farmer's field:

- a) Pig farming opportunities in Goalpara district on 15.06.017 at S.D.A.O office, Dudhnoi
- b) Scientific rearing of upgraded pig from 21.07.17 to 22.07.17 in collaboration with IIE, Guwahati and Extension and Education Deptt. of C.V.Sc, Khanapara, Deptt of Forest, Govt of Assam, at Rangpahar
- c) Care and management of A.I born piglets on 29.07.17 at Pachim Dairang
- d) Health and Nutritional management of weaned piglets on 01.08.17 at Rangpahar
- e) Pig rearing practices on 24.09.17 at Sesapani.

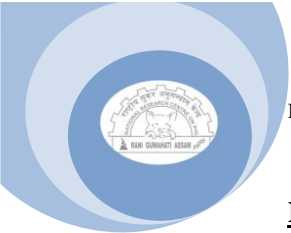
Doom Pig conservation approach:

- a) Identification and survey at breeding tract.
- b) Identify the native farmers of breeding tract and increase the awareness among them.
- c) Regular training of farmers' regarding importance of these germplasm and dissemination of scientific management practice to conserve the breed.
- d) Distribution of few piglets to the interested farmers.
- e) Conservation strategy is initiated for collection of semen and dissemination of quality germplasm at the breeding tract through artificial insemination.
- f) Distribution of superior boars to the breed rearers.

<p>Female Doom Pig</p>	<p>Male Doom Pig at the age of 8 months</p>
<p>Glimpses of training</p>	
<p>Doom pig conservation unit</p>	<p>Doom pig at farm</p>
<p>Doom pig at native breeding tract</p>	

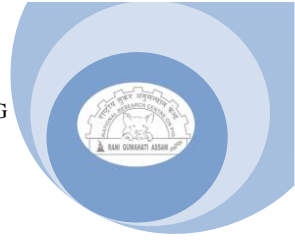
**GURU ANGAD DEV VETERINARY AND ANIMAL SCIENCE UNIVERSITY, LUDHIANA**

Looking to the scope and importance of piggery sector in the state of Punjab the Council sanctioned one centre of All India Coordinated Research Project on Pig at College of Veterinary Sciences, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana during 20017-18. The work for establishment of pig farm at the center was initiated during the reporting period.



KRANTISINH NANA PATIL COLLEGE OF VETERINARY SCIENCE, SHIRVAL

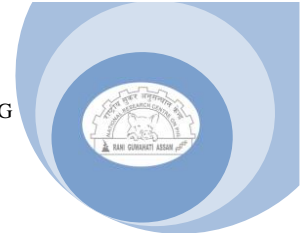
Looking to the scope and importance of piggery sector in the state of Maharashtra the Council sanctioned one centre of All India Coordinated Research Project on Pig at Krantisinh Nana Patil College of Veterinary Science, Maharashtra Animal and Fishery Sciences University, Shirval. The work for establishment of pig farm at the center was initiated during the reporting period.



Mega-Seed Project on Pig

**NAME OF THE CENTRE AND INCHARGE**

Mega-seed Project on Pig		Name of Incharge
Old centers		
1.	College of Veterinary Science, Assam Agricultural University Khanapara, Guwahati, Assam-781022	Dr. D. Kalita
2.	College of Veterinary Science, Birsa Agricultural University, Kanke, Ranchi, Jharkand -834006	Dr. Ravindra Kumar
3.	ICAR-RC for NEH region Jharnapani, Medziphema, Dimapur, Nagaland 797 106	Dr. Mahak Singh
4.	A.H. & Vety. Farm Complex, Veterinary Department, Govt of Mizoram, Selesih, Aizawl, Mizoram – 796014	Dr. K. Lalnithanga
5.	Kerala Veterinary and Animal Science University, Pookode, Kerala-680651	Dr. A.P. Usha
6.	Animal Resource Development Department, Govt. of Tripura, Agartala, Tripura-799006	Dr. Subir Das
7.	Veterinary Services, Dept. of Animal Husbandry and Veterinary Services, Krishi Bhawan, Todong, Gangtok -737102, Sikkim	Dr. Shaman Rai



INTRODUCTION

1. Brief history:

Rapid urbanization and increased population pressure has resulted in increased demand for quality pork production. The major constraints like non-availability of superior quality seed stock, low-cost feed ingredient, imbalanced ration at reasonable price, unscientific management or inadequate knowledge, lack of financial support as well as marketing channel etc. are hampering the growth and development of piggery sector. But a sizeable number of unemployed educated youth have taken up this venture as means of their livelihood/occupation or as subsidiary income generation. This has opened up a possibility of development of piggery sector of the country.

The mega-seed project on pig was launched by ICAR in 2008. National Research Centre on Pig is coordinating the Mega-seed Project on Pig. The project is having four centers as follows:

- Assam Agricultural University, Khanapara
- Birsa Agricultural University, Ranchi
- ICAR RC for NEH, Nagaland Centre, Medziphema
- State Veterinary Department, Aizawl, Mizoram

Subsequently, looking at the demand of quality pig germplasm four more centres have been sanctioned in XIIth Five Year Plan. However, from 1st April, 2017 the centres of Chhattisgarh Kamdhenu Vishwavidyalaya, Durg and State Animal Husbandry and Veterinary Department, Govt. of Arunachal Pradesh were discontinued. New Mega Seed Centre on Pig was initiated in Dept. of Animal Husbandry and Veterinary Services, Govt. of Sikkim.

The project was launched with an objective to produce and supply quality swine germplasm to the local farmers.

2. Objectives:

- Production of at least 900 piglets by each of the centre to target supply of quality pig germplasm covering 300 farm families per annum
- Capacity building in institutes to produce targeted quality piglets
- Initiating gender friendly pro-poor growth through improved pig husbandry

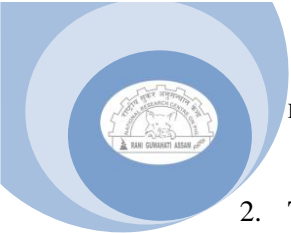
3. Target Fixed:

- Production of upgraded variety of quality piglets and increased farm income through technology lead growth

4. Activity assigned and target fixed

General:

1. Extension activities of the programme including animal distribution record should be maintained as per Direct Benefit Transfer (DBT) norms of Govt. of India.



2. The Mega Seed on Pig centers should act as a capacity building unit in the locality. For this purpose, the farm should act as demonstration unit and necessary training to the stake holders may be provided by each centre.
3. Impact assessment along with economics of production at farmers' door need to be carried out by individual centers through third party/outside agency/ICAR-NCAP.
4. Number of farm families/ beneficiaries should be included in the report.
5. The centres should adopt AI technology as a part of breeding programme.
6. Changing of PI of the centres should be done in consultation of Project Coordinator. In-charges should have specialization in Animal Genetics and Breeding, however, scientists from other discipline may be associated with the project as Co-PI.
7. The centers initiated in XIIth Five Year Plan should achieve the target of piglet production.
8. The coordinating centre needs to visit the proposed new location of shifting of Mega Seed Project on Pig for feasibility study.

Centre wise recommendation:

AAU, Khanapara:

1. The centre should maintain only 50% Hampshire crossbred population with a target to produce 1500 piglets in 2017-18.
2. The centre should submit the AUC/UC in time.
3. The infrastructure must be created in the new location of the Mega Seed Project on Pig by 31st March, 2018. Till the infrastructure made in the new location (Lakhimpur), the centre should maintain animals in the present location.
4. Name of the PI for new location should be communicated to the coordinating centre at the earliest.

BAU, Ranchi:

1. The centre should maintain Jarshuk cross with a target to produce 1000 piglets in 2017-18.
2. Compile the generation-wise data of Jharsuk for each generation (as per format of TANUVAS) and send to coordinating unit by 15th August, 2017.
3. AI should be initiated at the earliest.

ICAR RC for NEH, Nagaland:

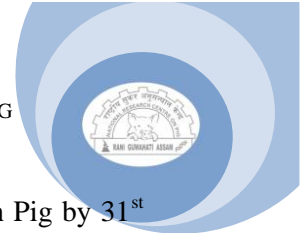
1. The centre should maintain 50% exotic inheritance crossbred (Ghungroo X Hampshire) pigs with the target to produce 1000 piglets in 2017-18.

A.H. & Veterinary Department, Government of Mizoram:

1. Necessary steps need to be taken to achieve production of 900 piglets/annum of pure Large White Yorkshire during the year 2017-18.

Kerala Veterinary and Animal Science University, Mannuthy:

1. The centre should target producing 1000 piglets during the year 2017-18.



2. The infrastructure must be created in the new location of the Mega Seed Project on Pig by 31st March, 2018. Till the infrastructure made in the new location (Pookode), the project will be operative from present location.
3. Name of the PI for new location should be communicated to the coordinating centre at the earliest.

ARDD, Tripura:

1. Production target should be accelerated. Necessary decision for continuation of the project will be taken after submission of the production performance report to the coordinating unit by 31st October, 2017.
2. The centre should target producing 900 piglets during the period 2017-18.

5. Action point discussed in Review Meet of 'All India Coordinated Research Project on Pig' and "Mega Seed Project on Pig" held at Sri Venkateswara Veterinary University, Tirupati on 1-2nd July, 2017.

AAU, Khanapara

Recommendation	Action Taken
General: <ol style="list-style-type: none"> 1. Extension activities following Direct Benefit Transfer (DBT) norms 2. Capacity building through demonstration and training 3. Impact assessment through third party/outside agency/ICAR-NCAP. 4. Inclusion of number of farm families/ beneficiaries in the report. 5. Adoption of AI technology 	<ol style="list-style-type: none"> 1. Initiated 2. Done 3. Initiated 4. Done 5. Done
Centre wise recommendation: <ol style="list-style-type: none"> 1. Target to produce 1500 piglets 	<ol style="list-style-type: none"> 1. 1321 no. produced

BAU, Ranchi

Recommendation	Action Taken
General: <ol style="list-style-type: none"> 1. Extension activities following Direct Benefit Transfer (DBT) norms 2. Capacity building through demonstration and training 3. Impact assessment through third party/outside agency/ICAR-NCAP. 4. Inclusion of number of farm families/ beneficiaries in the report. 5. Adoption of AI technology 	<ol style="list-style-type: none"> 1. Initiated 2. Done 3. Initiated 4. Done 5. Yet to be done
Centre wise recommendation: <ol style="list-style-type: none"> 1. Target to produce 1000 piglets 2. Compilation of generation-wise data of Jharsuk cross 	<ol style="list-style-type: none"> 1. 872 no. produced 2. Done

ICAR RC for NEH, Nagaland Centre, Medziphema

Recommendation	Action Taken
General: <ol style="list-style-type: none"> 1. Extension activities following Direct Benefit Transfer (DBT) norms 2. Capacity building through demonstration and training 3. Impact assessment through third party/outside agency/ICAR-NCAP. 4. Inclusion of number of farm families/ beneficiaries in the report. 5. Adoption of AI technology 	<ol style="list-style-type: none"> 1. Initiated 2. Done 3. Initiated 4. Done 5. Done
Centre wise recommendation: <ol style="list-style-type: none"> 1. Target to produce 1000 piglets 	<ol style="list-style-type: none"> 1. 1018 no. produced



Veterinary Department, Government of Mizoram, Aizawl

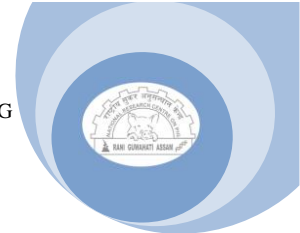
Recommendation	Action Taken
General: 1. Extension activities following Direct Benefit Transfer (DBT) norms 2. Capacity building through demonstration and training 3. Impact assessment through third party/outside agency/ICAR-NCAP. 4. Inclusion of number of farm families/ beneficiaries in the report. 5. Adoption of AI technology Centre wise recommendation: 1. Target to produce 900 piglets	1. Initiated 2. Done 3. Initiated 4. Done 5. Done 1. 653 nos. Produced

Centers included during XIIth Plan and later:

Targets	KVASU, Kerala	ARDD, Tripura	State Dept. Sikkim
Submission of AUC	Yes	Yes	Yes
Final Report submission	Yes	Yes	Yes
Breed maintained	LWY cross	LWY, Landrace	Rani/LWY
Construction work		Done	Done
Piglet production	1018	675	-

5. Salient Achievements of Mega Seed Project on Pig till Date:

Under this project improved variety of piglets were produced and distributed to the farmers. Total 18027 piglet of improved variety were produced for distribution during XIIth Plan Period. A total of 5879 nos. of improved variety of piglets were produced for distribution in 2017-18.



ASSAM AGRICULTURAL UNIVERSITY, KHANAPARA, GUWAHATI

Rapid urbanization and increased population pressure has demanded the scope for production of qualitative and quantitative meat in the country particularly in the North Eastern region. The major constraints like non-availability of superior quality seed stock, imbalanced ration at reasonable price, unscientific management or inadequate knowledge, lack of financial support as well as marketing channel etc. are hampering in the growth and development of pig husbandry. But a sizeable number of unemployed educated youth, retired persons from the affluent families / societies have taken up this venture as means of their livelihood / occupation or as subsidiary income generation. This development has opened up a new chapter in the entire scenery of piggery development in the state. The AICRP on pig, AAU, Khanapara has played an important role since its inception for development of pig production in the state and neighbouring states through various ways like attending awareness program, exhibition, demonstration, distribution of leaflet/booklet, selling of piglets at nominal price.

The Indian Council of Agricultural Research (ICAR), Govt. of India has sanctioned Mega Seed Project on Pig to the Assam Agricultural University, Khanapara. Accordingly, the activity of the project was started initially with four breeding boars and 13 Sows of 50%H genetic group of pigs purchased from the AICRP on Pig as one of the breeding / foundation stock under the Mega Seed Project during 2008. The three genetic groups viz. 50% Hampshire, Ghungroo and T&D were maintained under the Mega Seed Project on Pig. The genetic groups are quite popular among the farmers and there is a demand for quality piglets.

Herd Strength:

Age in months	Opening Balance on 1. 4.17		Total	Closing Balance on 31.3.18		Total
	Male	Female		Male	Female	
0 - 6 week	197	174	371	82	98	180
6wk - 5m	33	29	62	101	63	164
5m - 8 m	12	19	31	17	23	40
Over 8 month	14	106	120	15	91	106
TOTAL	256	328	584	215	275	490

Stock Continuity:

Sex	Stock 1.4.17	Addition			Deletion				Stock as on 31.03.18
		Birth	Purchase	Total	Sale	Slaughter	Died	Total	
Male	256	700	-	956	700	7	34	215	215
Female	328	621	-	949	644	-	30	275	275
Total	584	1321	-	1905	1344	7	64	490	490

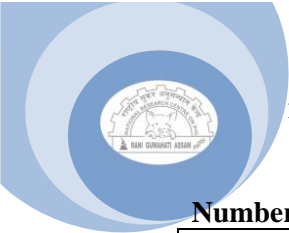
Average Litter size at birth and at weaning

Genetic Group	Number of Litter	Litter Size at Birth			Litter Size at Weaning		
		Male	Female	Total	Male	Female	Total
50%H	166	4.22±0.15	3.74±0.15	7.96±0.11	3.60±0.13	3.06±0.14	6.66±0.13

Pre weaning and Post weaning mortality

Genetic Group	Pre weaning mortality (%) (0-42 d)	Grower Mortality (%) (42 d-5 m)	Finisher (%) (5 m – 8 m)	Adult Mortality (%) (over 8 m)
50%H	2.20 (29)	2.40(31)	3.23 (1)	2.50 (3)

Within parenthesis are the number of died animal



Number of piglets produced during the reporting period: April 2017-March'2018

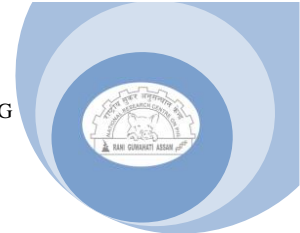
	Total no. of piglets born			Total no. of piglets died			Total live piglets produced		
	M	F	T	M	F	T	M	F	T
1 st quarter	119	99	218	13	7	20	106	92	198
2 nd quarter	207	179	386	5	6	11	202	173	375
3 rd quarter	196	176	372	7	8	15	189	168	357
4 th quarter	178	167	345	9	9	18	169	158	327
Annual	700	621	1321	34	30	64	666	591	1257

Number of piglets sold during the reporting period:

	Total no. of live piglets Produced			Total no. of piglets Sold			Amount realized (Rupees)
	M	F	T	M	F	T	
1 st quarter	106	92	198	219	209	428	Rs.42,03,200 /-*
2 nd quarter	202	173	375	109	104	213	
3 rd quarter	189	168	357	229	173	402	
4 th quarter	169	158	327	105	108	213	
Annual	666	591	1257	662	594	1256	

* Total receipt included from piglets and adults

	
Para Vet training pro. of Deptt. Animal Husbandry and Veterinary, Govt. of Sikkim	Para vet of Deptt. of Animal Husbandry & Veterinary, Govt. of Sikkim
	
50% H.50% I, under MSP on Pig, AAU, Khanapara	50% H 50% I Breeding Boar, Under MSP on Pig, AAU, Khanapara
	
Weaned Piglets of 50% H 50% I Under MSP on Pig, AAU, Khanapara	Hands on training for Farmers of M/S Mothonga Agro-Producers Co.Ltd



BIRSA AGRICULTURAL UNIVERSITY, RANCHI, JHARKHAND

Jharkhand is one of the leading states in the country where piggery has been accepted by rural people as a remunerative enterprise. The farmers have adopted the rearing of our improved variety JHARSUK with great enthusiasm which provided tremendous employment opportunity to local people through integrated piggery development programme. Now-a-days farmers are getting benefit of Mega seed project. The MSP on pig supplying improved variety of pig named JHARSUK to the farmers and gradually farmers are interested to rear this variety because of 2-3 times economical as comparison to desi pigs under village management conditions resulted into progressive increases in the number of pig breeders. Approximate more than 300 second line pig breeder has been developed which are supplying improved germplasm of pig to the neighboring farmers. But still the centre not able to fulfill the 100% demand of piglets in Jharkhand. Presently, approx 90% populations of pig in Jharkhand are of indigenous/local type (as per census 2012). But gradually the centre will be able to replace our local pig with improved variety. Success of piggery development programmes in target districts depends on regular supply of “Jharsuk” pigs to farmers because desi pigs of the area can safely be replaced by identical colour “Jharsuk” pigs with significant increase in growth rate and reproductive performances. Demands for “Jharsuk” pigs are increasing day by day. In Jharkhand, pig production has assumed great importance even among extremely low resource poor farmers.

Herd dynamics

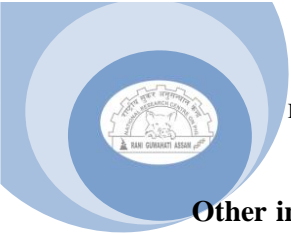
Sl. No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1.	Piglet (up to 42 d)	80	1340		73	37		300
2.	Grower (42d-5 m)	53	-		113	37	858	152
3.	Finisher (5m- 8 m)	39	-		3		4	41
4.	Breeding Female	89	-		12	40	30	104
5.	Boar	26	-		3	5	29	24
Grand total		287			204	119	921	621

Number of piglets produced during the reporting period

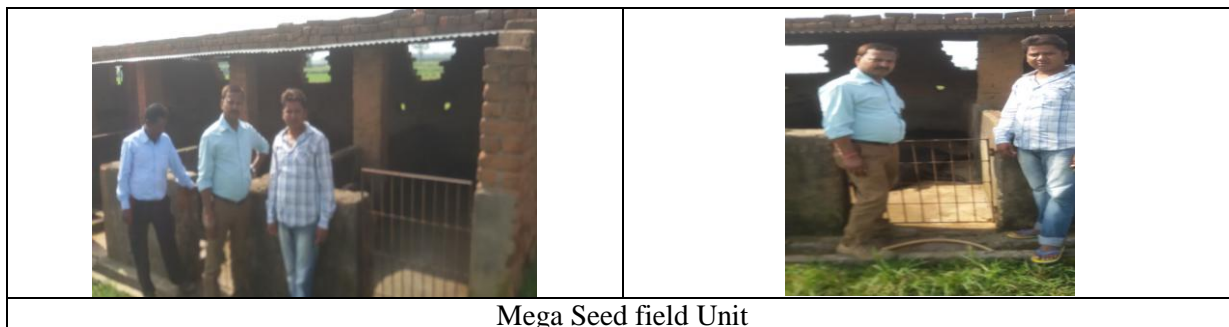
	Total no. of piglets born			Total no. of piglets died			Total no. of piglets produced		
	M	F	T	M	F	T	M	F	T
1 st quarter	181	148	329	16	12	28	165	136	301
2 nd quarter	132	162	294	6	7	13	126	155	281
3 rd quarter	181	195	376	41	42	83	140	153	293
4 th quarter	157	184	341	31	33	64	126	151	277
Annual	651	689	1340	94	94	188	557	595	1152

Number of piglets sold during the reporting period

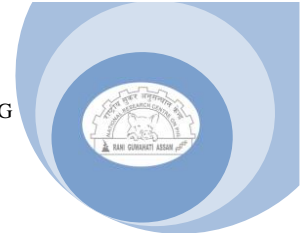
	Total no. of piglets born			Total no. of piglets sold			Amount realized (Rupees)
	M	F	T	M	F	T	
1 st quarter	165	136	301	49	56	105	1,82,408.00
2 nd quarter	126	155	281	148	134	282	6,40,371.00
3 rd quarter	140	153	293	100	78	178	3,36,417.00
4 th quarter	126	151	277	165	191	356	6,72,852.00
Annual	557	595	1152	462	459	921	18,32,048.00



Other information: One of our progressive pig farmers Sri Jarome Soreng has been awarded as best innovative Farmers at IARI, New Delhi.



Mega Seed field Unit



ICAR-RC FOR NEH REGION, JHARNAPANI

Nagaland, one of the hilly states of Eastern Himalaya, is inhabited by tribal communities which are mostly non-vegetarian and hence the demand for animal protein is much more compared to other parts of the country. Pig is one of the most important livestock which play an important role in improving the socio-economic status of the tribal and weaker section of the society. Though among various livestock, pig alone accounts for 58.4 % of the total livestock population in Nagaland, there still exists a wide gap between the demand and availability of pork mainly due to rearing of non-descript local pigs which have very poor growth and production. Moreover, the majority of the farmers are fattener farmers. Therefore, the need of the hour is to facilitate a shift in production pattern by way of introducing quality pig germplasm with superior genetic merit and production potential.

Keeping this fact in view, an attempt has been made to propagate quality pig germplasm under “Mega Seed Project on Pig” at the centre w.e.f November, 2008. Under the Mega Seed Project on pig, a total of 4877 no. of piglets have been distributed till date for promotion of breeding in Nagaland, Assam, Manipur and Arunachal Pradesh. Many entrepreneurs have come forward to take up pig breeding and have generated self employment. Under the Mega seed program, ICAR Research Complex has conducted awareness campaign, training cum demonstration for promotion of quality germplasm and scientific rearing practices of pig for better income and sustainable production.

Herd dynamics:

Sl. No.	Categories	Opening Balance	Additions			Disposal		Closing balance
			Birth	Transfer	Death	Transfer	Sold	
1	Piglets (upto 42 d)	72	872	0	198	0	638	108
2	Grower (42 d –5 m)	12		4*		12*		4
3	Finisher (5 m- 8 m)	14		12*		7*		19
4	Breeding female	62		5*			12	55
5	Boar	5		2*			4	3
Grand Total		165		23	198	19	654	189

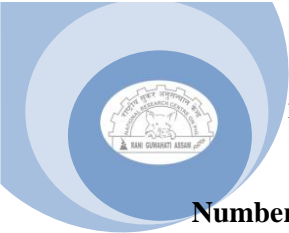
*selection, addition and transfer within farm between herds of different age groups.

Genetic constitution breeding stock maintained at the centre as on 31.03.2018

Age Group	Ghungroo	Hampshire	Cross Breed	Total
Replacer	0	0	23	23
Sow	10	0	48	58
Boar	0	0	3	3
Total	10	0	74	84

Number of piglets produced during the reporting period:

Quarter	Total piglets Farrowed			Total piglets died			Total piglets produced		
	M	F	T	M	F	T	M	F	T
1 st	176	167	343	40	45	85	136	122	258
2 nd	77	88	165	18	12	30	59	76	135
3 rd	108	93	201	22	32	54	86	61	147
4 th	95	68	163	20	9	29	75	59	134
Annual	456	416	872	100	98	198	356	318	674



Number of piglets/adult animal sold during the reporting period:

Quarters	Total no. of piglets produced			Total no. of piglets sold.			Total no. of adult sold			Amount realized (rupees)
	M	F	T	M	F	T	M	F	T	
1 st	136	122	258	103	83	185	0	5	5	
2 nd	59	76	135	78	76	154	0	0	0	
3 rd	86	61	147	59	76	135	4	1	5	
4 th	75	59	134	101	62	169	0	6	6	
Annual	356	318	674	341	297	643	4	12	16	

Other information you want to furnish in project:

Artificial insemination in pig has been introduced and popularized in Nagaland to enhance the production of piglets from superior breeding stock available under Mega Seed Project on Pig. The performance appraisal of artificial insemination program from adopted organized farms and farmer at field level were conducted. The conception rate was recorded to be 58.59 % in the MSP farm following double insemination with average litter size 9.47. The low conception rate and longer heat interval mainly due to the overage parent stock. Also the poor housing system is a big factor in the drop of production. However, in field condition the conception rate was increased from previous years to 89.48 with litter size averaging 10.06. It may be attributed to the younger stock maintained at field level and also the trainings imparted to farmers. Over 600 farmer beneficiaries were benefited through the availability of better quality piglets and semen for Artificial insemination from the centre.

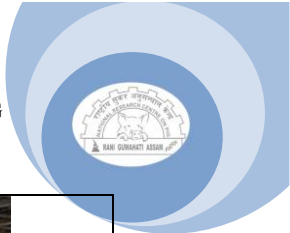
The Centre conducted four trainings for farmers which are given below:

1. Promotion of pig breeding through Artificial insemination. 28-29 June 2017.
2. Five Days course on boar training, semen collection, processing and basic semen analysis. 21-25 July 2018.
3. Integrating Fish farming with pig and poultry. 20-21 October 2017.
4. Artificial insemination in pig: Technology to boost quality piglet production. 2-4 November 2017.

Performance of AI conducted at farm and field level

Location of AI adopted	No. of inseminations	No. of animals farrowed	Conception rate (%)	Service per conception	Litter size average
MSP Pig Farm	157	92	58.59	1.71	9.47 (4-16)
Medziphema	149	140	93.96	1.06	9.09 (4-17)
Kohima Area	67	52	77.61	1.29	9.2 (6-15)
Dimapur Area	187	173	92.51	1.08	10.48 (2-18)
Jalukie	25	18	72	1.38	11.5 (5-14)
Total in field condition	428*	383	89.48	1.12	10.06 (2-18)

*Excludes Phek, wokha and karbi anglong areas due to insufficient data.



<p>Demonstration to lady farmers on semen processing</p>	<p>Training lady farmers on veterinary health care</p>
<p>Demonstration of boar training and semen collection</p>	<p>Demonstration of semen analysis to the farmers</p>
<p>Hands on training for farmers from Rongmei Baptist association</p>	<p>AI Training for Veterinarians from different state departments</p>
<p>Practical AI Training for Veterinarians from state departments</p>	



A.H. & VETERINARY FARM COMPLEX, AIZAWL, MIZORAM

Pig rearing is one of the most important sources of subsidiary income for the peasants and well to do and middle income groups of Mizoram. The meat of pork has always been the most common protein source for the Mizo people from early days. The local cost of pork in Mizoram is Rs 300/- per kg and thus allow farmers a good source of income.

In view of this scenario of meat production, especially pork, in Mizoram, the ICAR-Mega Seed Project on Pig was established since 2009 (29th March) in Mizoram with the main objective of production and dissemination of 900 Large White Yorkshire piglets per year in Mizoram. Although the target for piglet production is not yet achieved so far, we are expecting to achieve the target in the near future *i.e.*, within two to three years or even earlier.

Herd Dynamic:

Sl. No.	Categories	Opening Balance	Addition		Disposal			Closing Balance
			Birth	Transfer	Death	Transfer	Sold	
1.	Piglet (upto 42 days)	98	653	-	- 64	- 601	-	86
2.	Grower (43 d – 5m)	1		+ 601	- 9		590	3
3.	Finisher (5m – 8m)	37				-14		23
4.	Breeding Female	41		+14				55
5.	Boar	1						1
Grand Total		178	653	615	73	615	590	168

Numbers of Piglet produced during the reporting period:

Sl. No.		Total no. of piglet born			Total no. of piglet died			Total piglet produced		
		M	F	T	M	F	T	M	F	T
1.	1 st quarter	78	75	153	3	3	6	60	63	123
2.	2 nd quarter	75	84	159	8	6	14	59	68	127
3.	3 rd quarter	80	53	133	16	17	33	77	69	146
4.	4 th quarter	90	118	208	11	9	20	96	109	205
Annual		323	330	653	17	17	73	292	309	601

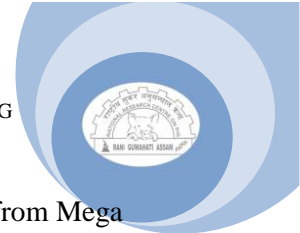
Numbers of Piglet sold during the reporting period:

Sl. No.		Total piglet produced			Total piglet sold			Amount realized (Rs.)
		M	F	T	M	F	T	
1.	1 st quarter	60	63	123	56	62	118	Rs. 3,54,000
2.	2 nd quarter	59	68	127	61	65	126	Rs. 3,78,000
3.	3 rd quarter	77	69	146	71	66	137	Rs. 4,11,000
4.	4 th quarter	96	109	205	101	108	209	Rs. 6,30,100
Annual		292	309	601	289	301	590	Rs. 17,73,100

Success Story of Beneficiaries:

The followings are few of success stories:

- (i) Name of Beneficiary : Mrs. Lalramngaihi
- Address : West Phaileng, Mamit District.
- Date of purchased : 4th April, 2017
- Number of animal purchased : 3(2 female+1 male)
- Purpose : Breeding purpose.



Mrs. Lalmangaihi purchased 3 piglets (1 male and 2 female) for breeding purpose from Mega Seed Pig Farm. Her main purpose is for breeding as there was no high yielding pig breed in her village. When we contact her she informed that her boar was already used for service and her sow had farrowed once and also added that her piglets are in high demand in her village.

- (ii) Name of beneficiary : Mrs. Lalchhuansangi
 Address : Ramhlun, Aizawl
 Date of Purchased : 13, April, 2017
 Number of animal purchased : 4(4 female)
 Purpose : For Breeding.

Mrs. Lalchhuansangi is a middle age woman who resides in Ramhlun locality of Aizawl. She had purchased 4 female piglets for breeding purpose. Her sow had already farrowed once with a average litter size of 8 piglets. All her sows are serviced by Artificial Insemination.

- (i) Name of Beneficiary : Mr. Rengbawia
 Address : Thingdawl, Kolasib
 Date of Purchased : 23th May, 2017
 Number of animal purchased : 2 (2 male + 1 female)
 Purpose : Fattening.

Mr. Rengbawia is Jhum cultivator who shifted to pig rearing. He had purchased 3 piglets for fattening and had sold both the fattener after 8 months and earned over Rs.100000/-. He had planned on increasing his pig farm.

- (ii) Name of Beneficiary : Mrs Laltanpuii
 Address : Serchhip, Serchhip District
 Date of purchased : 2th July, 2017.
 Number of Animal purchased : 4 (4female)
 Purpose : Breeding

Mrs. Laltanpuii of Serchhip purchased 4 female piglets for breeding purpose. As she is a recent widow having to support 2 children she had taken up pig rearing. 3 of her sow had already furrowed with the remaining 1 she reared for fattener since her heat was late. She had earned Rs 35000/- on slaughtering her pig and also earned Rs 60000/- on selling her piglets.

In addition to above farmers (beneficiaries), majority of our clients, who had purchased piglets for various purposes reported their success and progress in pig farming from different corner of Mizoram.



KERALA VETERINARY AND ANIMAL SCIENCES UNIVERSITY, KERALA

The Mega seed Project on Pigs was initiated in this Centre on 19-02-2015. In order to fulfil the technical programme of the project 21 Males and 66 Females are maintained as the breeding stock. As per the technical programme foundation stocks of indigenous pigs was established in the Centre and were used for cross breeding with Large White Yorkshire to evolve 75% Cross bred progenies.

Herd dynamics:

Sl. No	Categories	Balance on 1/4/17	Additions			Disposals			Closing balance
			Birth	Transfers	Purchased	Mortality	Sold	Culled	
1	Piglet (up to 42 d)	173	1089	0	0	71	974*		85
2	Grower (42 d - 5m)	25			4				11
3	Finisher (5 - 8 m)	7			10			22	68
4	Breeding female	74						27	66
5	Boar	18						2	20
	Grand total	447	1089		14	71	974	51	250

* Including Tribal Sub Project supply of 150 piglets

Number of piglets produced during the reporting period:

	Total no. of piglets born			Total no. of piglets died			Total no. of piglets produced		
	M	F	T	M	F	T	M	F	T
1 st quarter	149	108	257	9	6	15	140	102	242
2 nd quarter	139	157	296	9	12	21	130	145	275
3 rd quarter	109	136	245	7	8	15	102	128	230
4 th quarter	169	122	291	12	8	20	157	114	271
Annual	566	523	1089	37	34	71	529	489	1018

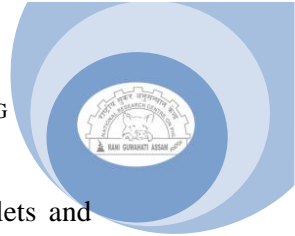
Number of piglets sold during the reporting period:

	Total no. of piglets produced			Total no. of piglets sold			Amount realized (Rupees)
	M	F	T	M	F	T	
							28.16 Lakhs
1 st quarter	140	102	242	100	94	194	
2 nd quarter	130	145	275	87	90	177	
3 rd quarter	102	128	230	80	93	173	
4 th quarter	157	114	271	158	122	280	
Annual	529	489	1018	425	399	824	

Success story:

The centre provides technical support to entrepreneurs on profitable pig rearing. Hands on training to progressive pig farmers are conducted in different aspects of such as breeding, nutrition, management, waste disposal and other problems related pig farming by experts. Many farmers have started pig farming as the source of income for livelihood.

Fattening Unit: Mr.Seby, Cheroor House, Vanissery, Kannur after attending training at AICRP Mannuthy during 2017. He has started breeding unit and started sale of fattening piglets. Now, he



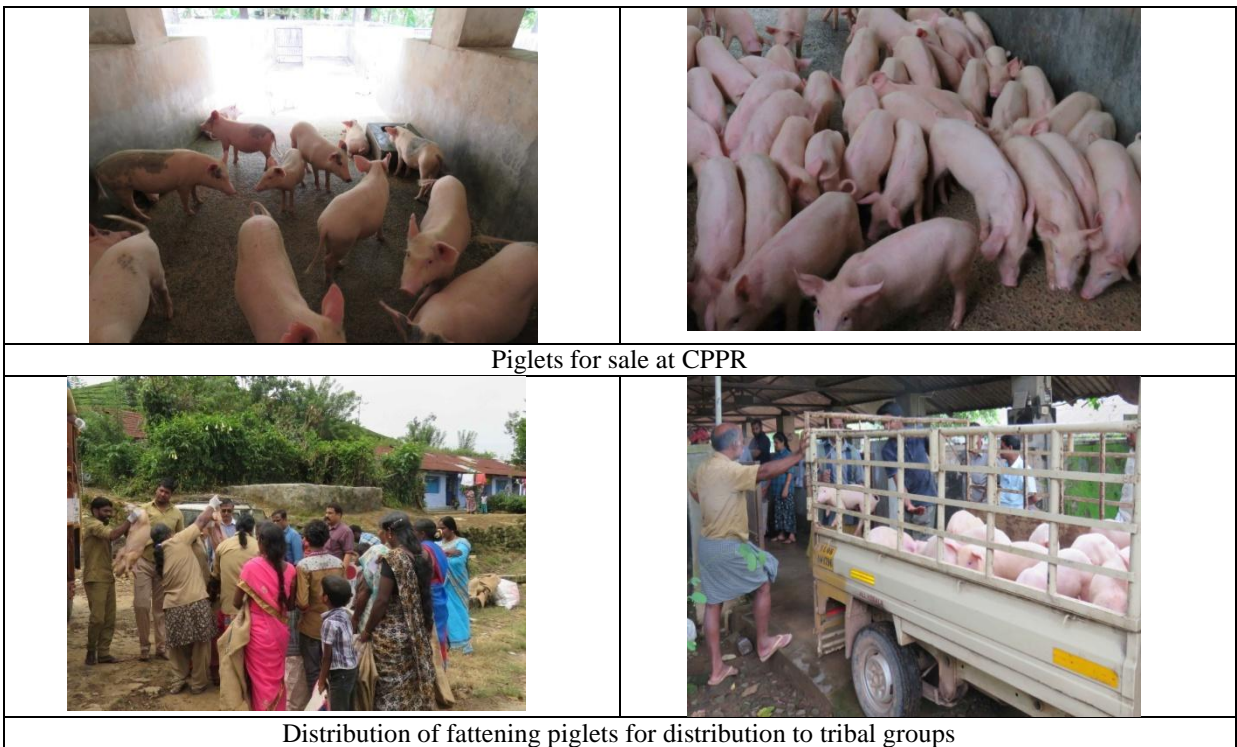
owns 55 breeding pigs and earns an income of Rs.45,000/month through the sale of piglets and breeding pigs.

Mr.George K.A, Divine Farms, Chalakkudi, Thrissur is having a fattening unit of more than 200 piglets. Initially they purchased all the fattening animals at the age of 3 months from CPPR, Mannuthy and run successfully his unit with an average income of Rs. 50000 per month.

Mr.Vinod Mohan., Kananchery House, Thodupuzha, Idukki district, Kerala is having a fattening unit of 22 piglets. He had undergone training at CPPR about scientific and profitable pig rearing in 2017. He is having an income of around 15000 from his fattening piggery unit.

Other information:

Under the Tribal Sub Plan ten piglets of 10 kg body weight were distributed to each of the fifteen tribal beneficiaries at Athirappally Panchayath, Chalakudy, Thrissur district Kerala.





ANIMAL RESOURCES DEVELOPMENT DEPARTMENT, TRIPURA

ICAR, Govt. of India has approved and sanctioned 04 new centres under Mega Seed Project on Pig during XIIth Plan Period, out of which one centre to be established in Tripura state. Accordingly, it was approved by the Government to declare Piggery unit of Composite Livestock Farm, Debipur under Sepahijala district as co-operating centre from Tripura state under Mega Seed Project on Pig during XIIth plan period. Beside this, as prerequisite, a MoU was signed between Director of ARDD, Govt. of Tripura and Director, NRC on Pig, ICAR, Rani as per Govt. approval.

Herd dynamics:

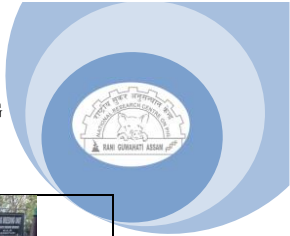
Date	LANDRACE							LARGE WHITE YORKSHIRE								
	Boar	Sow	Gilt	0-8 weeks		5-9 months [female]		Total	Boar	Sow	Gilt	0-8 weeks		5-9 months		Total
				M	F	M	F					M	F	M	F	
31.03.17		17	7	17	20	0	6	67	2	2	4	0	0	0	21	29
31.03.17		30	0	6	10	0	0	46	2	27	10	22	21	2	8	92

Number of piglets produced during the reporting period

	Total no. of piglets born					Total no. of piglets died					Total no. of piglets produced				
	M		F		T	M		F		T	M		F		T
	LR	LWY	LR	LWY		LR	LWY	LR	LWY		LR	LWY	LR	LWY	
1 st quarter	58	39	51	29	177	2	3	2	1	8	56	36	49	28	169
2 nd quarter	38	50	28	43	159	1	1	0	1	3	37	49	28	42	156
3 rd quarter	65	27	52	23	167	2	0	1	0	3	63	27	51	23	164
4 th quarter	38	67	37	54	196	4	3	2	1	10	34	65	34	53	186
Annual	199	183	168	149	699	9	7	5	3	24	190	177	162	146	675

Number of piglets sold during the reporting period:

	Total no. of piglets produced					Total no. of piglets sold					Amount realized (Rupees)
	M		F		T	M		F		T	
	LR	LWY	LR	LWY		LR	LWY	LR	LWY		
1 st quarter	56	36	49	28	169	32	14	38	10	94	1,91,500.00
2 nd quarter	37	49	28	42	156	37	65	21	52	175	3,71,500.00
3 rd quarter	63	27	51	23	164	76	21	62	21	180	3,84,500.00
4 th quarter	34	65	34	53	186	38	57	33	43	171	3,52,500.00
Annual	190	177	162	146	675	183	157	154	126	620	13,00,000.00





ANIMAL HUSBANDRY AND VETERINARY SERVICES, SIKKIM

Looking to the scope and importance of piggery sector in the state of Sikkim the Council sanctioned one centre of Mega Seed Project on Pig at Animal Husbandry and Veterinary Services, Govt. of Sikkim. The work for establishment of pig farm at the center was initiated during the reporting period.



Yorkshire, Rani



50% Hampshire, Rani



HDK



Farm Sign Board



Pig Farm Assam Lingzay, Sikkim.