

ANNUAL REPORT

AICRP ON PIG

&

MEGA-SEED PROJECT ON PIG

2014-15



भा.कृ.अनु.प.- राष्ट्रीय शूकर अनुसंधान केन्द्र
ICAR-NATIONAL RESEARCH CENTRE ON PIG
Indian Council of Agricultural Research
Rani, Guwahati, Assam, Pin -781 131, India



Annual Report (2014-2015)
AICRP on Pig
&
Mega Seed Project on Pig



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



NATIONAL RESEARCH CENTRE ON PIG

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Mega Seed Project on Pig

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

Annual Report (2014-2015)

AICRP on Pig

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Mega Seed Project on Pig

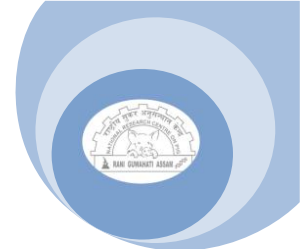
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Mega-Seed Project on Pig

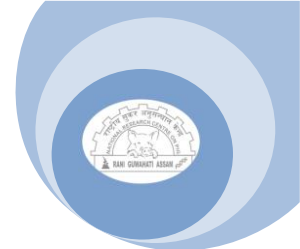
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AICRP on Pig

**NAME OF THE CENTRE AND INCHARGE**

AICRP Project on Pig		Name of Incharge
Old centres		
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, Birsa Agricultural University, Kanke, Ranchi, Jharkand -834006	Dr. L. B. Singh
4	College of Veterinary Science, Sri Venkateshwara Vety. University, Tirupati- 517 502, Andhra Pradesh	Dr. K. Sakunthala Devi
5	ICAR Research Complex for Goa, Ela, Old Goa-403402, Goa	Dr. E. B. Chakurkar
6	Indian Veterinary Research Institute, Izatnagar, U.P. -243122	Dr. G. K. Gour
7	Post Graduate Research Institute in Animal Sciences, Tamil Nadu Veterinary and Animal Sciences University, Kattupakkam, Tamilnadu-603203	Dr. H. Gopi
8	College of Veterinary Science & AH, CAU, Selesih, Aizawl, Mizoram-796007	Dr. Shyamsena Singh
9	School of Agricultural Science and Rural Development, Nagaland University, Medziphema, Nagaland-797 106	Dr. M. Catherine Rutsa
New Centers		
10.	Krishi Vigyan Kendra, NRC on Pig, Dudhnoi, Goalpara, Assam	
11.	Central Agricultural Research Institute, Port Blair, Andaman and Nicobar Island	
12.	Central Agricultural University, Imphal, Manipur	
13.	Indian Veterinary Research Institute, Eastern Regional Station, Kolkata, West Bengal	
14.	ICAR Research Complex for NEH Region, Tripura Centre, Agartala, Tripura	
15.	ICAR Research Complex for NEH Region, Barapani, Shillong, Meghalaya	



ACTIVITY ASSIGNED AND TARGET FIXED

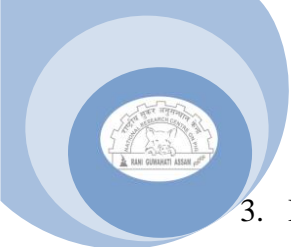
General:

1. Name of the project should be written as “ICAR-AICRP on Pig” by all the centers.
2. Technology developed by the individual centers need to be compiled and sent to the Project Coordinating Centre by 31st March, 2015.
3. The monthly report of piglet production and sale has to be sent to the Project Coordinating Centre by 28th of every month, preferably by mail. The period to be covered is from 25th of previous month to 24th of current month.
4. Each center needs to submit (A)UC before September month and quarterly expenditure statement.
5. The unspent amount, if any, should be refunded by each centre by the month of March of each financial year positively.
6. Annual report should be submitted for AICRP and Mega Seed Project on pig as per format provided by the month of April of the preceding financial year.
7. Seventy five percent of the revenue amount generated from sale proceed by each of the centres should be deposited to the respective institute/university and the remaining 25 percent should be sent to the coordinating unit (ICAR-NRC on Pig) for refund to ICAR. Out of the 75% amount retained by the institute/university, each centre can utilize 90% of this under contingency head to strengthen the project activities.
8. MOU for all the centers need to be renewed for each plan period as per format provided by Coordinating centre.
9. No additional budget will be provided in “salary component” for promotion of scientists to higher position other than sanctioned post.
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 centres is on breeding aspect, however scientists from other discipline may be associated with the project as Co-PI.

Breeding programme:

Each of the AICRP centers on pig should have to follow the following breeding plan:

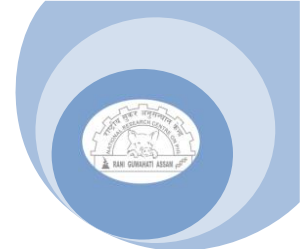
1. Crossbred animals of 75% exotic inheritance should be maintained.
2. Minimum 30 breedable sows unit should be maintained with a sex ratio of 1:3 and thus 10 sires (2 sires from each 5 unrelated sire lines) need to be maintained by each centre.



3. In-case of non-availability of sufficient number of 75% breedable female, the centre should develop a plan to produce it by 31st March 2015, positively. (Action to be taken: AICRP on pig centres at SASARD, Nagaland University, Medziphema and Central Agricultural University, Aizawl). These centers should send the report of stock position to the coordinating unit, by 31st March, 2015 for further review.

The performance of AICRP centers of SASARD, Nagaland University, Medziphema and Central Agricultural University, Aizawl centre was not upto the mark. It was suggested that ADG (AP&B) and Director, ICAR-NRC on Pig would visit the centre at the earliest to submit the report in this regard.

4. Selection of male animals should be based on index method of selection, including birth weight, weaning weight and 8 month body weight. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats). Index developed by centres should be reflected in the report.
5. The selection of male animals should preferably be done by considering cyto-genetic screening of population for all the genetic abnormalities. Report should be sent to coordinating unit.
6. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection. Data should be presented generation wise and genetic gain, selection differential needs to be calculated.
7. Target should be fixed to get approximately 3% genetic gain over previous generation with respect to 8 months body weight and litter size at weaning. The selection criteria should include the following:
 - a. 8 months body weight should be ≥ 75 kg for crossbred (except Tanye-Vo and Zowak crosses)
 - b. 8 months body weight should be ≥ 40 kg for crossbred (for Tanye-Vo and Zowak crosses)
 - c. Litter size at birth should be ≥ 8 nos
8. Three number of farrowing per sow need to be recorded. Three farrowing per sow should be completed in 2 years. Lifetime production traits should be recorded.
9. Artificial Insemination should be strictly implemented at all centers. Required extender for dilution of semen may be obtained from ICAR-NRC on pig.
10. Sire exchange programme among the different centers or introduction of new germplasm may be undertaken.

**Nutrition, Physiology and Management:**

1. Validation of existing feeding packages developed by AICRP on Pig centres at field level need to be carried out. Validated field level data needs to be recorded properly and included in report. Each feeding technology developed needs to be validated under the field condition with a minimum of five nos. of farmers before subsequent recommendation.
2. Efforts should be taken to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (temperature, humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis. The centers should work on shelter management and develop technologies to combat heat stress.
3. Each centre shall assess fertility status of pigs influenced by different production environments and identify the factors responsible for lowered fertility/reproductive disorders and develop technology for countering the same.

Health Management:

1. Regular monitoring of the pig 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 so as to keep it below 10%, 5% and 2%; respectively and suitable strengthening of bio-security measures at the farm to reduce pre and post weaning mortality.



INTRODUCTION

1. Brief history:

AICRP on pig started its journey 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

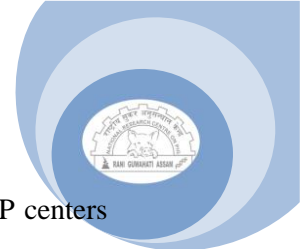
In 1992-93, two more centres at Kattupakkam (Tamilnadu) and Mannuthy (Kerala) was added in the AICRP network. During the year 2000-2001, two more centres at ICAR Research Complex, Goa and BAU, Ranchi were started to study the performance of indigenous pig for two generations followed by their crossbreeding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

Most recently, during the XII plan five more new centers were approved and was started functioning in 2014-15.

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

- Assam Agricultural University, Khanapara, Guwahati
- Birsa Agricultural University, Kanke, Ranchi
- 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 Research Complex for Goa, Old Goa.
- Central Agricultural University, Aizawl, Mizoram
- SASARD, Nagaland University, Medziphema.
- Krishi Vigyan Kendra, NRC on Pig, 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, Tripura Centre, Agartala, Tripura
- ICAR Research Complex for NEH Region, Barapani, Shillong, Meghalaya



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.

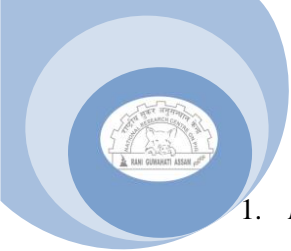
By the end of Vth five year plans, urgent need for improvement of indigenous pig was realized in view of their large number and high economic importance to the rural population. Simultaneously breeding needed to be put in place to evolve a suitable type of pig having optimum efficiency of feed conversion 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 as early as 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 ICAR-NRC on Pig, Guwahati in October, 2014.

4. Action point discussed in Review Meet of ‘All India Coordinated Research Project on Pig’ and “Mega Seed Project on Pig” held ICAR-National Research Centre on Pig, Rani, Guwahati on 10-11th October, 2014

AAU, Khanapara

Recommendation	Action Taken
Animal Breeding	
1. Crossbred animals of 75% exotic inheritance should be maintained by <i>inter-se</i> -mating	1. The genetic group 75% Hampshire attained 15 th generation and are maintained by <i>inter-se mating</i> at AAU, Khanapara centre.
2. 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.	2. 13 male and 43 female of 15 th generation pigs (3 rd crop) were selected as breeding stock. 40 gilts were placed for breeding during the later part of the year 2014-15.
3. Selection of male animals should be based on index method of selection, including birth weight, weaning weight and 8 month body weight.	3. The selection of male piglets (15 th generation) was done by index method including birth weight(X_1), weaning weight (X_2) and 8 month body weight (X_3). The Index used in selection of pigs is $(-0.483X_1+1.139 X_2 - 0.472 X_3)$ and selected from each sire family during later part of the year 2014-15.
4. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats).	4. The gilts were selected from each dam on the basis of dam’s record and number of functional teats.
5. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities.	5. In collaboration with the Department of AG&B, the cyto-genetic studies will be conducted at maturity age.



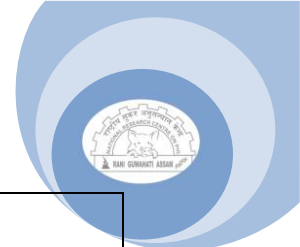
<p>6. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection.</p> <p>7. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/ICAR institutes. If required, training on AI may be obtained from NRC on pig.</p> <p>8. Three number of farrowing per sow need to be recorded. Three farrowing per sow should be completed in 2 years.</p>	<p>6. The reproductive and growth data will be analyzed for last 5 generations to calculate the genetic progress. However, the genetic progress of the last two generation <i>ie.</i> 14th & 15th will be presented at the time of workshop.</p> <p>7. The infrastructure for Artificial Insemination will be developed at AICRP Centre. A.I. is practiced in the Mega Seed Project with the help of Animal Reproduction and Gynecology Department, College of Veterinary Science, AAU, Khanapara.</p> <p>8. Three farrowings per sow are obtained in 2 years of age. Attempts are being made to reduce the inter-farrowing period.</p>
<p>Nutrition, physiology and management</p>	
<p>1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out.</p> <p>2. Compilation of technologies developed by the AICRP centers since its inception should be done.</p> <p>3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis.</p>	<p>1. A package of rations for pre-weaned piglets, grower and lactating sows have been developed by combining different ingredients and chemicals for optimum growth.</p> <p>a) Development of 50% Hampshire cross b) Development of 75.50% Hampshire cross c) Development of 87.50% Hampshire cross d) Construction of Selection Index</p> <p>3. The supplementation of 150 ppm Zinc with 15 ppm Copper can minimize the effect of heat and crowding stress due to its ameliorative effect results in increased body weight gain. Daily micro and macroclimatic data during the year 2014-15 were recorded.</p>
<p>Health Management</p>	
<p>1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest.</p> <p>2. Health calendar should be maintained by all the centres.</p> <p>3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes.</p> <p>4. Mortality parameters should be recorded with utmost care. Still birth/abortion/mummification should not be included while recording pre-weaning mortality.</p>	<p>1. The outbreak of Classical Swine Fever was informed immediately to the NRC on Pig and samples were sent for screening of antibody titer during the month of Jan-Feb, 2015.</p> <p>a) Iron injection given at 4th & 14th day. b) Deworming - At one and half months, two and half months, five months and at eight months (before breeding in female) and repeated six months interval. c) Vaccination: CSF and FMD was practised</p> <p>3. As per the guideline and proforma given by NRC on Pig, Rani, serum samples are regularly sent for screening.</p> <p>4. Mortality parameters were recorded and post-mortem exam was routinely conducted by Department of Veterinary Pathology, College of Veterinary Science, AAU, Khanapara. The mortality is recorded as per genetic group, Sex and age.</p>



5. Proper managemental 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 to keep below 10%, 5% and 2% respectively.	5. Special care was taken to reduce the mortality.
6. Steps need to be taken to strengthen the bio-security measures at the farm.	6. Bio-security measures were taken up.

BAU, Ranchi

Recommendation	Action Taken
General	
1. The monthly report of piglet production and sold has be sent to the Project Coordinating centre by 28 th of every month, preferably by mail. The period to be covered is from 25 th of previous month to 24 th of current month.	1. The monthly reports of piglet produced and sold (25 th of previous month and 24 th of current months) are sent regularly.
2. The centers need to submit AUC before September month of preceding financial year and UC quarterly, positively.	2. U.C. was sent on time.
3. The unspent amount, if any, must be refunded by the month of March of each financial year.	3. The unspent amount, has been refunded/adjusted in current financial year.
4. Final annual report should be submitted for AICRP on pig by the month of April	4. Final annual report for AICRP and MSP on Pig has been submitted as per format in time.
Animal Breeding	
1. 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.	1. Presently the centre achieved the target and the centre is maintaining 39 and 33 breeding females of T&D and 75% H, respectively.
2. Selection of male animals should be based on index method of selection, including birth, weaning and 8 month weight.	2. The centre started selecting males for breeding purpose on index method of selection including Birth, weaning and 8 months weight.
3. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats).	3. The centre is selecting females for breeding purpose on the basis of index method of selection including birth weight, weaning weight, litter weight at birth and weaning and number of functional teats.
4. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities.	4. Cyto-genetic analysis was not possible for lack of manpower.
5. The selection criteria: 8 months body weight should be ≥ 75 kg for crossbred	5. The selection criteria are being followed on the basis of body weight.
6. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection.	6. Data has been prepared showing progress in each generation over previous year due to genetic selection.
7. Artificial Insemination should be implemented at all centers.	7. Due to lack of facilities the centre was unable to start Artificial insemination.
8. Three number of farrowing per sow need to be recorded. Three farrowing par sow should be completed in 2 years.	8. Three farrowings per sow is recorded and was almost completed in two years.
Nutrition, Physiology and Management	
1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out.	1. Under process.
2. Compilation of technologies developed by the	2. Compilation of technologies is going on.



AICRP since its inception should be done.	
3. Efforts to develop location specific technologies for farmers to reduce the heat stress to the animals in changing climate scenario. Recording of daily micro and macroclimatic data.	3. Not done.
Health Management	
1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest.	1. No outbreak is recorded. It will be informed if any.
2. Health calendar should be maintained.	2. Health calendar is being maintained.
3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes.	3. Regular monitoring for infectious disease is being done and will be collaborated with NRC on pig if required.
4. Mortality parameters should be recorded with utmost care. Still birth/abortion/mummification should not be included while recording pre-weaning mortality.	4. Mortality parameters are being recorded.
5. Proper managemental care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively.	5. Proper management care is followed to reduce mortality in different stages.
6. Steps need to be taken to strengthen the bio-security measures at the farm.	6. The centre strengthened the bio-security measures at the farm.

KVASU, Mannuthy, Kerala

Recommendation	Action taken
General	
1. The monthly report of piglet production and sold has be sent to the Project Coordinating centre by 28th of every month, preferably by mail. The period to be covered is from 25th of previous month to 24th of current month.	1. Now, reports are being sent on last day of every month, hereafter it will be done on every 25 th as prescribed.
2. The centers need to submit AUC before September month of preceding financial year and UC quarterly, positively.	2. It is being done.
3. The unspent amount, if any, must be refunded by the month of March of each financial year positively.	3. Will be adhered to.
4. Final annual report should be submitted for AICRP and Mega-seed project on pig as per format provided by the month of April of the preceding financial year.	4. It is being followed.
Animal Breeding	
1. Crossbred animals of 75% exotic inheritance should be maintained by <i>inter-se- mating</i> .	1. It is being maintained.
2. 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.	2. It is being done.
3. Selection of male animals should be based on index method of selection, including birth weight, weaning weight and 8 month body weight.	3. It is being done. Fresh index based on current information will be evolved.



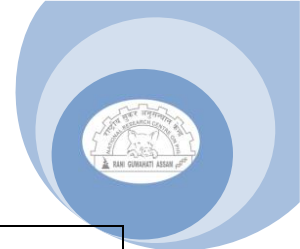
<ol style="list-style-type: none"> 4. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats). 5. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities. 6. The selection criteria should include following points: <ol style="list-style-type: none"> a. 8 months body weight should be ≥ 75 kg for crossbred b. Litter size at birth should be ≥ 7 7. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection. 8. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/CAU/ICAR institutes. If required, training on AI may be obtained from NRC on pig. 9. Three number of farrowing per sow need to be recorded. Three farrowing par sow should be completed in 2 years. 	<ol style="list-style-type: none"> 4. Will be attempted. 5. Will be attempted. 6. All suggestions will be scrupulously followed. 7. It will be done. 8. Training was undertaken from AICRP Goa unit. 9. It is being practiced.
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Nutrition, Physiology and Management

<ol style="list-style-type: none"> 1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out. 2. Compilation of technologies developed by the AICRP centers since its inception should be done. 3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis. 	<ol style="list-style-type: none"> 1. It is being carried out. 2. In the Annual Progress report all the research outcomes are being given. 3. A Master level research in this line has been just now completed and soon the result will be published.
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Health Management

<ol style="list-style-type: none"> 1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest. 2. Health calendar (as provided by coordinating centre) should be maintained by all the centres. 3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes. 4. Mortality parameters should be recorded with utmost care. Still birth/abortion/ mummification should not be included while recording pre-weaning mortality. 5. Proper managemental care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively. 6. Steps need to be taken to strengthen the bio-security measures at the farm 	<ol style="list-style-type: none"> 1. It is being adhered to. 2. Maintained 3. It is being practiced. 4. Being done. 5. All actions are being taken. 6. Measures are being taken.
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SVVU, Tirupati

Recommendation	Action Taken
Animal Breeding	
<ol style="list-style-type: none"> 1. Crossbred animals of 75% exotic inheritance should be maintained by <i>inter-se</i>-mating. 2. In-case of non-availability of 75% germplasm, the centre should develop a plan to produce it and then maintain it by <i>inter-se</i>-mating. 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 index method of selection, including birth weight, weaning weight and 8 month body weight. 5. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats). 6. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities. 7. The selection criteria should include following points: <ol style="list-style-type: none"> a. 8 months body weight should be ≥ 75 kg for crossbred 8. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection. 9. Artificial Insemination should be implemented at all centers. 10. Three number of farrowing per sow need to be recorded. Three farrowing par sow should be completed in two years. 	<ol style="list-style-type: none"> 1. Presently performance of only 75% crossbreds of LWY by interse mating is being studied. 2. 75% crossbreds of LWY are available at this center. 3. Breeding stock size containing 30 females bred to 10 boars to generate three crops of piglets (10 boars in each crop; each mated to 3 females). 4. Males are selected based on index method of selection including birth weight, weaning weight and 8 month body weight. 5. Females are selected based on index method of selection including litter size and litter weight at birth and weaning by giving weightage to number of functional teats for sows. 6. Selected animals were subjected for cytogenetic screening to find out genetic abnormalities if any. 7. Body weight recorded at 8 months. Weightage given for litter size at birth with ≥ 7 8. To indicate the progress data presented over previous generation. 9. Artificial insemination has been initiated. 10. Three number of farrowings will be completed in two years
Nutrition, Physiology and Management	
<ol style="list-style-type: none"> 1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out. 2. Compilation of technologies developed by the AICRP centers since its inception should be done. 3. Efforts to develop location specific technologies for farmers to reduce the heat stress to the animals in changing climate scenario. Recording of daily micro and macroclimatic data. 	<ol style="list-style-type: none"> 1. Validation of feeding packages at field level was initiated. 2. The available data on technologies developed at this centre is compiled. 3. Initiated.
Health Management	
<ol style="list-style-type: none"> 1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest. 2. Health calendar should be maintained 3. Regular monitoring of the pig herd for 	<ol style="list-style-type: none"> 1. Informed. 2. Health calendar is being maintained. 3. Emerging infectious diseases are recorded in



<p>emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes.</p> <p>4. Mortality parameters should be recorded with utmost care. Still birth/abortion/mummification should not be included while recording pre-weaning mortality.</p> <p>5. Proper managemental care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively.</p> <p>6. Steps need to be taken to strengthen the bio-security measures at the farm.</p>	<p>the farm and informed to coordinating unit.</p> <p>4. Regularly recording data on mortality parameters.</p> <p>5. Pre-weaning, Post-weaning and adult mortality percentages are within permissible level.</p> <p>6. All possible bio-security measures were adopted.</p>
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TANUVAS, Kattupakkam

Recommendation	Action Taken
General	
<p>1. The monthly report of piglet production and sold has be sent to the Project Coordinating centre by 28th of every month, preferably by mail. The period to be covered is from 25th of previous month to 24th of current month.</p> <p>2. The centers need to submit AUC before September month of preceding financial year and UC quarterly, positively.</p> <p>3. The unspent amount, if any, must be refunded by the month of March of each financial year positively.</p> <p>4. Final annual report should be submitted for AICRP and Mega-seed project on pig as per format provided by the month of April</p>	<p>1. Every month, piglet production is being regularly reported to the coordination centre. Sale details have been furnished from July 2014 and the same will be continued in future</p> <p>2. Actions are being taken to submit AUC and UC before the stipulated period</p> <p>3. Actions are being taken to refund the unspent amount, if any, during the last week of March</p> <p>4. Annual report has been submitted.</p>
Animal Breeding	
<p>1. Crossbred animals of 75% inheritance should be maintained by <i>inter-se</i> mating</p> <p>2. 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.</p> <p>3. Selection of male animals should be based on index method of selection, including birth weight, weaning weight and 8 month body weight.</p> <p>4. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats).</p> <p>5. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities.</p> <p>6. The selection criteria should include following points:</p>	<p>1. Crossbred pigs of 75% inheritance are being maintained by <i>inter-se</i> mating.</p> <p>2. At present 37 breedable sows and 14 sires are being maintained. The sex ratio of 1:3 is also being maintained.</p> <p>3. Selection is being practised based on birth weight, weaning weight and 6 month body weight. Efforts are being taken to follow index selection in pigs.</p> <p>4. Selection is being practiced based on litter size at birth and weaning, litter weight at birth and number of functional teats. Efforts are being taken to go for index selection in pigs.</p> <p>5. Blood has been collected and sent for cyto-genetics screening of population for all the genetic abnormalities to department of AGB, VC&RI, Namakkal results are availed.</p> <p>6. 8 months body weight in this centre is > 65 kg for crossbred and also Litter size at birth is</p>



<p>a. 8 months body weight should be ≥ 65 kg b. Litter size at birth should be ≥ 7 7. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection. 8. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/CAU/ICAR institutes. If required, training may be obtained from NRC on pig 9. Three number of farrowing per sow need to be recorded. Three farrowing per sow should be completed in 2 years.</p>	<p>> 7. 7. The collected data will be analysed statistically and the same will be presented by comparing with the performance of the previous generation 8. AI in pigs has already been standardized in other pure breeds at this farm. The same will be continued in crossbreds also. 9. Already two farrowing per sow has been recorded and the mating for the third farrowing was completed. The performance of third farrowing will be recorded and the same will be completed within two years.</p>
Nutrition, physiology and management	
<p>1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out. 2. Compilation of technologies developed by the AICRP centers since its inception should be done 3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis.</p>	<p>1. Actions are being taken for the validation of existing feeding packages developed by AICRP units at field level. 2. Action will be taken to compile the technologies developed by this center 3. Micro and macroclimatic data (Temp, Humidity and calculation of THI) shed are being collected regularly and it will be reported in the coming monthly reports</p>
Health Management	
<p>1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest. 2. Health calendar should be maintained. 3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes. 4. Mortality parameters should be recorded with utmost care. Still birth/abortion/mummification should not be included while recording pre-weaning mortality. 5. Proper managerial care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively. 6. Steps need to be taken to strengthen the bio-security measures at the farm.</p>	<p>1. No outbreak recorded for this year. If any, it will be promptly reported to NRC on pig 2. Health calendar is being maintained. 3. Action will be taken to regularly monitoring the pigs for emerging infectious diseases 4. Mortality parameters are properly recorded. 5. Scientific management practices are being carried out to reduce the mortality and at present the mortality rates are below the recommended level 6. 7. Steps taken: <ul style="list-style-type: none"> • Disinfectants such as Khorsolin and Potassium Permanganate were regularly used to clean the piggery shed. • Sokrena – water sanitizer were added to drinking water for sanitization. • Periodical cleaning and white washing of water troughs </p>



IVRI, Bareilly

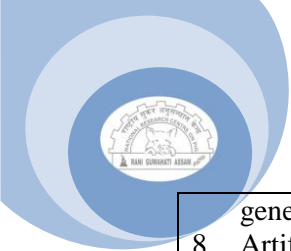
Recommendation	Action Taken
General	
<ol style="list-style-type: none"> 1. The monthly report of piglet production and sold has be sent to the Project Coordinating centre by 28th of every month, preferably by mail. The period to be covered is from 25th of previous month to 24th of current month 2. The centers need to submit AUC before September month of preceding financial year and UC quarterly, positively 3. The unspent amount, if any, must be refunded by the month of March of each financial year positively 4. Final annual report should be submitted for AICRP and Mega-seed project on pig as per format provided by the month of April. 	<ol style="list-style-type: none"> 1. Being submitted regularly on monthly basis 2. Already sent in-time 3. Refunded 4. Submitted
Animal Breeding	
<ol style="list-style-type: none"> 1. Crossbred animals of 75% exotic inheritance should be maintained by <i>inter-se</i> mating. 2. 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. 3. Selection of male animals should be based on index method of selection, including birth, weaning and 8 month body weight. 4. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats). 5. The selection of animals should preferably be done by considering cyto-genetics screening of population. 6. The selection criteria should include following points: <ol style="list-style-type: none"> a. 8 months body weight should be ≥ 75 kg for crossbred b. Litter size at birth should be ≥ 7 7. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection 8. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/CAU/ICAR institutes. If required, training on AI may be obtained from NRC on pig. 9. Three number of farrowing per sow need to be recorded. Three farrowing par sow should be completed in 2 years. 	<ol style="list-style-type: none"> 1. Achieved 2. Initiated 3. Under process 4. Under process 5. Under process 6. Achieved 7. Provided in the Annual Report 8. Initiated and will be used in few females 9. Followed
Nutrition, Physiology and Management	
<ol style="list-style-type: none"> 1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out. 2. Compilation of technologies developed by the AICRP centers since its inception should be done. 3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis. 	<ol style="list-style-type: none"> 1. Will be undertaken 2. Compiled with update 3. Will be undertaken



Health Management	
1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest.	1. Noted
2. Health calendar should be maintained.	2. Maintained
3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes.	3. Being done
4. Mortality parameters should be recorded with utmost care. Still birth/abortion/mummification should not be included while recording pre-weaning mortality.	4. Noted
5. Proper managemental care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively.	5. All efforts has been Initiated to control the same
6. Steps need to be taken to strengthen the bio-security measures at the farm.	6. Already taken

ICAR RC- Goa, Old Goa

Recommendation	Action taken
General	
1. The monthly report of piglet production and sold has be sent to the Project Coordinating centre by 28 th of every month, preferably by mail. The period to be covered is from 25 th of previous month to 24 th of current month.	1. Monthly reports are being sent regularly
2. The centers need to submit AUC before September month of preceding financial year and UC quarterly.	2. Followed
3. The unspent amount, if any, must be refunded by the month of March of each financial year positively.	3. It will be followed
4. Final annual report should be submitted for AICRP and Mega-seed project on pig as per format provided by the month of April of the preceding financial year.	4. Followed
Animal Breeding	
1. Crossbred animals of 75% exotic inheritance should be maintained by <i>inter-se- mating</i> .	1. It is maintained
2. 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.	2. It is being maintained
3. Selection of male animals should be based on index method of selection, including birth weight, weaning weight and 8 month body weight.	3. Followed
4. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats).	4. Followed
5. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities.	5. Followed in collaboration with ICAR-NBAGR
6. The selection criteria should include following points: a. 8 months body weight should be ≥ 75 kg for crossbred b. Litter size at birth should be ≥ 7	6. Followed
7. The data should be presented to indicate the progress made in each generation over previous ones due to	7. Followed



<p>genetic selection.</p> <p>8. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/CAU/ICAR institutes. If required, training on AI may be obtained from NRC on pig.</p> <p>9. Three number of farrowing per sow need to be recorded. Three farrowing par sow should be completed in 2 years.</p>	<p>8. It is being followed</p> <p>9. It is being followed</p>
<p>Nutrition, physiology and management</p>	
<p>1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out.</p> <p>2. Compilation of technologies developed by the AICRP centers since its inception should be done.</p> <p>3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis.</p>	<p>1. Carried out</p> <p>2. Compiled</p> <p>3. It will be taken up</p>
<p>Health Management</p>	
<p>1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest.</p> <p>2. Health calendar (as provided by coordinating centre) should be maintained by all the centres.</p> <p>3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes.</p> <p>4. Mortality parameters should be recorded with utmost care. Still birth/abortion/ mummification should not be included while recording pre-weaning mortality.</p> <p>5. Proper managemental care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively.</p> <p>6. Steps need to be taken to strengthen the bio-security measures at the farm</p>	<p>1. Noted</p> <p>2. Maintained</p> <p>3. Carried out</p> <p>4. Done</p> <p>5. It is followed</p> <p>6. It is followed</p>

CVSc & AH, CAU, Aizawl

Recommendation	Action taken
<p>General</p>	
<p>1. The monthly report of piglet production and sold has be sent to the Project Coordinating centre by 28th of every month, preferably by mail. The period to be covered is from 25th of previous month to 24th of current month.</p> <p>2. The centers need to submit AUC before September month of preceding financial year and UC quarterly, positively.</p> <p>3. The unspent amount, if any, must be refunded by the month of March of each financial year positively.</p> <p>4. Final annual report should be submitted by the month of April of the preceding financial year.</p>	<p>1. The monthly report of piglet production and sold had been sent to the Project Coordinating centre by 28th of every month</p> <p>2. UC had been sent quarterly</p> <p>3. There is no unspent amount</p> <p>4. Final annual report had already been sent</p>



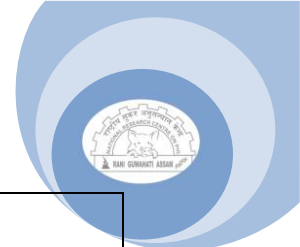
Animal Breeding	
<ol style="list-style-type: none"> 1. Crossbred animals of 75% exotic inheritance should be maintained by <i>inter-se-mating</i>. 2. In-case of non-availability of 75% germplasm, the centre should develop a plan to produce it and then maintain it by <i>inter-se-mating</i>. 3. Minimum 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 index method of selection, including birth weight, weaning weight and 8 month body weight. 5. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats). 6. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities. 7. The selection criteria should include following points: <ol style="list-style-type: none"> a. 8 months body weight should be ≥ 35 kg for crossbred b. Litter size at birth should be ≥ 7 8. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection. 9. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/CAU/ICAR institutes. If required, training on AI may be obtained from NRC on pig. 10. Three number of farrowing per sow need to be recorded. Three farrowing par sow should be completed in 2 years. 	<ol style="list-style-type: none"> 1. Will be done. 2. Necessary plan has been taken up for the production of 75% LWY piglets 3. 25 breedable females and 10 breeding males of 75 % LWY x 25% Zovawk have been produced. Another 13 females and 5 males of 5-8 months age group are also coming up. 4. Selection of breeding males and females were done by index method 5. Followed 6. Will be done 7. Followed 8. As only the first generation crops of 75 % LWY x 25% Zovawk have been produced, the progress made could not be shown. 9. Initiated 10. Three farrowings had been obtained from one sow in two year.
Nutrition, physiology and management	
<ol style="list-style-type: none"> 1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out. 2. Compilation of technologies developed by the AICRP centers since its inception should be done. 3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis. 	<ol style="list-style-type: none"> 1. Existing feeding packages developed by AICRP unit will be validated at field level. 2. Technologies are being compiled 3. At present, it may not be required as the climatic condition of the centre is very pleasant during summer. Daily micro and macroclimatic data are being recorded.
Health Management	
<ol style="list-style-type: none"> 1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest. 	<ol style="list-style-type: none"> 1. Being done



<ol style="list-style-type: none"> 2. Health calendar (as provided by coordinating centre) should be maintained by all the centres. 3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes. 4. Mortality parameters should be recorded with utmost care. Still birth/abortion/ mummification should not be included while recording pre-weaning mortality. 5. Proper managemental care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively. 6. Steps need to be taken to strengthen the bio-security measures at the farm 	<ol style="list-style-type: none"> 2. Individual health card is prepared to document symptoms of illness 3. Sending of blood, faeces, nasal samples to Pathology, Microbiology and Parasitology departments to find out the causative agents. 4. Followed 5. Proper managemental care are being followed to minimize the mortality in all age groups 6. Other sanitary and bio-security measures are being followed as per the standard procedure.
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SASARD, Nagaland

Recommendation	Action taken
General	
<ol style="list-style-type: none"> 1. The monthly report of piglet production and sold has been sent to the Project Coordinating centre by 28th of every month, preferably by mail. The period to be covered is from 25th of previous month to 24th of current month. 2. The centers need to submit AUC before September month of preceding financial year and UC quarterly, positively. 3. The unspent amount, if any, must be refunded by the month of March of each financial year positively. 4. Final annual report should be submitted for AICRP and Mega-seed project on pig as per format provided by the month of April of the preceding financial year. 	<ol style="list-style-type: none"> 1. The centre is complying as desired 2. Submitted, 3. Done 4. Sent on time
Animal Breeding	
<ol style="list-style-type: none"> 1. Crossbred animals of 75% exotic inheritance should be maintained by inter-se- mating. 2. In-case of non-availability of 75% germplasm, the centre should develop a plan to produce it and then maintain it by <i>inter-se-mating</i>. 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 index method of selection, including birth weight, weaning weight and 8 month body weight. 5. Selection of female animals should be based on index method of selection, including litter size at birth and weaning, litter weight at birth and weaning and number of functional teats (at least 6 pairs of functional teats). 6. The selection of animals should preferably be done by considering cyto-genetics screening of population for all the genetic abnormalities. 7. The selection criteria should include following points: <ol style="list-style-type: none"> a. 8 months body weight should be ≥ 35 kg for crossbred b. Litter size at birth should be ≥ 7 	<ol style="list-style-type: none"> 1. Maintaining 75% exotic inheritance by inter-se-mating 2. A breeding plan developed to produce and maintain 75% exotic inheritance through inter-se-mating. 3. As on 31.03.2015, the centre has 30 breeding sows 4. Selection of male based on index method of selection following the criteria 5. Selection of female animals done as per criteria 6. Followed 7. Graded Tenyi Vo weighs 36.70 ± 4.08 Kg at 8 months of age



<p>8. The data should be presented to indicate the progress made in each generation over previous ones due to genetic selection.</p> <p>9. Artificial Insemination should be implemented at all centers and necessary collaboration for this purpose may be established with the relevant department of SAU/CAU/ICAR institutes. If required, training on AI may be obtained from NRC on pig.</p> <p>10. Three number of farrowing per sow need to be recorded. Three farrowing per sow should be completed in 2 years.</p>	<p>8. Done</p> <p>9. Artificial Insemination implemented in collaboration with ICAR-RC NEH, Jharnapani Mega-seed project, Nagaland Centre. JRF underwent AI training of at NRC-Pig.</p> <p>10. Three farrowing achievable per sow within 2 years</p>
Nutrition, physiology and management	
<p>1. Validation of existing feeding packages developed by AICRP units at field level needs to be carried out.</p> <p>2. Compilation of technologies developed by the AICRP centers since its inception should be done.</p> <p>3. Efforts to develop location specific technologies for farmers to reduce the heat stress of the animals in changing climate scenario. Recording of daily micro and macroclimatic data (Temp, Humidity and calculation of THI) needs to be undertaken by all the AICRP and mega-seed project centres and compiled on monthly basis.</p>	<p>1. Validation is carried out in few villages, more field validation is planned during the current year</p> <p>2. Being done</p> <p>3. Awareness programme in this regard is recently carried out. Demonstration and application of location specific shall be done accordingly.</p>
Health Management	
<p>1. Outbreak of any infectious diseases needs to be communicated to NRC on Pig at the earliest.</p> <p>2. Health calendar (as provided by coordinating centre) should be maintained by all the centres.</p> <p>3. Regular monitoring of the pig herd for emerging infectious diseases should be undertaken in collaboration with NRC on Pig/National Institutes.</p> <p>4. Mortality parameters should be recorded with utmost care. Still birth/abortion/ mummification should not be included while recording pre-weaning mortality.</p> <p>5. Proper managerial care should be taken up to reduce pre-weaning (upto 42 days), post-weaning (42 days to 5months) and adult (5 months to 8 months) mortality to keep below 10%, 5% and 2% respectively.</p> <p>6. Steps need to be taken to strengthen the bio-security measures at the farm</p>	<p>1. Noted</p> <p>2. Noted</p> <p>3. Noted</p> <p>4. Recording</p> <p>5. All measures taken care of</p> <p>6. Regular vaccinations, disinfection of farm premise, restriction of visitors, hygienic disposal of farm wastes etc are some of the routine farm practices to strengthen bio-security.</p>

5. Salient Achievements of the AICRP 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:

- Breeding programmes were developed to generate the following genotypes/genetic groups:
 - Improved indigenous pigs

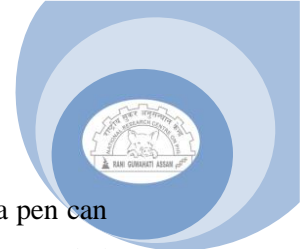


- Crossbreds having 50:50 inheritance from Landrace and indigenous pigs
 - Large White Yorkshire crossbreds having 50% indigenous inheritance
 - Crossbreds having 75% Large White and 25% indigenous inheritance
 - Landrace crossbreds having 25% indigenous inheritance
 - Hampshire crossbreds carrying 25% 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:

Some salient features of achievements made and technologies generated in various aspects of pig husbandry and management are as follows:

- 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.



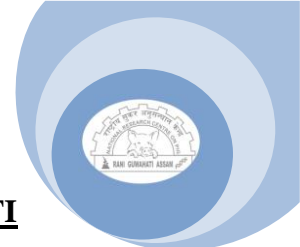
- In pregnant and lactating gilts, maize (36% in standard ration) could be replaced with 30% rice polish or tamarind seed along with 20% molasses without affecting the performance characteristics.
- An economic ration was developed by graded replacement of maize with wheat bran.
- In indigenous grower 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 difference 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-cafeinated 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

Assam possesses 1.63 million (15.84%) pigs of the total population of India (10.29 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 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/marketing age of 8 months.

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 AICRP 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 organizing training, awareness program, exhibition, demonstration etc. The AICRP/ MSP on Pig, AAU, 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.

1) Herd dynamics: Herd strength at the beginning and the end of the year along with deletion:

Herd Strength I: 01.04.2014 - 31.03.2015

Age in months	Opening balance as on 01.04.2014		Total	Closing balance as on 31.03.2015		Total
	Male	Female		Male	Female	
	75% H	75% H		75% H	75% H	
0 - 6 week	-	-	-			
6wk – 2 month	-	-	-			
2 – 6 month	-	-	-			
6 – 8 month	-	-	-			
Over 8 month	1	26	27	13	43	56
Total	1	26	27	13	43	56

Stock Continuity Details II:

Sex	Stock as on 01.04.2014	Addition (3 rd Crop)	Purchase	Total	Grand total
	1	2	3	4	5
Male	1	128	Nil	129	129
Female	26	107	Nil	133	133
Total	27	235	Nil	262	262



Deletion

Sex	Sale	Slaughter	Destroyed	Died	Total	Stock as on 31.03.2015	Grand total
	6	7	8	9	10	11 (4-10)	
Male	87	12	-	17	116	13	13
Female	85	-	-	5	90	43	43
Total	172	12	-	22	206	56	56

2) Breeding strategy of the farm as approved (If crossbreeding was done and crossbred animals are maintained, please give detailed history of crossbreeding for the farm):

- A number of selected indigenous gilts were maintained since 1981. A group of indigenous gilt was bred with pure Hampshire boars to get 50% Hampshire inheritance for 24 normal farrowings. Another group of indigenous gilts were maintained for indigenous line.
- The progeny 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 Annual Scientist Meet'2007 (Manuthy) recommended for the production of 87.50%H12.50%I genetic group in addition to 75%H25%I genetic group for the AAU Khanapara Centre.
- Pure Hampshire boar or AI with Pure Hampshire boars were utilized for production of 87.50%H genetic group.
- Annual Scientist Meet (Jabalpur 21st Nov.'2011) recommended to maintain sufficient number of 75%Hampshire genetic group only for the AAU, Khanapara Centre.
- The 75%H25%I breeding males are selected on the basis of Selection Index including birth weight(X_1), weaning weight (X_2) and 8 month body weight (X_3).The Index in selection of pigs is $(-0.483X_1+1.139 X_2 - 0.472 X_3)$
- The breeding females are selected on the basis of litter traits and functional teat (12 nos.), age at sexual maturity and body weight are also considered in selection of breeding female.
- Boars are selected on Intra-Sire basis.
- The parent stocks are maintained up to 3rd farrowing

3) Performance of animals:

Sl. No	Traits/ Characters		Mean ± SE (No. of observation)		
			75% H Genetic group		
		Crop	M	F	T
1	Av. Litter size at birth (no.)	3 rd	4.92 ± 0.24	4.12 ± 0.25	9.04 ± 0.18 (26)
2	Av. Litter weight at birth (kg)	3 rd	4.83 ± 0.22	4.13 ± 0.29	8.96 ± 0.19 (26)
3	Av. Litter size at weaning (no.)	3 rd	4.69 ± 0.26	4.00 ± 0.25	8.69 ± 0.27 (26)
4	Av. Litter weight at weaning (kg)	3 rd	39.49 ± 2.02	33.48 ± 2.09	72.97 ± 1.50 (26)
5	Av. individual wt at birth (kg)	3 rd	0.99 ± 0.01 (128)	0.97 ± 0.01 (107)	0.98 ± 0.00 (235)



6	Av. individual wt at weaning (kg) (6 weeks)	3 rd	8.42 ± 0.09 (122)	8.37 ± 0.09 (104)	8.39 ± 0.07 (226)
7	Number of days for weaning	3 rd	42 days		
8	Pre weaning mortality rate (%)	3 rd	4.69	2.80	3.83
9	Pre weaning growth rate (g/day) (0 to 6 wks)	3 rd	176.91 ± 2.15	176.09 ± 2.20	176.54 ± 1.54
10 A	Post weaning mortality rate (%) (Weaning to 5 month)	3 rd	1.63	Nil	0.87
10 B	Adult mortality rate (%) (above 5 month)	3 rd	7.38	1.51	4.33
11	Post weaning growth rate (6 wks to 8 th months) (g/day)	3 rd	337.52 ± 2.43	322.93 ± 1.25	328.99 ± 1.43
12	Overall growth rate 0 to 8 th months of age) (g/day)	3 rd	308.58 ± 1.89	297.06 ± 1.49	301.85 ± 1.37
13	Body weight (kg) at 1 month	3 rd	6.15 ± 0.03 (123)	6.14 ± 0.03 (106)	6.15 ± 0.02 (229)
	2 month	3 rd	11.28 ± 0.11 (109)	11.19 ± 0.09 (103)	11.24 ± 0.07 (212)
	3 month	3 rd	18.46 ± 0.18 (57)	17.90 ± 0.13 (65)	18.16 ± 0.11 (122)
	4 month	3 rd	26.79 ± 0.17 (54)	26.06 ± 0.14 (65)	26.39 ± 0.12 (119)
	5 month	3 rd	36.13 ± 0.24 (53)	35.18 ± 0.16 (65)	35.61 ± 0.14 (118)
	6 month	3 rd	47.05 ± 0.23 (52)	45.44 ± 0.21 (65)	46.16 ± 0.17 (117)
	7 month	3 rd	59.42 ± 0.36 (49)	56.28 ± 0.32 (64)	57.64 ± 0.28 (113)
	8 month	3 rd	75.02 ± 0.46 (42)	72.25 ± 0.26 (59)	73.41 ± 0.28 (101)
14	Age at slaughter (days)	246 days			
15	Weight at slaughter (kg)	76.19 ± 2.01			
16	Dressing percentage (%)	68.86 ± 1.21			
17	Carcass Length (cm)	69.37 ± 0.86			
18	Back Fat Thickness (mm)	26.06 ± 0.71			
19	Meat Bone ratio (:)	Not done			
20	Amount of pork produced per sow (kg)	Not calculated			
21	Feed conversion efficiency (:)	1:4.4			

4) Life time production traits:

Considering 1st, 2nd and 3rd crop: 2013-14 and 2014-15

- Average litter size at birth per sow: 8.00 ± 0.22 (78)
- Average litter weight at birth per sow: 7.80 ± 0.15 kg
- Average litter size at weaning per sow: 7.65 ± 0.13 (78)
- Average litter weight at weaning per sow: 66.54 ± 1.71 kg
- Average litter weight at slaughter per sow: Not calculated

5) Specific managemental practice:

Identification: Distinguishing body characteristics of individual animal at birth along with animal number are recorded. The identification number of respective animal is recorded in clip board of individual pens. However, the animal number is given on left thigh by clipping of hair.

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

6) Mortality Parameter:

Genetic group wise and sex wise mortality rate (Pre and post weaning):

Mortality rate in 75%H genetic group of pigs during the period 1.4.2014 to 31.03.2015

A. Pre weaning mortality:

Animal	Crop No	0 - 14 days			15 - 28 days			29 - 42 days			Overall (Pre weaning)		
		M	F	T	M	F	T	M	F	T	M	F	T
Animals at risk	3 rd	128	107	235	125	106	231	123	106	229	128	107	235
Animals died	3 rd	3	1	4	2	-	2	1	2	3	6	3	9
Mortality %	3 rd	2.34	0.94	1.70	1.60	-	0.87	0.81	1.89	1.31	4.69	2.80	3.83
Overall %		2.34	0.94	1.70	1.60	-	0.87	0.81	1.89	1.31	4.69	2.80	3.83

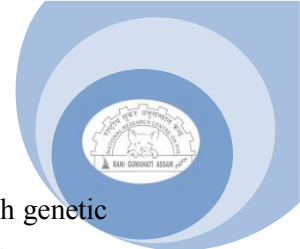
B. Post weaning and adult mortality:

Animal		Post weaning (43 days to 5 months)			Adult (over 5 months)			Overall at Farm		
		M	F	T	M	F	T	M	F	T
Animals at risk	Parent	-	-	-	1	26	27	1	26	27
	3 rd Crop	123	106	229	121	106	227	123	106	229
Animals died	Parent	-	-	-	-	-	-	-	-	-
	3 rd Crop	2	-	2	9	2	11	11	2	13
Mortality %	Parent	-	-	-	-	-	-	-	-	-
	3 rd Crop	1.63	-	0.87	7.44	1.87	4.85	8.94	1.89	5.68
Overall %		1.63	Nil	0.87	7.38	1.51	4.33	8.87	1.52	5.08

i) Measures taken to minimize mortality:

a. 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 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 mother and debilitated piglets were nourished specially to regain their health. Pre starter (7th - 20th day) and Starter (22nd day – weaning) rations were provided to the piglets. Sometime buffalo milk is also provided to debilitated piglets. Iron



therapy in the form of intra muscular injection “Feritas” were given to all piglets of both genetic groups of pig at 4th and 14th day after birth to combat the occurrence of piglet anemia.

- **Diarrhoea:** Piglets were suffered from diarrhoea during the pre weaning period and medicine viz. Furoxon /Tetracycline / Gentamycine / Enrofloxacin / C-flox were used. ORS /Glucose had also been used in affected pigs.
- b) **Lameness:** A total of 40 piglets suffered from lameness during the year under report. The animals were treated with Neuroxine, Vetalgine or Melonex and steroid with antibiotics. Adult animals were disposed immediately if the condition is not favorable. Two pregnant sows and 40 piglets were suffered from lameness due to broken floor.
- c) **Prophylactic measures:**

- **Vaccination:** The freeze dried Swine Fever Vaccine was given to the weaned piglets followed by booster dose after one month and then 6 months interval. The FD Swine fever Vaccine was procured from Institute of Biological Products, A.H & Vety. Deptt. Govt. of Assam. Blood samples were collected after 3rd vaccination of SF for routine screening. The samples were sent to the ICAR-NRC on Pig, Rani and the deptt. Microbiology, C.V.Sc, Khanapara. The NRC on Pig, Rani screened 16 number of Swine sera samples and reported negative antibody titer in 6 samples *vide* dtd.02.02.15. The deptt. Microbiology, C.V.Sc, Khanapara also examined 23 Sera Samples and reported only 5 samples positive CSFV antibody.

The NRC on Pig Rani reported (11.02.2015) lowered CSF Antigen percentage ie 15.27% in Vaccine Samples. A total of 43 pigs showed initial symptoms (loss of appetite and loss of body weight) of Swine Fever during January – February 2015. A total of 11 adult pigs were died due to Swine Fever and other related diseases. The NRC on Pig, Rani screened the tissue samples of died animals and found positive CSFV antigen. The Deptt. Microbiology, C.V.Sc, Khanapara also screened the tissue samples of died animals and found positive CSFV. The Health Advisory Committee suggested to purchase Swine Fever vaccine from the Institute of Animal Health & Veterinary Biological (R&T), West Bengal, Kolkata. The FD Swine Fever Vaccine was given at 25-30 days as initial dose followed by booster dose after one month and then 6 months interval. The FMD and HS vaccine are given annually after weaning.

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.

v) **Disposal of diseased carcass:** The carcass after conducting PM was disposed to deep well available in the premises of AICRP on Pig by mixing with common salt/Urea. The commercial urea (2 kg) poured at weekly interval on deep well or as per situation.

ii) **Causes of mortality (Specific cause)**

Table: Details of investigation conducted for causes of mortality:

SI No	Causes of mortality	75 %H (3 rd crop)		
		M	F	T
1	Anemia	1	1	2
2	Enteritis	2	-	2
3	Pneumonia	3	=	3
4	Traumatic Injury	1	-	1
5	Pneumoenterities	-	1	1
6	Swine Fever	3	-	3
7	Hemorrhagic gastro-enteritis	1	-	1
8	Septicemia	2	2	4
9	Putrefied	1	-	1
10	Fibrinous Pneumonia	1	-	1
11	Fibrinous Pericardities and Perihepatities	2	-	2
12	NAD	-	1	1
Total		17	5	22

7) Adoption of integrated farming systems: Talks on Integrated farming system were rendered at different extension programme

- Mrs. Rumi Saikia Kalita, farmer of Titabar, Jorhat has adopted integrated farming system (Pig cum Fishery) comprising three ponds and 15 pigs as on 15th April'2014. Horticultural crops-banana and lemon are also planted. Earlier, she had a pig farm, started during 2004 with a five fattener. Subsequently, herd size increases and produced piglets and were sold to the farmers of Tea gardens and Nagaland. At Present, she is maintaining Hampshire cross.
- Sri Lakhyadhar Sarma, unemployed Youth, Haripur, Soneshar (Kamalpur) has been maintaining Hampshire cross and Hampshire x Ghungroo since last seven years. He is maintaining 39 pigs, out of which 12 fatteners are ready to sale, 2 breeding males and 8 females and 19 piglets. The price of piglets is Rs.2500/ piglet at weaning. He is earning about Rs.4.00 lakhs annually. Rice polish, boiled Colocasia and poultry waste are utilized as feed. He is spending Rs.5000/ pm on Feed and Medicine. He is also maintaining 4 nos. of Betel goats and selling Rs.4500/-Rs.5000/ kid.

8) Survey on market of pork production: A Preliminary survey on pork market was carried out in Greater Guwahati and salient points are as follows.

Qualification of Pork Seller: Mostly under Metric and uneducated

Residence: Mostly rented

Occupation: Pork selling

Caste: 50% Tribal and 50% others

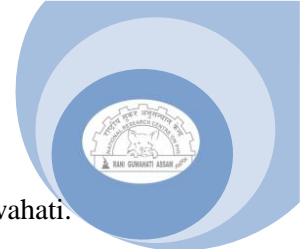
No. of Retail Shop: 85

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 Morigaon, Panikhaiti, Chandrapur, Peripheral areas of Guwahati.

2. Breed: Mostly Hampshire cross, Hampshire x Ghunngroo, Local and Ghunngroo
3. Age: 9 months- 2 ½ Years
4. Type: Male- 20%, Female - 40% Castrated - 40%
5. Weight: 60 - 180 kg
6. Method of Slaughter: heart puncture in most cases, occasionally hammering
7. Price of Pig Rs.80/kg- Rs.90/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: 40-50 numbers.
10. Daily Sale: 40- 45 qt.
11. Period of Highest Sale: November and February
12. Period of Lowest Sale: June - Aug of the year
13. Price per kg of Pork: Retailer Rs. 160/ - 180/kg,
14. Whether Diseased Pig are Slaughtered or not: Sometime disease pigs are slaughtered.

9) 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.

10) Production economics: (Considering Feed & Medicine Cost)

a. Farm Condition:

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

Concentrate feed up to 8 month of age (15-240 days) = 340 kg (Rs. 6290/),

Considering, @ Rs.18.50/kg feed and Cost of Medicine & Vaccines Rs.750/ animal

Total Cost Rs.7040/ animal at 76 kg live weight

Cost of production / kg live wt.: Rs 93/ kg live wt.

Cost of production/kg pork: Rs.132/ kg pork (considering 70% Dressing Percentage)

b. Field Condition: (Biju Kalita, Nalbari)

Cost of production / pig upto Market age: (8 male and 4 female)

Cost of feeding of hotel waste @ Rs.20/day/animal from 2-8 month of age (Rs.3600/) and

Cost of Medicine & Vaccines Rs.750/ animal.

Total Cost Rs. 4350/ animal at 85 kg live wt (at 8 month of age)

Cost of production /kg live wt.: Rs. 51/ kg live wt.

Cost of production /kg pork: Rs. 74/ kg pork (considering 70% Dressing Percentage)

11) Extension programme with success story:

i) At the institute:

The Extension activities organized by the Director of Research (Vety.), AAU, Khanapara, Associate Director of Extension Education (ADEE), AAU, Khanapara, Chief Scientist, Goat Research Station, Burnihat and NIRD-NERC Guwahati involved the Scientist of the project as Resource



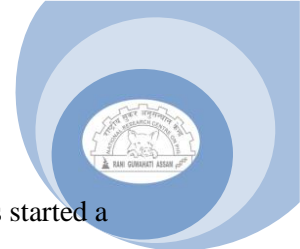
Persons in their different programs. The trainees were given lessons on theory as well as practical demonstration in various aspects of pig production.

Talks/ Demonstration:

- Talks on “Trainers’ training on Management and Health Care of Livestock during Natural Disaster” Organized by ADEE, AAU, Khanapara on 12.06.2014.
- Talk on “Training on Pig farming”. Organized by Chief Scientist, LRS, AAU, Mondira on 28.06.2014.
- Talks on “Rural Piggery for Sustainable Livelihood: a critical analysis” under Model Training Course (MTC) on “Breeding and Management Strategies for Piggery Enterprises for increased Productivity and Profitability” was Organized by National Research Centre on Pig, Rani, Guwahati on 11.09.2014
- Talk on “Scientific Pig rearing” Conducted by Goat Research Station, AAU, Khanapara under the Scientific Rearing of Goat, GRS, AAU, Burnihat on 24.09.2014.
- Talks (3) on “Different breeds of Pig and their selection for improved production” under the “Increasing Productivity of Pigs through Scientific Intervention” was Organized by ADEE, AAU, Khanapara on 23.09.2014, 14.10.2014, 04.11.2014
- Talk on “Scientific rearing on pigs” was conducted by SAMETI, Guwahati on 22.11.2014 under the program on “Advances in Scientific Rearing of Pigs, Goats and Rabbits”.
- Talk on “Intervention Strategies”. Organized by NELPS, Sixmile, Guwahati on 21.11.2014 under the program on “Piggery Sub Sector Study done in Mizoram and Nagaland and its Recommendation”.

Success story:

- Biju Kalita, Balitera, district Nalbari, an unemployed youth, age 40 years maintaining 10 Sows and 3 breeding males. He is selling 4 fatteners in every 2 month and raising from his farm. He is earning Rs. 7, 50 lakh annually by spending only Rs. 10,000/ month on hotel waste and broiler waste. He is having two ponds of fishery and broiler unit.
- Kamal Talukdar, Chandkushi, district Nalbari, age 45 year maintaining two herds of pig (70+80). He is spending Rs. 500/day for carrying Kitchen waste/left out from Amingaon and Rs. 50,000/annually for two labourours. He is earning Rs. 12.00 lakh annually from piggery by regular selling of fatteners.
- Bipul Kalita, Mirza is an unemployed youth, age 40 years maintaining 22 gilts, 4 breeding males since 2013. 5+5 piglets were purchased from AICRP on Pigs during November’14 and February’2015 for fattening. All females are pregnant and 6 fatteners are ready to dispose. Attempt is made to sale fatteners in every month in cyclic manner. He is having two broiler units.



- Madhurya Sarma, age 40 years, Amguri Sivasagar maintaining a herd of pig (40). He has started a pig farm during 2013 with the piglets of AICRP on Pig. Mr. Sarma earned Rs. 7.00 lakh by selling fatteners monthly and breeding piglets @ Rs.3500/.

Distribution of booklet: *Gahori Palon* a book published by KVK, AAU, Jorhat, are distributed to the farmers in different training programmes. A leaflet on Scientific Rearing of Pigs' was also published by the AICRP on Pig and distributed. Booklet on 'Scientific rearing of pigs' in local language and published by the Assam Science Society, Guwahati, are distributed free of cost to the farmers in the trainings and the farmers who has purchased the pigs from the project.

12) Salient achievement during the report period

- The genetic group *i.e.* 75%H is developed at the AICRP on Pig, AAU, Khanapara. The 75%H genetic group has attained 15th generation.
- One crop (235 piglets) were obtained during 2014-15 and maintained for breeding stock. The average litter size at birth, litter weight at birth, litter size at weaning and litter weight at weaning were found to be 9.04 ± 0.18 , 8.96 ± 0.19 kg, 8.69 ± 0.27 and 72.97 ± 1.50 kg respectively. The average body weight at birth, at 6th week (weaning), at 6 month and at 8 month of age were found to be 0.98 ± 0.00 kg, 8.39 ± 0.07 kg, 46.16 ± 0.17 kg and 73.41 ± 0.28 kg respectively.
- F. D. Swine Fever Vaccine is rescheduled as - Initial dose at 25-30 day of age, booster after 1 month of age and repeated after 6 months interval.
- Facilities are provided to the P.G and Ph. D. students for conducting research in the disciplines of Animal Physiology, Livestock Production and Management, Animal Nutrition, Veterinary Medicine and Animal Genetics & Breeding. One student completed her MVSc Three Ph D students and one MVSc student are expecting to complete their degree prog in next financial year.
- Farmers of different parts of the state particularly Sivsagar, Baksa, Kamrup, Nalbari and Morigaon districts witnessed the different genetic groups of pigs maintained under the AICRP/MSP on Pig during their training programme.
- Implementation of MSP on Pig and achieved the target of piglet production (1574) during 2014-15 and benefited the farmers of NE Region.
- Publication of 4 Research papers and two Abstract.

13) Scientific publications:

- i) Others: 4 nos.
- ii) Abstract: 2

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

Topic: Effect of zinc on physiological performance of post-weaned piglets during hot-humid season. (Department of Veterinary Physiology-M.V.Sc Research)

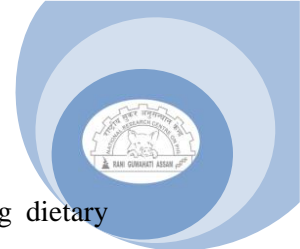
Abstract: The present experiment was conducted to study the growth and physiological performance of post- weaned piglets following supplementation of 150 ppm of zinc and 15 ppm of copper during



hot- humid season in low stocking density (LSD) and high stocking density (HSD) groups for a period of 4 months from June to September, 2013. A total of 24 numbers of crossbred weanling pig (Hampshire x Assam local) of 60 days old, maintained as per standard feeding and managerial practices were randomly divided into Group I (LSD) and Group II (HSD) each consisting of twelve animals. The Group I and II were sub-divided into two categories namely control and treated consisting of six numbers of piglets in each. In LSD and HSD group both the control and treated piglets were kept in separate pens. They were housed individually with open area of 104.76 sq. ft (9.73 m²) and closed area of 90.25 sq. ft (8.38 m²) including feed and water manger. The animals of treated category under both LSD and HSD groups were supplemented with basal diet + 150 ppm Zn + 15 ppm Cu and the animals of control category were fed only basal diet without any supplementation. The THI level was calculated using the data obtained from daily recording of minimum and maximum ambient temperature and relative humidity. The physiological parameters related to thermal stress viz. rectal temperature and respiration rate were recorded at weekly interval. Blood samples of the individual experimental animals were collected from 2 months of age till attainment of 6 months of age at monthly interval following all aseptic measures. The THI level ranges from 81.16 to 86.06 which were found to be stressful for the animals. There was significant difference (P<0.01) in rectal temperature and respiration rate between control and treated category within the group but rectal temperature did not show any significant difference between the groups. The highest (64.00± 1.57 kg) body weight gain was recorded in pigs of LSD group under Zn and Cu treated category and lowest (58.67 ± 2.80 kg) in control under HSD group at 6 months of age. The serum level of Zn, Cu, T₃, T₄ were found to be highest in treated category under LSD group. A decreasing trend was observed in serum cortisol and growth hormone level along with advancement of age. The analysis of variance revealed that Zn, Cu, growth hormone, T₃, T₄ and cortisol level showed significant differences (P<0.01) between the LSD and HSD group as well between control and treated category within the group. The supplementation of zinc: copper can minimize the effect of heat and crowding stress due to its ameliorative effect as well as increased body weight gain.

Ongoing:

- Topic: Genetic Variation in Reproductive traits of Crossbred Pigs. (Animal Genetics & Breeding- M.V.Sc)
- Topic: *Streptococcus suis* infection in pigs and evaluation of bacterin efficacy (Department of Epidemiology & Preventive Medicine- Ph. D.)
- Topic: Biomolecular expression on melatonin and vitamin E supplementation during summer and winter in pig. (Department of Veterinary Physiology –Ph. D).
- Topic: Genetics Studies on Growth Performance and Polymorphism of *IGF- II* and *POU1F1* Genes in Crossbred Pigs. (Animal Genetics & Breeding- Ph. D.)
- Topic: Effect of dietary Oligosaccharides on productive performance of cross bred pigs.



- Topic: Growth performance of pigs in response to seasonal stress under varying dietary energy levels. (Deptt. of LPM).

15) Distinguish Visitors:

- An expert team from Govt. of The Nederland along with Director, ICAR-NRC on Pig visited the project on 05. 04.2014
- Dr. S. K. Singh, Former Dean, Ranchi Veterinary College visited the project on 18.03.2015

16) Climatic parameter of the farm

Month	Minimum Temp. (°C)	Maximum Temp. (°C)	Average Temp. (°C)	Relative Humidity (%)	THI
April	20.53±0.28	33.27±0.44	27.04±0.33	65.07±3.29	76.37±0.52
May	22.61±0.27	33.71±0.12	28.09±0.35	74.23±1.13	79.11±0.44
June	24.90±0.27	33.80±0.47	28.99±0.23	80.13±1.18	81.35±0.26
July	26.84±0.11	34.32±0.30	29.88±0.12	81.77±0.63	83.06±0.13
August	26.45±0.12	34.17±0.55	28.96±0.16	84.00±0.56	81.88±0.21
September	25.57±0.10	33.03±0.36	28.51±0.21	80.43±0.76	80.64±0.26
October	22.51±0.47	32.97±0.35	27.39±0.23	74.65±0.98	78.18±0.40
November	17.47±0.42	29.83±0.48	23.21±0.44	73.27±0.64	71.51±0.64
December	13.52±0.42	27.03±0.29	19.52±0.28	72.71±0.94	65.93±0.45
January	11.71±0.21	25.45±0.29	18.08±0.16	63.41±0.80	63.58±0.24
February	12.68±0.47	27.68±0.74	19.74±0.58	64.64±2.44	65.54±0.69
March	17.61±0.37	33.09±0.29	25.36±0.22	64.80±1.25	72.35±0.44



75% Hampshire lactating sow with their piglets



75% Hampshire pregnant gilt



Farmer's training, Bongaigaon



One day training at Mangoldoi



Private Farm, sow with piglets, Mirza



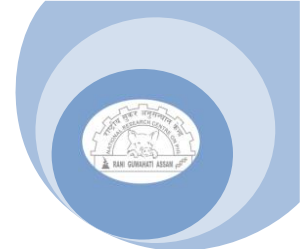
Private Farm, Bipul Kalita, Mirza



Training programme, Women SHG, Dhemaji



One day training at Mangoldoi



BIRSA AGRICULTURAL UNIVERSITY, RANCHI, JHARKHAND

Pig production is considered as one of the important activities of animal husbandry programme especially for the improvement of economic status of tribes and some weaker section of society of Jharkhand. There is tremendous scope for employment and earning with subsidiary occupation in livestock production, pig being one of the important among them. The climatic condition with 1300 to 1600 mm annual rain fall, average 20% humidity and 6 to 40°C environmental temperature is conducive for such activities. Jharkhand state has potential to grow paddy and maize in several pockets besides abundantly available vegetable wastes, Jungle roots, tapioca and other soft trees and leaves which provide natural source of feeds for pigs and other livestock. After independence, pig husbandry has been treated only as a rural occupation ancillary to other livestock and poultry farming. Little emphasis has been laid on treating it as commercial venture. Efforts to improve the productivity of native pig remained more or less negligible. A sizeable section (about 40%) of Jharkhand population is living below the poverty line. A very large section of this group have special liking for pig farming. On the basis of above ground, Pig Breeding Farm at Ranchi Veterinary College of Birsa Agricultural University (BAU) was primarily started as a U.G. and P.G. teaching besides farmers training in the year 1973- 74. Initially four exotic breeds viz., Landrace, Tamworth, Large White Yorkshire and Russian Charmukha were maintained. The infrastructure of the farm has been strengthened with financial assistance from the ICAR, New Delhi and the World Bank through Bihar Plateau Development Project and NATP Mission Mode besides the state government. The major population of pig in country including Jharkhand is of native type. Their production performance of is poor as compared to other exotics and crossbreds. Insufficient availability of quality stock is great hindrance in boosting pig production. BAU, Ranchi which is primarily dedicated to socio-economic upliftment of farmers through transfer of improved technologies shares great responsibility than others in respect of piggery development work. Therefore, in order to improve the socio-economic status of pig breeder, the University felt necessity of evolving appropriate pig breeding and management technologies. On the guidelines of National Commission on Agriculture (1976), a series of breeding experiments on pig involving LWY, Landrace, Tamworth, Hampshire and *desi* were conducted over a decade by the scientists of Ranchi Veterinary College and finally a new breed of black coloured pig named “T & D” was developed besides many other improved technologies in respect of its breeding, feeding, management, disease control etc. which is adopted by the farmers at the state and National levels. The impact of piggery development programmes was observed to be very high among tribal and backward community engaged in pig production programme. Pig rearing is gaining ground, and may gain industry status in Jharkhand. The farmers are eager to make it regular enterprise due to higher economic returns, employment generation and low input-high output ratio. It is clearly seen from the livestock census (19th) in which 64.15% increase in pig population was noticed.



1) Herd dynamics (T&D):

Sl. No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1.	Piglet (up to 42 days)	25	294		05			37
2.	Grower (42days-5 months)	46			08		249	24
3.	Finisher (5m- 8 months)	7			-		11	09
4.	Breeding Female	23			02			39
5.	Boar	3			-		2	12
	Total	104	294		15		262	121

Herd dynamics (75% H):

Sl.No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1.	Piglet (upto 42 days)	23	318		12			74
2.	Grower (42days-5 months)	21			4		190	57
3.	Finisher (5m- 8 months)	7						11
4.	Breeding Female	32			5		4	33
5.	Boar	5			3		2	11
	Total	88	318		24		196	186

2) Breeding strategy of the farm as approved:

- i. To study the performance of “T&D” and 75% Hampshire pigs under optimum management conditions.
- ii. To select the animals within each genetic group for faster growth rate with better reproductive performances.

3) Performance of animals: T&D

Sl. No.	Traits/Characters	Mean ± SE (no. of observation)			
1	Litter size at birth	7.73±0.32 (30)			
2	Litter weight at birth(kg)	10.52±1.92 (30)			
3	Litter size at weaning(no.)	7.30±0.32 (27)			
4	Litter weight at weaning (kg)	66.59±3.02 (27)			
		Male	Female	Overall	
5.	Avg. weight at birth(kg)	1.20±0.02(116)	1.21±0.02(135)	1.20±0.01(251)	
6	Avg. weight at weaning (kg)	6 wk	6.70±0.14(102)	6.76±0.14(112)	6.73±0.10 (214)
		8 wk	9.69±0.23(99)	9.56±0.24 (113)	9.62±0.17 (212)
7	Number of days for weaning(d)	42 days	42 days	42 days	
8	Pre weaning mortality rate (%)	3.00	1.82	2.38	
9	Pre weaning growth rate (gm/d) (6 w)	159.52	160.95	160.24	
10	Post weaning mortality rate (%)	2.38	1.90	4.28	
11	Post weaning growth rate, up to 8 month (g/d)	324.75	339.60	335.96	
12	Overall growth rate (up to 9 m) (g/d)	297.52	307.41	303.70	



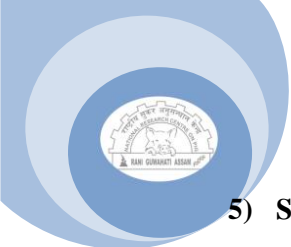
13	Body weight (kg)			
	1 Month	6.70±0.14(102)	4.74±0.10 (126)	4.72±1.09 (235)
	2 Month	9.69±0.23 (99)	9.56±0.24 (113)	9.62±0.17 (212)
	3 Month	15.67±1.20 (3)	14.43±0.16 (12)	14.68±0.50(15)
	4 Month	22.00±1.20 (3)	21.16±0.03 (15)	21.30±0.82(18)
	5 Month	33.33±1.84 (3)	30.13±.05 (15)	30.67±1.39(18)
	6 Month	44.67±2.52 (3)	41.69±0.70 (13)	42.25±2.01(16)
	7 Month	52.50±2.89 (4)	55.45±0.75 (10)	54.61±2.31(14)
	8 Month	71.00±3.18 (3)	74.00±0.79(09)	73.25±2.64(12)
	9 Month	80.33±1.90(3)	83.00±0.56(05)	82.00±2.15(8)
10 Month	89.29±1.17(7)	93.33±0.10(03)	90.50±1.38(10)	
14	Feed conversion efficiency (:)			3.50

Performance of animals: 75% Hampshire

Sl. No.	Traits	Mean ± SE			
1	Litter size at birth(no.)	7.08±0.22 (25)			
2	Litter weight at birth(Kg)	9.27±0.35 (25)			
3	Litter size at weaning (no.)	6.64±0.26 (25)			
4	Litter weight at weaning (Kg)	55.72±2.69(25)			
		Male	Female	Overall	
5	Avg. weight at birth(kg)	1.36±0.03(161)	1.35±0.03 (139)	1.36±0.02(300)	
6	Avg. weight at weaning (kg)	6w	7.01±0.15(139)	6.91±0.16 (122)	6.96±0.11(261)
		8w	9.69±0.25(121)	10.51±0.96(108)	10.08±0.47(229)
7	Number of days for weaning(d)	42 days			
8	Pre weaning mortality rate (%)	5.59	7.19	6.33	
9	Pre weaning growth rate(gm/d)	167	165	166	
10	Post weaning mortality rate (%)	1.44	2.46	1.92	
11	Post weaning growth rate(gm/d) up to 8 m	295.75	262.32	279.04	
12	Overall growth rate (up to 9 m) (gm/d)	306.19	274.07	286.11	
13	Body weight (Kg)	1 Month	5.09±0.11(148)	4.98±0.12(127)	5.04±0.08 (275)
		2 Month	9.69±0.25(121)	10.51±0.96(108)	10.08±0.47(229)
		3 Month	14.66±0.78(19)	15.61±1.49(11)	15.01±0.72(30)
		4 Month	19.45±1.09(19)	21.10±2.27(11)	20.05±1.67(30)
		5 Month	25.83±1.66(19)	28.80±2.18(11)	27.14±1.54(30)
		6 Month	38.43±1.61(14)	3.45±2.93(12)	36.13±1.65(26)
		7 Month	50.92±2.52(12)	52.50±3.35(10)	51.64±2.01(22)
		8 Month	65.57±3.15 (7)	58.85±3.27 (7)	62.21±2.37(14)
		9 Month	82.67±1.20 (3)	74.00±3.84 (5)	77.25±2.82 (8)

4) Lifetime production traits

Reproductive traits	AICRP (T&D)	AICRP (75%)	Significance
Litter size at birth	7.77±0.32(24)	6.69±0.17 (19)	**
Litter size at weaning	7.44±0.36 (24)	6.38±0.16 (19)	**
Litter weight at birth (Kg)	8.65±0.33 (24)	8.66±0.36 (19)	NS
Litter weight at weaning (Kg)	59.39±2.64(24)	51.60±2.44 (19)	NS



5) SPECIFIC MANAGERIAL PRACTICES

Different groups of animals kept in separate pens under uniform housing and managerial conditions. The newly born piglets were provided with paddy straw during winter season as a bedding material to protect the piglets against extreme cold effects.

i) Care during pregnancy: Farrowing pens were thoroughly cleaned and flushed with water and disinfect by Phenyle. The farrowing pens were provided with creep box for feeding creep ration to suckling 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.

ii) Care during the time of farrowing: Mostly sows did not need any help at the time of farrowing. Therefore, disturbances to the sow were avoided as far as possible while farrowing was in process. Just after birth each piglet was cleaned with clean cloth and the mucous was removed from its mouth and nostrils. The needle teeth of piglets were nipped and were given identification mark through ear notching. The piglets were assisted to suckle their dam and allowed to remain with her till weaning at the age of 8 weeks. The placenta after farrowing removed immediately and the sow was not allowed to eat it.

iii) Pre-weaning care: As a preventive measure against anaemia, one ml. of an iron dextran injection (Imferon) was given intramuscularly to each piglet on 3rd and 14th day of age. We are using ear notching for identification of piglets after farrowing. We are castrating the surplus male piglets at the age of 3-4 weeks by open surgical method.

iv) Post-weaning care: The piglets were vaccinated against swine fever and Foot and Mouth disease. Deworming was also carried out soon after weaning and repeated, if needed. The dams were removed from the farrowing pens and the piglets were allowed to remain in the same pens for at least one week. Proper aid whenever necessary was also provided to the animal.

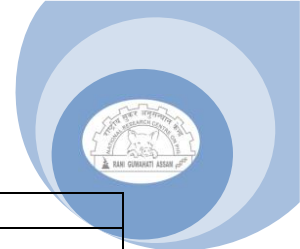
6) Mortality parameter:

i) Genetic group wise and sex wise mortality (Pre and post weaning):

AICRP (T&D)			
	Male	Female	Total
Pre weaning	03	02	05
Post weaning	05	04	09
Total	08	06	14
AICRP 75% H			
	Male	Female	Total
Pre weaning	09	10	19
Post weaning	02	03	05
Total	11	13	24

ii) Causes of mortality (Specific cause): T&D

SL.NO	DISEASE	TOTAL NO.
Pre-weaning		
1.	Gastritis	03
2.	Piglet anemia	02



	Total	05
Post-weaning		
1.	Pneumonia	03
2.	Gastritis	04
3.	Piglet anemia	02
	Total	09

75% Hampshire

SL.NO	DISEASE	TOTAL NO.
Pre-weaning		
1.	Pneumonia	10
2.	Gastritis	05
3.	Trempling	04
	Total	19
Post-weaning		
1.	Lymphademitis	01
2.	Septic shock	01
3.	Piglet anemia	03
	Total	05

iii) Measures to taken minimize mortality:

- a) **Management measures:** Provision of bedding specially during winter season,
- b) **Prophylactic measures:** Following drugs as a prophylactic measures are given to prevent the mortality of piglets
 - i) All the pigs were vaccinated against the Swine Fever and FMD vaccine.
 - ii) The imferon were injected to all the piglets at 3rd and 14th days of age and weaned at 42 days of age.
 - ii) The piggery shed was cleaned daily and the manure removed completely from the floor and walls through manual scraping.
 - iv) Providing plenty of sheds around the piggery shed by planting trees.
 - v) The pigs were dewormed regularly to control parasitic infestation.
- c) **Disposal of diseased carcass:** Carcass of pigs disposed of by burial method.

7) Experimentation:

- i. Comparative growth performance of “T&D” and 75% Hampshire pigs were studied. Average body weight at birth, 6th and 8th week of age was observed to be higher in 75% Hampshire (1.36±0.02, 6.96±0.11 and 10.08±0.47 Kg) pigs in comparison to “T&D” (1.20±0.01, 6.73±0.10 and 10.08±0.47 Kg) respectively. However, body weight at 32nd and 40th weeks of age was observed to be higher in T&D than 75% H. Body weights at 32nd and 36th weeks of age were recorded in “T&D” (73.25±2.64 and 82.00±2.15 Kg) and 75% Hampshire (62.21±2.37 and 77.25±2.82 Kg).
- ii. Comparative reproductive performance of “T&D” and 75% Hampshire pigs were studied. No significant differences were observed between these two groups. However, slightly better reproductive performances (LSB, LSW and LWW) were noticed in “T&D” pigs than 75% Hampshire. Litter size at birth, Litter size at weaning and Litter weight at birth and Litter weight at



weaning for T&D and 75%H were observed to be 7.73±0.32, 7.30±0.32, 10.52±2.04 Kg, 66.60±2.98 Kg and 7.12±0.32, 7.08±0.32, 11.04±2.47 Kg, 60.38±3.15 Kg, respectively.

Effect of inclusion of cooked and water soaked concentrate ration on performance of pre-weaning piglets and grower pigs

Effect of inclusion of cooked and water soaked concentrate ration on performance of pre-weaning piglets were studied. No significant difference in body weight change was observed among groups till weaning period. However feed consumption was observed to be more in case of treatment III (cooked concentrate ration) followed by treatment I (control) and treatment II (water soaked concentrate).

Effect of inclusion of cooked and water soaked concentrate ration on performance of grower piglets were studied. No significant difference in body weight change was observed during all the periods under study. However feed consumption was observed to be significantly higher in case of treatment II followed by treatment I and III. FCR was also observed to be non-significant during most of the periods under study.

Effect of inclusion of cooked and water soaked concentrate ration on performance of growing-finishing piglets were studied. Body weight gain and FCR was observed to be non-significant among groups. However feed consumption was observed to significantly higher in case of treatment III and II than control group (I).

8) Survey on market of pork production: The price of pork increasing day by day due to the increase in demand of pork in local market. The price of pork increased three times in last five years. Presently price of pork is Rs. 150-200 per kg.

9) Disposal pattern of waste, pig excreta etc/ Establishment of biogas plant: No biogas plant but we are using the pig excreta as manure for agricultural land.

10) Production economics:

- i) Cost of production/pig up to slaughter age: Rs. 5000 - 11000 depending on feed and marketing
- ii) Cost of production/Kg pork: Rs. 60.00 per kg body weight gain on 100% concentrate ration

11) Extension programme with success story:

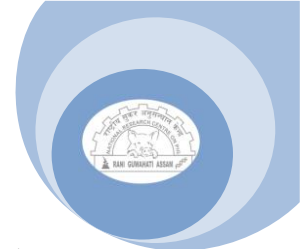
At the institute: Training to farmers on Pig breeding & Management at Pig Breeding Farm

- A. 10 days duration: 172
- B. 1 day duration 1388

Fifty four farmers (15F+29M) along with four veterinary officers have come for three days exposure-cum-training programme on pig Management at farm and village level.

At the farmers' field:

- i) Livestock (Pig) show during *Kisan Mela* at different KVKs of University.
- iii) *Kisan gosti* at different places of state during Livestock Show.
- iv) T.V. Telicast (Doordarsan Ranchi) 10
- iii) Radio 1



12) Salient achievement during the report period:

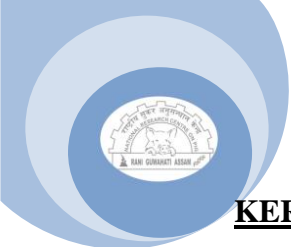
- i. Comparative growth performance of “T&D” and 75% Hampshire pigs were studied. Average body weight at birth, 6th and 8th week of age was observed to be higher in 75% Hampshire (1.36 ± 0.02 , 6.96 ± 0.11 and 10.08 ± 0.47 Kg) pigs in comparison to “T&D” (1.20 ± 0.01 , 6.73 ± 0.10 and 10.08 ± 0.47 Kg) respectively. However, body weight at 32nd and 40th weeks of age was observed to be higher in T&D than 75% H. Body weights at 32nd and 36th weeks of age were recorded in “T&D” (73.25 ± 2.64 and 82.00 ± 2.15 Kg) and 75% Hampshire (62.21 ± 2.37 and 77.25 ± 2.82 Kg), respectively.
- ii. Comparative reproductive performance of “T&D” and 75% Hampshire pigs were studied. No significant differences were observed between these two groups. However, slightly better reproductive performances (LSB, LSW and LW) were noticed in “T&D” pigs than 75% Hampshire. Litter size at birth, Litter size at weaning and Litter weight at birth and Litter weight at weaning for T&D and 75%H were observed to be 7.73 ± 0.32 , 7.30 ± 0.32 , 10.52 ± 2.04 Kg, 66.60 ± 2.98 Kg and 7.12 ± 0.32 , 7.08 ± 0.32 , 11.04 ± 2.47 Kg, 60.38 ± 3.15 Kg, respectively.
- iii. Effect of inclusion of cooked and water soaked concentrate ration on performance of pre-weaning piglets, grower and finisher were studied. No significant difference in body weight change was observed among the groups, however, consumption was increased.

13) Scientific publication:

In peer-reviewed: 1



Visit of VCI team to AICRP farm

**KERALA AGRICULTURAL UNIVERSITY, MANNUTHY CENTRE, KERALA**

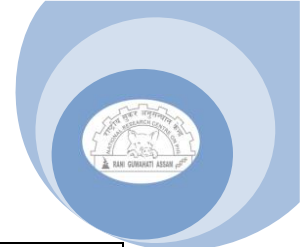
This farm was started on 12-05-1965 as a small pig breeding unit along with an auxiliary pork production scheme under the Department of Animal Husbandry. It was taken up by Kerala Agricultural University in 1972 and renamed as University Pig Breeding Farm. The All India Coordinated Research Project was 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, Land race, Duroc, the 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. The extension activities of the Centre include provision of technical advice to progressive pig farmers, issue of project reports and establishment of field units.

1) Herd dynamics:

Details	Desi			Crossbred 50 %			Crossbred 75 %		
	M	F	Total	M	F	Total	M	F	Total
Opening balance as on 01/04/2014	29	37	66	0	66	66	0	13	13
Birth (01/04/14 to 31/3/2015)	48	42	90	0	0	0	240	236	476
Total	77	79	156	0	66	66	240	249	489
Mortality	2	3	5	0	3	3	16	13	39
Sold / Field unit / slaughter	50	53	103	0	29	29	170	167	337
Total	52	56	108	0	32	32	186	180	366
Closing balance as on 31/3/2015	25	23	48	0	34	34	54	69	123

2) Breeding strategy of the farm as approved:

75% crossbreds are maintained by interse mating



3) Performance of animals:

Sl.No	Traits/Characters	Mean # SE (no. of observation)		
		M	F	Total
1.	Litter Size at birth (no)	5.80±0.12	4.82±0.10	10.62±0.11
2.	Litter weight at birth (kg)	6.91±0.13	5.56±0.13	10.30±0.13
3.	Litter Size at weaning (no)	5.39±0.11	4.53±0.10	9.92±0.11
4.	Litter weight at weaning (Kg)	47.97±0.15	37.83±0.18	85.80±0.16
5.	Avg.Individual weight at birth (kg)	1.19±0.07	1.15±0.05	1.17±0.06
6.	Avg.Individual weight at weaning (kg)	8.90±0.25	8.35±0.20	8.63±0.22
7.	Number of days for weaning (d)	42	42	42
8.	Pre weaning mortality rate(%)	7.01	6.11	6.56
9.	Pre weaning growth rate(gm/d)	183.57	171.43	177.62
10.	Post weaning mortality rate(%)	0.75	0.60	0.67
11.	Post weaning growth rate (g/d)	378	365	371.5
12.	Overall growth rate (upto 9 m) (g/d)	324	321	315
13.	Body weight at different ages (kg) (n=8)			
	at 1 st month			5.92±0.20
	2 nd month			10.30±0.30
	3 rd month			17.11±0.40
	4 th month			27.90±0.40
	5 th month			37.60±0.50
	6 th month			48.80±0.55
	7 th month			61.60±0.60
	8 th month			75.70±0.70
	9 th month			86.50±0.75
	10 th month			93.50±0.80
14.	Age at slaughter (d)			300
15.	Weight at slaughter(Kg)			93.50 ±0.80
16.	Dressing Percentage (%)			66.0±0.70
17.	Carcass Length (cm)			78.10±0.65
18.	Back Fat Thickness (mm)			21.11±0.45
19.	Meat Bone ratio (:)			4.20± 0.10
20.	Amount of pork produced per sow (kg/year)			1855.04
21.	Feed Conversion efficiency (:)			4.01
22.	Live weight produced/sow/litter at birth (kg)			10.30
23.	Live weight weaned /sow (kg)			85.80
24.	Live weight produced at slaughter age/sow/litter (kg)			927.52
22.	Any other information relevant to this table (add separate row, if required)			Nil

4) Lifetime production traits

Traits	Mean
Live weight produced /sow/litter at birth (kg)	10.30±0.13
Live weight weaned /sow (kg)	85.80±0.16
Live weight produced at slaughter age/sow/litter (kg)	927.52



5) Specific managerial practice: Identification using microchips

6) Mortality parameter:

Desi -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
Animals at risk	-	-	-	-	-	-	-	-	-	-	-	-
Number died	1	1	2	1	1	2	-	-	-	2	2	4
Mortality %	1.29	1.27	2.56	1.29	1.27	2.56				2.59	2.53	2.56

Desi - Post-weaning

Parameter	45 days - 1 year			Adult			Over all		
	M	F	T	M	F	T	M	F	T
Number of animals at risk									
Number died		1					1		1
Mortality %		1.27					1.27		0.64

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
Animals at risk	-	-	-	-	-	-	-	-	-	-	-	-
Number died	0	3	3							3	3	
Mortality %		4.5	4.5							4.5	4.5	

Cross bred 50% -Post- weaning: Nil

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	10	8	18	5	6	11	2	1	3	17	15	32
Mortality %	4.17	3.21	3.68	2.08	2.41	2.25	0.83	0.40	0.61	7.08	6.02	6.54

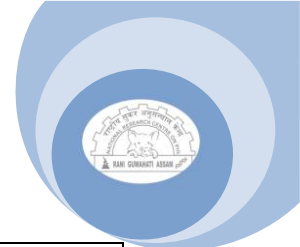
Cross bred 75 % -Post- weaning

Parameter	45days-1year			Adult			Over all		
	M	F	T	M	F	T	M	F	T
Number of animals at risk									
Number died	4	3	7				4	3	7
Mortality %	1.67	1.20	1.43				1.67	1.20	1.43

a. Causes of mortality (specific cause):

Pre-weaning

Causes	Number died								
	Desi			Crossbred 50%			Crossbred 75%		
	M	F	T	M	F	T	M	F	T
Gastro enteritis	1	-	-		1		10	6	16
Hepatitis	1	1	3		1		3	5	8
Pulmonary congestion and edema	-	1	1		1		4	4	8
Total	2	2	4		3		17	15	32



Post weaning

Causes	Number died								
	Desi			Crossbred 50%			Crossbred 75%		
	M	F	T	M	F	T	M	F	T
Gastro enteritis	-	-	-	-	-	-	2	1	3
Hepatitis	-	-	-	-	-	-	1	1	2
Pulmonary congestion and edema	1	-	1	-	-	-	1	1	2
Total	1	-	1	-	-	-	4	3	7

(iii) Measures to taken minimize mortality:

Management measures:

- All the pigs were dewormed periodically and regular spraying against ecto-parasites was carried out.
- Early treatment to control piglet diarrhea and anemia were undertaken
- Soft bedding with hay was provided to minimize the incidence of crushing of piglets
- Early detection and treatment of MMA syndrome
- A disinfectant dip was constructed at the entrance of the centre to control infection from outside.
- Practice of one time feeding in the early morning of the day was introduced along with provision of shade to minimize the heat stress
- Efforts are taken to minimize the pre-weaning mortality with suitable interventions.

Prophylactic measures:

- All the animals were vaccinated twice annually for swine fever disease (CSF) and FMD
- Weaned piglets were vaccinated against the CSF three days after weaning and FMD after 21 days
- The wallowing tanks in the pens are routinely cleaned using disinfectants and maintained hygienically.
- The sows were dewormed and thoroughly scrubbed and cleaned prior to shifting them into the farrowing pens.
- Pregnant sows were transferred to farrowing pen 2-3 weeks in advance to provide individual care and management.
- Routine inspection and maintenance of hygienic practices of farrowing pens for preventing MMA

Disposal of diseased carcass:

Carcasses are disposed into the carcass pit located in the campus.

**7) Nutritional experimentation:**

The feed with following composition is used in the centre.

S.No.	Feed Ingredients	16% CP	18%CP	20% CP
1	Maize	45	38	40
2	Soya	15	20	23
3	Rice Polish	19.5	20	10
4	Wheat Bran	14	10	15
5	Dried Fish	5	10	10
6	Mineral Mixture	1	1.5	1.5
7	Salt	0.5	0.5	0.5
8	Vitamins	0.02	0.02	0.02
9	Lysine	0.02	0.02	0.02
10	Methionine	0.02	0.02	0.02
11	Zinc oxide	0.02	0.02	0.02
	Total	100.08	100.08	100.08

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

Solid waste/excreta is collected in the manure pit and sold @ Rs.0.20/kg to farmers and government agricultural farms. Liquid waste is collected in the slurry pit and pumped to the grass lands along with water.

9) Production economics:

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

ii) Cost of production/kg pork

Market prices of pork

Pork with fat : Rs.250/kg from University meat plant

Lean pork : Rs.360/kg from University meat plant

Private outlets : Rs.230/kg.

Live weight : Rs.100/ kg depends upon the season

The production economics is calculated on the basis of only concentrate feeding, the existing price of pork is Rs.230/kg and Rs.100/kg live weight.

Cost of production/pig up to slaughter age: Rs.9460/-

Cost production /kg pork: Rs.105/-

10) Extension programme with success story:

(i) **At the institute:** The Centre provides technical knowledge to the progressive farmers in establishing the piggery units with respect of the construction of the pig house, health care, management, waste disposal and other problems faced on day to day basis over telephone and personal call. The Centre could establish 290 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 programme on “Profitable Rearing of Pigs “was held at Centre for Pig Production & Research, Mannuthy from 17th to 21nd March 2015. Twelve farmers



attended the programme. Many progressive pig farmers have been participating and discussing the prospects and problems of pig rearing in Kerala and many of the pig farmers expressed their success stories.

(ii) At the farmer's field: Centre had supplied 438 fattening piglets to 94 farmers. Eight new units have been established during this period.

11) Salient achievements during the report period:

The centre has successfully fulfilled the demand of the farmers by supplying 438 fattening piglets (crossbreds) and also generated receipt of Rs.11.78/lakhs during the year 2014-15. 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. A comprehensive breeding schedule has been introduced for prompt selection / culling of the stock.

A study was conducted to find out litter performance of sows in different housing and management during farrowing and preweaning period. Thirty Large White Yorkshire sows were selected and randomly divided into three groups of ten animals each and were subjected to three treatments, i.e., conventional farrowing house with guard rail and 1/3rd slatted floor, farrowing house with guard rail with floor level ventilation and farrowing house with farrowing crates. There were no significant variations in litter size and litter weight at birth in all treatment groups. Mortality of piglets noticed in first two days after birth were similar ($P > 0.05$) in all three farrowing system. From this study it is concluded that farrowing house with farrowing crate significantly improves the litter performance of sows in terms of more litter size and weight at weaning and reduces the piglet mortality. It had economic benefit compared with other treatments.

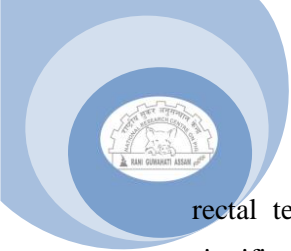
12) Publications: 5 nos. in peer reviewed journal

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

A study was conducted to find out litter performance of sows in different housing and management during farrowing and preweaning period. Thirty Large White Yorkshire sows were selected and randomly divided into three groups of ten animals each and were subjected to three treatments, i.e., conventional farrowing house with guard rail and 1/3rd slatted floor (T1), Farrowing house with guard rail with floor level ventilation (T2) and Farrowing house with farrowing crates (T3). The animals were maintained in the different housing systems from last quarter of pregnancy to forty five days after farrowing.

Micro climatic variables, rectal temperature, respiratory rate, daily feed intake of sows, body weight loss during lactation, maternal behavioral scores of sows, mortality pattern of piglets and litter performance of sows were recorded. Proximate principles of the feeds and serum cortisol of sows were estimated. Economics of litter production were calculated.

Significantly higher ($P < 0.05$) room temperature was recorded in T3 followed by T2 and T1. Significantly higher ($P < 0.05$) room humidity was recorded in T2 followed by T1 and T3. Elevated



rectal temperature and respiratory rate was observed in T3 group housed sows. There were no significant differences in average daily feed intakes between the treatments.

There were no significant variations in litter size and litter weight at birth in all treatment groups. Litter size and litter weight at fourth week at weaning was significantly higher ($P < 0.05$) in treatment group T3 than T2 and T1.

There were no significant differences in maternal behavioral scores between the treatments. The body weight loss during lactation of sows was significantly ($P < 0.05$) higher in T3 sows which was not significantly different between T2 and T1. There were no significant differences in serum cortisol level between the treatment at the beginning and at the end of experiment. Mortality of piglets in three different farrowing housing systems had a significant difference ($P < 0.05$) between all the treatments. Mortality of piglets noticed in first two days after birth were similar ($P > 0.05$) in all three farrowing system. Mortality incidence happened in first three days of piglets after farrowing in T1, T2 and T3 was 62.5 %, 71.4 % and 66.7 % from the total preweaning piglet mortality. Cost of production per kg live weight of piglets on housing cost basis was higher in T1 followed by T2. T3 had the lowest housing cost of production among the three different farrowing systems. Time (years) required to pay back the housing cost for T3, T2 and T1 is 1.63, 2.94 and 3.11 respectively.

From this study it is concluded that farrowing house with farrowing crate significantly improves the litter performance of sows in terms of more litter size and weight at weaning and reduces the piglet mortality. It had economic benefit compared with other treatments.

14) Distinguish visitors:

- K M L Pathak, DDG (AS) ICAR (30-4-2015)
- Gert Jan Duives, HAS Hogeschool (University of Applied Science), Netherlands (5-2-15)

15) Success story:

The centre provides technical knowledge to pig farmers with respect of the 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 participate in the genetic improvement programme implemented by the centre. The success story of two farmers is presented here.

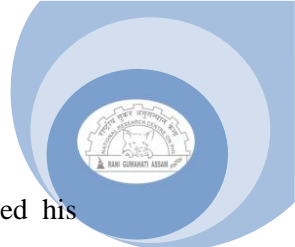
Breeding Unit

Name of Livestock Keeper: Binu Kuruvila

Full Address: Malabar Hills farm & Resorts, Chempanode, Calicut 673528, Kerala: Mr Binu Kuruvilla is an engineer (air craft) by profession started pig rearing from 2014 after attending a training on scientific pig rearing. Mr. Binu Kuruvilla started a breeding pig rearing unit on the advice of AICRP on pig with 20 pigs. Now, he owns 58 breeding pigs and earns a good income by sale of quality piglets and manure.

Fattening Unit

Name of Livestock Keeper: Raimon V I



Full Address: Vadassery House, Kormala, Kuttichira P O 680724 : Raimon VI expanded his existing piggery unit from 2014 after attending a training on scientific pig rearing. Mr Raimon VI started his pig fattening unit on the advice of AICRP on pig with a few pigs in 2011. Now, he owns 250 pigs and earns a good income of about Rs.25000/month through the sale of finisher pigs. He is also rearing breeding stock from which he is expecting more income.



Solar power plant



Biogas plant



Pregnancy detector



Training for farmers



Field unit



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 condition 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. From the year 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 are being studied.

1) Herd dynamics

Sl. No	Categories	Opening balance	Additions		Disposals			Closing balance
			Birth	Transfers / Purchased	Deaths	Transfers/ Slaughter	Sold	
1	Piglet (upto 42 d)	263	233	-	19	-	-	44
2	Grower (4 d-5 m)	6	-	-	15	-	213	86
3	Finisher (5– 8 m)	-	-	-	-	5	133	-
4	Breeding female	49	-	-	5	-	-	34
5	Boar	15	-	-	-	-	-	12

2) 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 end of V Five year plan
- During VI Five year plan the performance of indigenous breeds was studied under optimum 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 the year 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 are being studied.

3) Performance of animals:

a) Performance of animals (21st generation I crop)

Sl. No	Traits/ Characters	Mean ± SE (no. of observation)		
		M	F	Total
1	Litter size at birth (no.)	3.50±0.27 (40)	3.65±0.23 (40)	7.15±0.24 (40)
2	Litter weight at birth (kg)	4.50±0.35 (40)	4.54±0.33 (40)	9.04±0.38 (40)
3	Litter size at weaning (no.)	3.32±0.26 (40)	3.50±0.25 (40)	6.82±0.26 (40)
4	Litter weight at weaning (kg)	26.82±2.17 (40)	27.73±2.06 (40)	54.55±2.13 (40)



5	Avg. individual weight at birth(kg)	1.28±0.02 (140)	1.24±0.02 (146)	1.26±0.01 (286)
6	Avg. individual weight at weaning (kg) (42 days)	8.06±0.10 (133)	7.92±0.09 (140)	7.99±0.07 (273)
7	Number of days for weaning (d)	42 days	42 days	42 days
8	Pre weaning mortality rate (%)	5% (140)	4.10 (146)	4.54 (286)
9	Pre weaning growth rate (g/d)	160.01±0.17 (133)	160.65±0.15(140)	160.30±0.16(273)
10	Body weight (kg)			
	1 month	6.37±0.08 (134)	6.23±0.07 (142)	6.30±0.05 (276)
	2 months	9.76±0.04 (132)	9.71±0.05 (139)	9.73±0.03 (271)
	3 months	14.82±0.04(129)	14.43±0.05(137)	14.62±0.03(266)
	4 months	24.79±0.06(126)	24.11±0.07(135)	24.44±0.05(261)
	5 months	36.55±0.06(124)	35.59±0.08(133)	36.05±0.06(257)
	6 months	46.98±0.06(123)	46.01±0.08(133)	46.48±0.06(256)
	7 months	65.27±0.04(123)	65.55±0.04(133)	65.41±0.02(256)
	8 months	70.16±0.07(123)	68.71±0.01(133)	69.41±0.02(256)
	Age at slaughter (d)	278	295	286
	Weight at slaughter (kg)	74.5	76.80	75.65
	Dressing Percentage (%)	62.12	60.78	61.45
	Carcass Length (cm)	75.50	71.50	73.00
	Back Fat Thickness (mm)	15.40	14.40	14.90
	Meat Bone ratio (:)	2:1	2:1	2:1
	Amount of pork produced per sow (kg)	46.28	46.67	46.48
	Feed conversion efficiency (:)	3.13	3.25	3.19

b) Performance of animals: (21st generation II crop)

Sl. No	Traits/ Characters	Mean ± SE (no. of observation)		
		M	F	Total
1	Litter size at birth (no.)	3.39±0.31(28)	4.00±0.33(28)	7.39±0.39(28)
2	Litter weight at birth (kg)	3.76±0.02	4.36±0.01	8.13±0.01
3	Litter size at weaning (no.)	3.22±0.32(26)	3.84±0.34(26)	7.06±0.45(26)
4	Litter weight at weaning (kg)	23.37±0.12	27.38±0.20	50.76±0.22
5	Individual weight at birth (kg)	1.11±0.01(102)	1.09±0.01(105)	1.10±0.01(207)
6	Avg. individual weight at weaning (kg) (42 days)	7.26±0.04(99)	7.13±0.05(102)	7.19±0.03(201)
7	Number of days for weaning (d)	42	42	42
8	Pre weaning mortality rate (%)	2.94±0.05(102)	2.86±0.07(105)	2.89±0.09(207)
9	Pre weaning growth rate (gm/d)	146.43±0.23(99)	143.80±0.41(102)	145.00±0.39(201)
10	Post weaning mortality rate (%)	5.05±0.12(99)	3.92±0.14(102)	4.47±0.11(201)
11	Post weaning growth rate (gm/d) (up to 4 months)	148.46±1.26(77)	146.41±1.22(80)	147.43±1.25(157)
12	Overall growth rate (upto 4 m) (gm/d)	147.75±1.26(77)	145.50±1.28(80)	146.58±1.30(157)
13	Body weight (kg)			
	1 month	5.88±0.04(100)	5.79±0.04(105)	5.83±0.03(205)
	2 months	9.29±0.04(94)	9.13±0.05(100)	9.21±0.03(194)
	3 months	14.28±0.08(88)	14.00±0.08(92)	14.14±0.06(180)
	4 months	18.83±0.13(77)	18.54±0.12(80)	18.69±0.08(157)

Selection records for 21st generation:

Selection differential values for production and reproduction traits:

Trait	Males	Females
Litter size at birth (No.)	0.01	0.01
Litter weight at birth	0.01	0.20



Litter size at weaning	0.04	0.05
Litter weight at weaning	2.23	1.22
Body weights (kg) at		
Birth weight	0.09	0.04
1 month	0.15	0.02
At weaning (42 days)	0.14	0.05
2 month	0.17	0.08
3 month	0.22	0.07
4 month	0.21	0.07
5 month	0.19	0.14
6 month	0.30	0.16
7 month	0.20	0.12
8 month	0.14	0.11

Observed Genetic gain:

Trait	Male	Female
Litter size at birth (no.)	0.20	0.18
Litter weight at birth (kg)	0.36	0.36
Litter size at weaning (no.)	0.09	0.11
Litter weight at weaning (kg) *	-	-
8 months body weight (kg)	6.10	6.39

* The observed genetic gain for Litter weight at weaning could not be calculated since the data was recorded for weaning weights of 19th generation at 56 days and 20th generation at 42 days.

- The selected breeding stock parents (males & females) were subjected to cytogenetic screening studies and no chromosomal abnormalities were found. Report on cytogenetic study was already submitted to the coordinating unit. The metaphase and karyotype photographs were enclosed.
- The artificial insemination technique was initiated at this centre for producing of 3rd crop animals from 21st generation parent stock (Photographs enclosed). The semen extender from NRC on pig will be taken very soon.

4) Lifetime production traits for 20th generation

- Average litter size at birth per sow : 7.27
- Average litter weight at birth per sow : 8.59
- Average litter size at weaning per sow : 6.94
- Average litter weight at weaning per sow : 52.65
- Average litter weight at slaughter per sow : 75.00

5) Specific managemental practices:

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

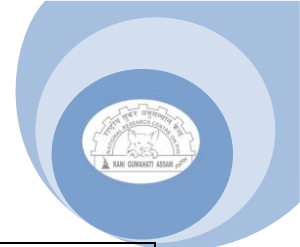
To combat piglet anemia, iron dextran injection was given on 4th day and repeated on 14th day.

6) Mortality parameter:

i) Genetic group wise and sex wise mortality rate:

75% LWY (20th Generation II Crop & 21st Generation I Crop)

	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	237	8	3.37	259	11	4.24	496	19	3.83
Post weaning	229	8	3.49	248	7	2.82	477	15	3.14
Adult	58	Nil	Nil	139	5	3.59	197	5	2.53



ii) Causes of mortality (*Specific cause*):

PRE-WEANING	
Pneumonia	7
Pulmonary edema	1
Hypovolemic shock	4
E.coli	1
Haemorrhagic enteritis	2
Pasteurellosis	2
Lymphosarcoma	2
Total	19
POST-WEANING	
PASTEURELLOSIS	8
E.coli	1
Hypovolemic shock	1
Lymphosarcoma	5
Total	15
ADULT	
Metritis Mastitis Agalactia syndrome (MMA)	5
Total	5
Grand Total	39

iii) Measures taken to minimize mortality: 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.

Prophylactic measures: Regular vaccination as per the schedule covering the diseases of HS, Foot and Mouth, Swine fever etc.

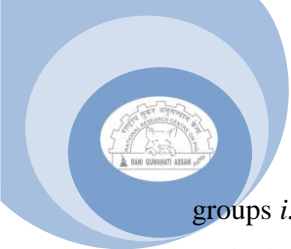
iv) Disposal of diseased carcass: The dead animals after conducting the post-mortem are buried properly as per standard practices.

7) Nutritional experimentation:

Effect of replacement of soybean meal with shrimp shell waste to study the performance of crossbred pigs during preweaning and growing periods.

In swine production, feed alone represent nearly 65 to 70% of total cost of production. In intensive pig production, pig directly competes with human beings for cereal grains like maize along with other protein, mineral, and vitamin supplements. In the field, pig farmers are unable to support costly feeding programme because of high cost of cereals and oil cakes. In the present study, shrimp shell waste, which is basically the dried waste of the shrimp industry, consisting of heads, shells and appendages was used at different levels in feed formulation by replacing soybean meal, to study its effect on growth and nutrient utilization in crossbred pigs.

Experimental design: The trail was conducted during the creep (10 days to 42 days) and grower (weaning to 35 kg body weight) stages. During creep phase 12 litters were selected and divided into 2



groups *i.e.* 58 piglets (control) and 55 piglets (treatment). During grower phase (*i.e.* from weaning age to 35 kg body weight), 6 number of weaned piglets, one piglet from each litter was selected and allotted to the respective treatments.

The control group was fed with standard creep feed, while the treatment group was fed with creep feed containing dried shrimp waste @ 17 parts *i.e.* to replace 58 % of Soybean meal of control ration. The ingredient composition of creep feed and chemical composition of shrimp shell waste is presented below.

S.No.	Ingredient	Control	Treatment
1.	Maize	60.0	60.0
2.	Soybean	29.0	17.0
3.	Shrimp shell waste	0	12.0
4.	DORB	8.0	8.0
5.	Mineral Mixture	2.0	2.0
6.	Salt	0.5	0.5
7.	Lysine	0.5	0.5
	Total (kg)	100.0	100.0
	CP (%)	19.0	19.0
	DE (k.cal)	3000	3000

Chemical composition of shrimp shell waste (On dry matter basis except for DM):

S.No.	Chemical composition	%
1.	Dry matter	29.0
2.	CP	39.5
3.	Ether extract	4.8
4.	Crude fiber	8.7
5.	Total ash	24.8
6.	NFE	22.2

The growth performance of piglets during creep feed is presented below

Parameter	Control	Treatment
Initial weight (kg)	1.26±0.04 ^a	1.08±0.02 ^b
Final weight (kg) at 42 days	7.65±0.14 ^b	8.76±0.11 ^a
Weight gain (kg)	6.38±0.14 ^b	7.67±0.11 ^a
Average Daily Gain (g)	151.90±0.48 ^b	182.62±0.52 ^a
Average daily feed intake (g)	105.00±0.31	109.00±0.42
Feed conversion ratio	0.69	0.60

The ingredient and chemical composition of control and treatment grower ration is presented below.

S.No.	Ingredient	Control	Treatment
1.	Maize	48.0	50.0
2.	Soybean	22.0	12.0
3.	Shrimp shell waste	0	15.0
4.	DORB	27.0	20.0
5.	Mineral Mixture	2.0	2.0
6.	Salt	0.5	0.5
7.	Lysine	0.5	0.5
	Total (kg)	100.0	100.0
	CP (%)	18.0	18.0
	DE (k.cal)	3100	3100

The growth performance of grower piglets is presented below



Parameter	Control	Treatment
Initial weight (kg)	7.65±0.46 ^b	8.76±0.21 ^a
Final weight (kg) at 145 days	34.00±1.61 ^b	39.28±1.07 ^a
Weight gain (kg)	26.35±1.34 ^b	30.52±1.11 ^a
Average Daily Gain (g)	211±0.43 ^b	244±0.48 ^a
Average daily feed intake (kg)	0.65±0.18	0.70±0.23
Feed conversion ratio	3.08	2.86

Means with different superscripts differ significantly ($P \leq 0.01$)

The data were subjected to statistical analysis (Z-test) to find out the significant difference in growth rates among control and treatment group.

Significant difference was observed in growth parameters between two groups and the results of the study indicated that shrimp meal waste can be used to replace 55 to 60 % of Soybean meal in creep and grower rations of crossbred pigs to reduce cost of feeding and to prevent environmental pollution by shrimp shell waste.

Validation of existing feeding packages:

The existing feeding package developed at AICRP on Pig, Tirupati on “Replacement of Soybean meal with Sunflower cake” trail was conducted at field level through incorporation of sunflower seed cake in ration to reduce the feeding cost. As per the feeding packages developed at this centre the following rations were formulated and fed to animals with five numbers of farmers in surrounding villages of Tirupati.

8) Survey on market of pork production: The surplus animals, culled animals which are unfit for further breeding and also experimental animals where nutritional and carcass characteristics were studied are slaughtered and the pork was sold at the rate of 156/- per kg through the college pork counters/outlets.

A directory of pork eaters comprising about 2000 names along with mobile numbers of Tirupati town is being maintained by the station. Whenever there is a slaughter these customers are alerted through internet SMS to encourage pork consumption.

9) Disposal pattern of farm waste, pig excreta etc/Establishment of biogas plant: The farm waste or pig excreta is collected and made into a heap. This will be used periodically for the plants as manure in the research station premises. The remaining manure being supplied to LPM department in 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.

10) Production economics:

- i) Cost of production/pig up to slaughter age: The slaughter age is usually about 10 months or if as the animals reach 75 kg body weight. The average cost of production per pig upto slaughter age ranges from Rs.6500/- to 6700/- and it depends on the cost the ingredients which fluctuate periodically.
- ii) Cost of production/ kg pork: Cost of production / kg pork was Rs. 135/- to Rs. 145/-.



11) Extension programme with success story:

i) **At the institute:** Regularly farmers are visiting the farm and are being given technical advises about scientific pig rearing and feeding, vaccination etc. Importance of sanitization and hygiene and summer managerial practices is 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. As a resource person Senior Scientist & Head involved in conducting one day training programme to 35 number of beneficiaries of Chittoor District of Andhra Pradesh. Non-government organization Prajavydyasala farmers of Ananthapur district of Andhra Pradesh were given training on housing, sanitation and management for better production of pig farming. A total of 356 numbers of piglets were supplied to pig beneficiaries of different regions of Andhra Pradesh and feedback information as impact study was collected from the field in the form of success stories.

ii) **At the farmers' field:** Study was done to assess the effect of pig rearing on the livelihoods of beneficiaries of pig units. The study was carried out in different districts of Andhra Pradesh.

12) Success stories:

1. Sri. Haribabu, Kodur, Kadapa District, Andhra Pradesh.

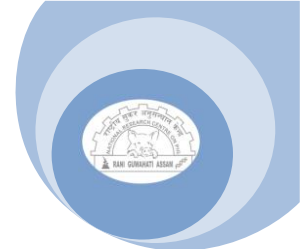
This farmer is supplied with 50 number of piglets during the year 2014-15. He has been maintaining farming since 2010 onwards by feeding of pigs with leftovers from fruit factories and markets and also providing concentrated feed for breeding and young animals. Farmer is procuring garbage from local hostels and hotels. Employment is given for one labour family for maintenance of pigs. Farmer has constructed a pig breeding centre and running farm successfully by generating his own stock. He claims that profit of Rs. 3,50,000/- per annum through pig farming.

2. Sri. T.N. Mohan Reddy, Banganpalli, Kurnool District.

He is one of the successful beneficiary who started rearing of pig unit in the year of 2007 with 100 number of piglets purchased from this centre. Presently 280 number of pigs are available in the farm and farmer getting profits though sale of live animals and pork. Farmer is having rice mill and offering broken rice to the animals along with market and hotel waste. Farmer is harvesting two crops in one year. Net profit of this farm is Rs.8.00 lakhs in the year through sale of live animals to Bangalore and Coimbatore market. The feed back information given from this farmer is very much encouraging.

3. Sri. T. Giri, S.V. Nagar, Perumallapalli Vill., Chittoor District.

This farmer is maintaining 85 number of pigs and constructed pig sties. The input resources is offering to animals like mango kennels, rice bran along with garbage. Farmer is spending money for labour and transport cost towards getting garbage from local markets. Concentrate feed is offered to the pregnant animals and creeper ration is given to the piglets. His earnings from pig units are around 5.50 lakhs per year. New stock is being added through breeding of his own farm animals. Feedback information is given by the farmer is encouraging.



13) Salient achievement during the report period

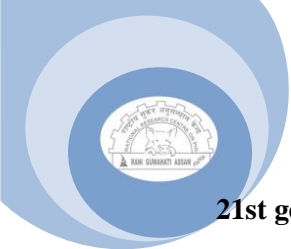
During the year 2014-15, 21st generation I crop animals completed 8 months of age and for II crop animals performance was recorded upto 4 months of age. The III crop animals will be produced during the month of July, 2015.

21st generation I Crop: A total of 40 numbers of farrowings are occurred, in which 286 piglets (140 Males + 146 Females) were born. This generation has completed 8 months of age during the reporting period and data was recorded on all the traits upto 8 months of age. The litter size, litter weight at birth and weaning were found to be slightly lower than 20th generation animals. But average individual weight at weaning was recorded as higher (7.99kg) compared to 20th generation (7.52kg). There is an improvement in the overall average body weights at 1, 2, 3, 4, 5, 6 and 7 months of age compare to previous generation, which were recorded as 6.30, 9.73, 14.62, 24.44, 36.05, 46.48 & 65.41kg at respective age. The average 8 months body weight was 69.41kg. Improvement in 8 months body weight was observed in comparison with previous generation (66.21kg). A total of 5 Number of animals (4 male & 1 female) were slaughtered for measuring slaughter parameters. Age at slaughter was 286 days and the average slaughter weight recorded as 75.65 kgs. Dressing percentage was observed as 61.45 with carcass length of 73cms, back fat thickness of 14.9mm and meat bone ratio was 2:1 and the amount of pork produced per sow was 46.48 kgs. The feed conversion efficiency was recorded as 3.19.

The selection differential values for various traits were calculated for 21st generation by considering 20th generation as the base population. The selection differential values for birth weight, one month, weaning weight, 2, 3, 4, 5, 6, 7 & 8 months of age in case of males are 0.09, 0.15, 0.14, 0.17, 0.22, 0.21, 0.19, 0.30, 0.20 and 0.14, where as these values in case of females are 0.04, 0.02, 0.05, 0.08, 0.07, 0.07, 0.14, 0.16, 0.12 and 0.11 at respective ages. The selection differential for average litter size & litter weight at birth, average litter size and litter weight at weaning in case of males are 0.01, 0.01, 0.04 and 2.23, whereas the values in females are 0.01, 0.20, 0.05 & 1.22 respectively.

The observed genetic gain for litter weight at weaning could not be calculated since the weaning age for 19th generation is practiced at 56 days and 20th generation is at 42 days age. The genetic gain for 8 months body weight was observed as 6.10 in males and 6.39kg in females. The gain in litter size at birth was 0.20 in males and 0.18 in females, where as these values for litter size at weaning was 0.09 and 0.11 respectively. The life time production traits are calculated for 21st generation by considering 1st & 2nd crop animals performance, since the 3rd crop has not produced during reporting period.

The preweaning, post weaning mortality are 4.51 & 4.39% and are within permissible level, where as the adult mortality was 0.39%.



21st generation II Crop:

During the year 2014-15 the II crop animals have completed 4 months of age. A total of 28 numbers of farrowings occurred and 207 numbers of piglets were born. The data was recorded on litter traits and birth weights upto 4 months of age. The litter size at birth and weaning was recorded as 7.39 & 7.06, which were less compared with first crop and the reason was due to occurrence of MMA syndrome in the farm during II farrowing period and it also leads to reduction in weights at birth and weaning which were recorded as 8.13 & 5.76 kgs. The average individual weight at weaning was 7.19 kg. The overall mortality rates during pre-weaning (2.89%) & post-weaning (4.47%) was within the permissible level. The overall growth rate upto 4 months of age was 146.58 g/day.

During the reporting period some of the pregnant sows were affected with MMA syndrome and three numbers of adult sows died and some of the litters were born as mummified and macerated foetus. The diagnostic reports from the Department of Microbiology and pathology were submitted to the coordinating unit for information.

All possible preventive measures were undertaken to avoid further losses due to MMA. The affected animals were segregated and kept in separate sheds, treated with antibiotics and supplements. All measures to prevent the access of causative factors by way of feed and water are regularly checked. The overall hygienic conditions, biosecurity measures are improved in the farm. Further 30 gilts as well as 10 young boars will be selected as future breeding stock from the 3rd crop of 21st generation. A total of 346 piglets were sold to the beneficiaries and a total of Rs. 6,17,469/- (Rupees Six lakhs seventeen thousand four hundred and sixty nine only) has been realized in the form of receipts by selling live piglets, culled animals and pork

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

- 1) M.V.Sc. in Department of LPM is completed research work during the year 2014-15 on “**Evaluation of nutrient requirements of lactating crossbred (LWY x Desi) sows using NRC, 1998 swine model**”

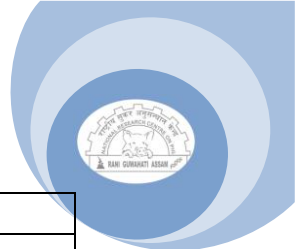
15) Distinguish visitors (If any):

Dr. Manmohan Singh, IAS, Hon’ble Vice-Chancellor, S.V.V.U & Principal Secretary to Government, Animal Husbandry, Dairy Development & Fishery Development, Andhra Pradesh visited the farm on 10.12.2014 and also distributed germplasm to the farmers.

16) Other information:

- Information on Micro and Macro climatic data

Month	Temperature (°C)		Humidity	THI
	Minimum	Maximum		
April, 2014	23.9	41.2	41.8	91.0
May	25.6	39.8	41.3	89.0
June	28.0	39.6	21.4	83.0
July,	26.5	35.1	51.8	85.0
August	24.5	35.7	55.1	87.0



September	21.8	32.7	69.8	86.0
October	20.4	32.6	69.9	86.0
November	23.4	36.0	91.0	95.0
December	18.0	29.7	70.4	82.0
January, 2015	17.2	29.6	68.8	81.0
February	17.6	31.7	59.9	83.0
March	25.2	39.5	41.6	89.0

During the reporting period, highest Temperature (41.2°C) was recorded in the month of April and the lowest (17.2 °C) temperature was recorded in the month of January.



Semen collection



Distribution of piglet



AI



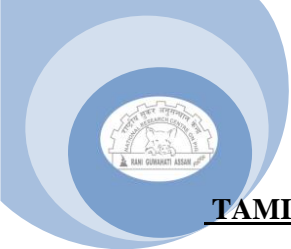
Sow



Field unit



Farmers training



TAMILNADU VETERINARY AND ANIMAL SCIENCE UNIVERSITY, KATTUPAKKAM

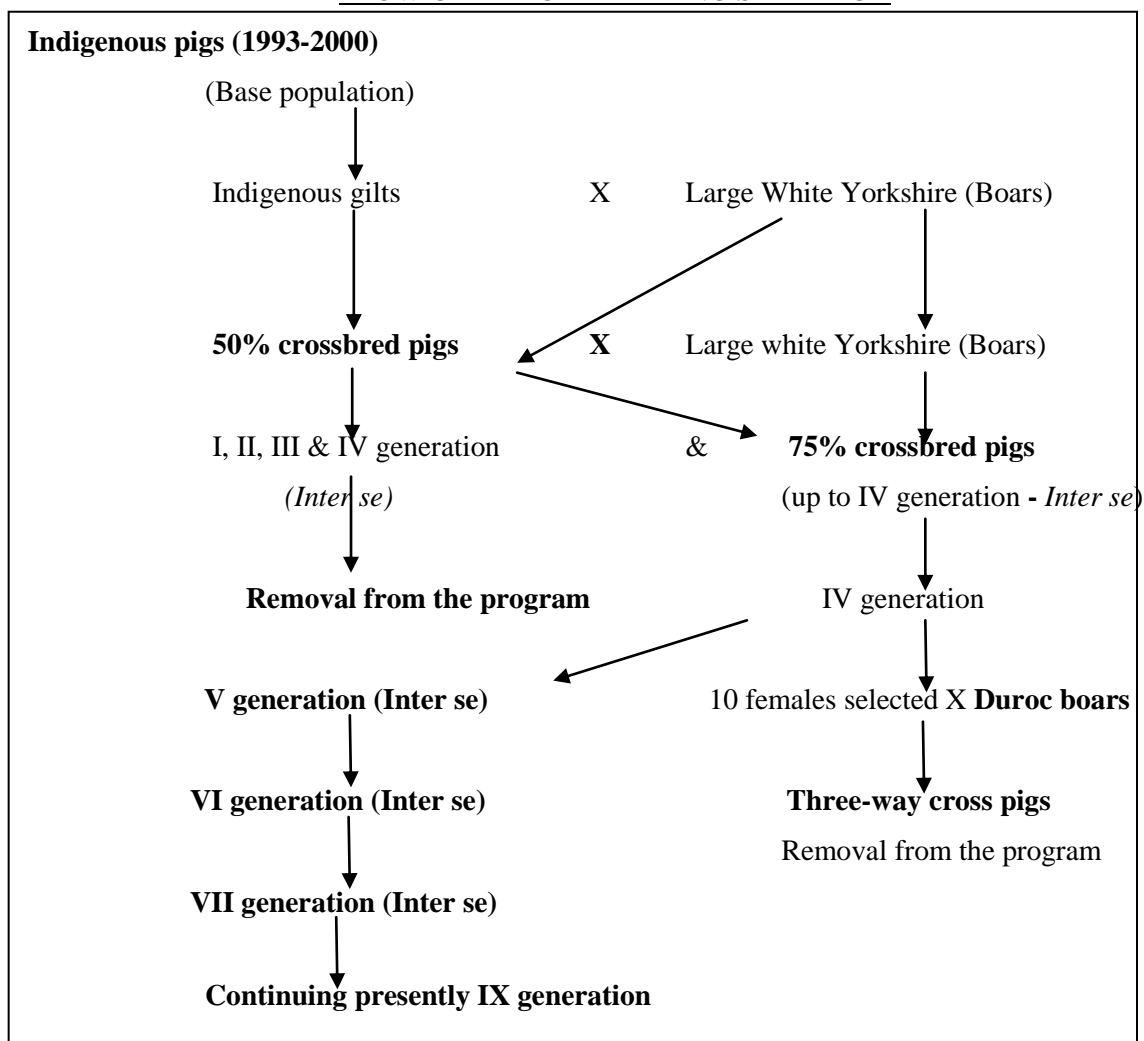
The scheme on “AICRP on Pigs” is functioning at Livestock Research Station, Kattupakkam since 1993-1994. At the beginning foundation stock of *desi* pigs was established procured from different field units and animals maintained as per recommendation of different meet.

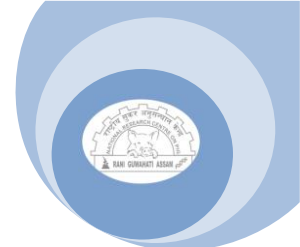
1) Herd dynamics

Particulars	75 % crossbred pigs						Total
	Adult		Grower		Suckling		
	Male	Female	Male	Female	Male	Female	
Opening balance on 01.04.2012	13	50	39	49	3	4	158
Birth	-	-	-	-	221	256	477
Internal transfer	14	34	216	254	-	-	518
Purchase (Desi pig)	-	-	-	-	-	-	-
Total addition	14	34	216	254	221	256	995
Opening balance + Total addition	27	84	255	303	224	260	1153
Death	-	1	4	6	8	6	25
Breeding sale	-	-	142	162	-	-	304
Slaughter sale	16	55	35	24	-	-	130
Internal Transfer	-	-	14	34	216	254	518
Total deletion	16	56	195	226	224	260	977
Closing balance on 31.03.2015	11	28	60	77	0	0	176

2) 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
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.

3) (i) Performance of animals – VIII GENERATION II CROP

Sl. No.	Traits / Characters	Mean \pm SE (No. of observations)		
		Male	Female	Total / overall
1	Litter size at birth (No.)	3.41 \pm 0.31 (24)	4.66 \pm 0.39 (24)	8 \pm 0.28 (24)
2	Litter weight at birth (kg)	5.18 \pm 0.27 (24)	4.41 \pm 0.18 (24)	9.49 \pm 0.30 (24)
3	Litter size at weaning (No.)	3.45 \pm 0.20 (25)	4.75 \pm 0.34 (25)	7.88 \pm 0.27 (25)
4	Litter weight at weaning (kg)	28.58 \pm 3.08 (25)	35.80 \pm 0.53 (25)	64.39 \pm 6.42(25)
5	Individual weight at birth (kg)	1.21 \pm 0.02 (82)	1.16 \pm 0.02(112)	1.24 \pm 0.01(194)
6	Weight at 21 day (kg)	4.38 \pm 0.24 (80)	5.12 \pm 0.19(110)	4.88 \pm 0.15(190)
7	Individual weight at weaning - 42 days (kg)	8.5 \pm 0.15 (83)	7.92 \pm 0.15 (114)	8.17 \pm 0.12 (197)
8	Number of days for weaning	42 days of age		
9	Pre weaning mortality rate (%)	4.76	2.04	3.29
10	Pre-weaning growth rate (g/day)	163.0 \pm 0.05 (47)	159.0 \pm 0.10 (43)	160.0 \pm 0.14 (47)
11	Post-weaning mortality rate (%)	2.12	2.3	2.22

(ii) Performance of animals – IX GENERATION I CROP

Sl. No.	Traits / Characters	Mean \pm SE (No. of observations)		
		Male	Female	Total
1	Litter size at birth (No.)	3.40 \pm 0.31 (22)	4.66 \pm 0.39 (22)	8 \pm 0.28 (22)
2	Litter weight at birth (kg)	4.98 \pm 0.17 (22)	4.64 \pm 0.32 (22)	8.91 \pm 0.38 (22)
3	Litter size at weaning (No.)	3.13 \pm 0.33 (22)	3.86 \pm 0.37 (22)	6.86 \pm 0.29 (22)
4	Litter weight at weaning (kg)	27.77 \pm 2.45 (22)	28.63 \pm 2.39(22)	51.5 \pm 1.55 (22)
5	Individual weight at birth (kg)	1.26 \pm 0.02 (69)	1.17 \pm 0.02 (88)	1.21 \pm 0.01(157)
6	Weight at 21 day (kg)	4.64 \pm 0.32 (65)	5.34 \pm 0.19(85)	5.22 \pm 0.15(150)
7	Individual weight at weaning - 42 days (kg)	7.70 \pm 0.18 (65)	7.41 \pm 0.17 (85)	7.54 \pm 0.12 (150)
8	Number of days for weaning (day)	42 days of age		
9	Pre weaning mortality rate (%)	5.33	3.48	4.34
10	Pre-weaning growth rate (g/day)	154.0 \pm 0.19(65)	148.0 \pm 0.18 (85)	150.0 \pm 0.12(150)
11	Post-weaning mortality rate (%)	1.53	2.35	2.0
12	Post-weaning growth rate (g/day) (up to 7 month)	316.0 \pm 1.57(11)	315.0 \pm 1.98(26)	317.0 \pm 1.35 (37)



(iii) Performance of animals – DESI PG

Sl. No.	Traits / Characters	Mean ± SE (No. of observations)		
		Male	Female	Total / overall
1	Litter size at birth (No.)	4.2 ± 1.01 (5)	2.4 ± 0.67 (5)	6.6 ± 1.02 (5)
2	Litter weight at birth (kg)	4.73 ± 1.09 (5)	2.69 ± 0.72 (5)	7.42 ± 1.12 (5)
3	Litter size at weaning (No.)	4.2 ± 1.01 (5)	2.4 ± 0.67 (5)	6.6 ± 1.02 (5)
4	Litter weight at weaning (kg)	26.02 ± 5.43 (5)	15.06 ± 4.3 (5)	41.06 ± 5.8 (5)
5	Individual weight at birth (kg)	1.12 ± 0.11 (21)	1.12 ± 0.02 (12)	1.12 ± 0.11(33)
6	Weight at 21 day (kg)	3.2 ± 0.19 (21)	3.18 ± 0.25(12)	3.2 ± 0.15 (33)
7	Individual weight at weaning - 42 days (kg)	6.19 ± 0.15 (21)	6.27 ± 0.18 (12)	6.2 ± 0.11 (33)
8	Number of days for weaning (day)	42 days of age		
9	Pre weaning mortality rate (%)	-	-	-
10	Pre-weaning growth rate (g/day)	120.5 ± 0.14(21)	122.6 ± 0.18 (12)	121.3 ± 1.11 (33)
11	Post-weaning mortality rate (%)	1.53	2.35	2.0

4) Specific managemental practices

(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 polyurathane ear tag.

(b) Castration: In swine farming, castration is useful for fattener production. Only a few selected male piglets were left intact as potential sires (boars) for future breeding and remaining males were castrated and put for fattener pig production. Castration was performed by open method prior to weaning or at the time of weaning.

5) Mortality parameters

(i) Genetic group-wise mortality rate - 75 per cent crossbred from 01.04.2013 to 31.03.2014

VIII Generation II Crop

	Pre-weaning(1 days to 42 days)			Post-weaning(42 days to 1 year)		
	M	F	T	M	F	T
Animals at risk	82	112	192	84	113	197
Animals died	2	2	4	1	1	2
Mortality (%)	2.40	1.83	2.08	1.19	0.88	1.01

VIII Generation III Crop (Pre- and post-weaning)

	Pre-weaning (1 days to 42 days)			Post-weaning (42 days to 1 year)		
	M	F	T	M	F	T
Animals at risk	49	44	93	47	43	90
Animals died	2	1	3	1	1	4
Mortality (%)	4.76	2.04	3.29	2.12	2.3	2.22

Causes of mortality (2013-14)

Sl. No.	Causes	75% crossbred (<i>inter se</i>)			
		Pre-weaning		Post-weaning	
		M	F	M	F
1.	Crushing	4	4	-	-
2.	Enteritis	1	-	2	4
3.	Hepatitis	-	-	-	-
4.	Debility	-	-	1	1



5	Weak piglets	3	-	-	-
6	Carcass decomposed	1	-	1	1
7	Toxaemia	-	1	-	-
8	Others	-	-	-	-
	Total	9	5	4	6

(iv) Measures taken to 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 Albendazole and Ivermectin suspension and / or Fenbendazole and Praziquantel suspension @ 1ml per 3 kg body weight to prevent the reinfection because of intensive rearing. Routine health cover measures viz., iron, vitamin and oral calcium supplementation, disinfecting the pig sties and premises, etc. were also carried out. Strict supervision and summer managemental practices like sprinkling of water and allowing the pigs for wallowing were followed. Growth promoters like mixtures of 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 pigs and lactating sows to boost up their growth and health. During 2013-14, all the pigs were dewormed periodically using Albendazole and Ivermectin combination @ 1 ml per 3 kg body weight.

(a) Managemental measures

Particulars	01-04-2013 to 31-03-2014
No. of pigs treated	225
No. of pigs dewormed	637
No. of growers castrated	52
No. of pigs sold for breeding	304
No. of new field units established	5
No. of pigs sold for slaughter	130
Revenue generated (Rs. in lakhs)	14.17
Farm advisory services	328 farmers

(b) Prophylactic measures

- The piggery 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.
- All staffs working in pig breeding unit followed the self precautionary measures
- Field units were advised appropriately
- No. of animals vaccinated against Swine Fever: 104 (August, 2013)
- No. of animals vaccinated against Foot and Mouth Disease: 65 (2013-14)

(v) Disposal of diseased carcass: The carcasses of dead pigs were buried in the disposal pit dug 4 to 5 feet depth after conducting post-mortem and collecting relevant samples for haematological and histo-pathological examinations.

6) Disposal pattern of farm waste, pig excreta etc. / establishment of biogas plant: Pig manure was collected from pig sty and stored in a separate manure pit. The stored pig manure was used by the



agricultural section as fertilizer for fodder production. Pig urine and cleaned water were drained into manually made drainage channel, located at the rear side of each shed. All the sheds are connected with the channel and the waste is drained into storage tank at the rear end of Pig Breeding Unit. Efforts are taken to create a centralised concrete drainage facility at pig breeding unit and establishment of biogas unit. Open drainage channels constructed at the cost of rupees six lakhs to cover two hundred meters length to avoid the pollution in farm premises.

7) Production economics

(i)	Total variable cost	:	Rs. 22.19 lakhs
(ii)	Total receipts (sale of pigs)	:	Rs 14.17 lakhs
(iii)	Cost of production / kg of live body weight (Total variable cost / total body weight produced during the year)	:	Rs. 152.40
(iv)	Net farm income per adult unit	:	Rs. 29,520.00 /-
(v)	Cost of production of a piglet at Weaning	:	Rs. 2502.12 /-

8) Extension programme with success story

i) At the institute:

Training conducted

- Farm Manager Training (skill development course)-6
- White Pig Rearing Self Employment Course-2

ii) Participated in Science City

Exhibited live specimens of Large White Yorkshire, Duroc and Three-way synthetic pigs and explained to school students and visitors about importance of pig rearing in Science City Festival at Science City, Chennai held between 26.02.2015 – 01.03.2015 iii) Guest lecture delivered

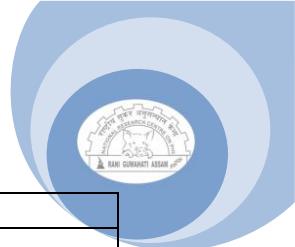
Title	Subject Matter Specialist	Date and Place
Scientific housing management practices in pig farming (Farmers)	Dr.M.Murugan Associate Professor	09.04.2014 Krishi Vigyan Kendra Kattupakkam – 603 203
White pig rearing	Dr.M.Murugan Associate Professor	23.08.2014 – 24.08.2014 Yercaud, salem Dt.
Scientific swine feeding and disease management practices (Farmers)	Dr.M.Murugan Associate Professor	14.10.2014 Krishi Vigyan Kendra Kattupakkam – 603 203
Scientific housing management practices in pig farming (Farmers)	Dr.M.Murugan Associate Professor	09.04.2014 Krishi Vigyan Kendra Kattupakkam – 603 203

(i) At the farmers field: Five field units were visited and collected feedback from the farmers and photos are enclosed in Part-C.

9) Scientific publications: 4 nos.

10) Distinguished visitors:

Date	Name of Visitor	Designation
03.04.2014	Dr. S.M. Sivaprakash	Director of Extension, KVAFSU
03.04.2014	Dr. Dilipkumar	Associate Director of Extension, KVAFSU
06.04.2014	Dr. R.K. Singh	Director cum Vice Chancellor, IVRI, Izatnagar
13.05.2014	Dr. Mahadew Gavali	Asst. commissioner A.H, Commissioner office Pune
21.05.2014	Arthur L. Goetsch	Langston university, USA
21.05.2014	Tilahun Sahlu	Langston university, USA



03.07.2014	Dr. Tim Rowan	GALVmed, Edinburgh,UK.
06.07.2014	Prof. Dr.A.S. Mahfuzul Bari	Vice Chancellor, CVASU, Bangladesh
08.07.2014	Dr. Cyril R. Clarke	Dean, Virginia Tech
19.08.2014	Dr. R. Jayabal	SSO,TNSCST, Chennai – 25.
19.09.2014	Dr. A.T. Sherikar	EX Vice Chancellor, Mumbai.
12.11.2014	Yatishwari Atmanikashapriya	Director, Akshaya Krishi Kendra, Ulundurpet
02.12.2014	Wim. Dee Whittier	Director of Veterinary Extension Virginia Tech
14.02.2015	Dr. R.S. Gandhi	ADG, ICAR New Delhi.
20.02.2015	P. Ayangaranesan	Agriculture Minister, Sri Lanka.
06.03.2014	Dr. D.K. Sarma	Director, ICAR, -NRC on pig



Field Unit

Mr. Muruganantham, Sethiathope, Cuddalore dt. Tamilnadu (Adult pigs -5 and Grower pigs – 22)

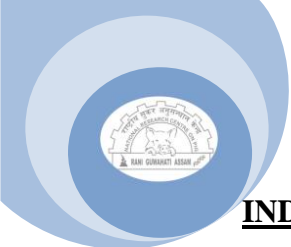


Field Unit

Nellai Church Community, Tirunelvali dt. Tamilnadu (Grower pigs – 20 + 4)



Hygienic slaughtering of pigs demonstrated to students of Food Science, Pondicherry Central University

**INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR, BAREILLY**

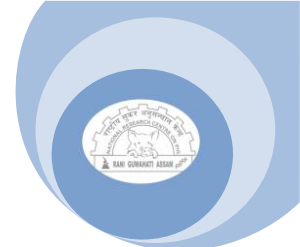
IVRI Centre of All India Coordinated Research Project on Pigs came in existence during the year 1971 (IV Five Year Plan) in order to study the performance of Landrace pigs under farm conditions. However, subsequently the technical programme was modified to initiate research works on indigenous and crossbred genotypes with Landrace blood of 75% and 50%. As there was no significant difference between the two genetic groups of crossbred pigs, they were merged as per the recommendations of Scientists' Meet held at Tirupati (September, 1994) 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. After merging the two crossbred genotypes, the crossbreds were further crossed with purebred Landrace in the year 2006 due to gradual deterioration of the performance, as per the recommendation made at the Scientists' Meet at Goa (2001-02). The crossbred stock (81.25% L x 18.75% D), produced was maintained and evaluated for their performance in the light of the recommendations made at the 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 produce stock of 75% exotic blood line, efforts were made to breed pure landrace with desi. Hence, at present this farm has 75 % crossbred pigs of 173 numbers.

1) Herd dynamics**Herd strength of 50% Crossbred Pigs**

Sl. No.	Age (months)	Opening Balance	Additions Births	Disposals			Closing balance
				Deaths	Transfers	Sold	
1	Piglet (up to 42 days)	-	-	-	-	-	-
2	Grower (42days-5 month)	-	-	-	-	-	-
3	Finisher (5month-8 month)	-	-	-	-	-	-
4	Breeding female	23	-	-	-	20	3
5	Boar	7	-	-	-	3	4
	Total	30	-	-	-	23	7

Herd strength of 75% Crossbred Pigs

Sl. No.	Age (months)	Opening Balance	Additions Births	Disposals			Closing Balance
				Deaths	Transfers	Sold	
1	Piglet (up to 42 days)	82	310	88	3	-	109
2	Grower (42days-5 month)	-	-	3	5	97	3
3	Finisher (5month-8 month)	16	-	1	9	33	6
4	Breeding female	15	-	-	-	3	45
5	Boar	3	-	-	-	11	13
	Total	116	310	92	17	144	173



Herd strength of Landrace Pigs

Sl. No.	Age (months)	Opening Balance	Additions		Disposals			Closing balance
			Births	Deaths	Transfers	Sold		
1	Piglet (up to 42 days)	4	47	16	-	-	-	
2	Grower (42 days-5 month)	15	-	4	2	38	-	
3	Finisher (5month-8 month)	18	-	-	2	-	-	
4	Breeding female	6	-	3	-	8	3	
5	Boar	12	-	1	-	15	10	
	Total	55	47	24	4	61	13	

Herd strength of Desi Pigs

Sl. No.	Age (months)	Opening Balance	Additions		Disposals			Closing balance
			Births	Deaths	Transfers	Sold		
1	Piglet (up to 42 days)	-	3	-	-	-	-	
2	Grower (42days-5month)	12	-	-	-	-	-	
3	Finisher (5month-8 month)	-	-	-	-	-	2	
4	Breeding Female	-	-	3	-	6	-	
5	Boar	-	-	3	-	1	-	
	Total	12	3	6	-	7	2	

2) Breeding strategy of the farm as approved

In order to establish 75% exotic blood line, pure bred Landrace and desi pigs were mated to produce 50% stock, which were further backcrossed with pure bred LR to get 75% exotic blood. As per the recommendation of AICRP Annual Review Meet held at IVRI in 2013, 30 breedable sows are being maintained with a sex ratio of 1:3 along with 10 boars. During this year, a total of 310 CB (75%) animals were born. Further, there will be selection of animals based on their performance for the future breeding. The established 75% exotic inheritance will be maintained by inter-se- mating.

3) Performance of animals

Mean±SE of various production parameters in 50% Crossbred pigs

Sl. No.	Traits/characters	CB 50%		
		M	F	Total
1.	Litter size at birth (no.)	4.33±0.42(65)	3.43±0.43(55)	7.50±0.53(120)
2.	Litter weight at birth (kg) Traits/ Characters	4.45±0.48(65)	3.86±0.54(55)	7.53±0.66(120)
3.	Litter size at weaning (no.)	3.25±0.62(39)	2.58±0.48(31)	5.38±0.83(70)
4.	Litter weight at weaning (kg)	27.08±4.84(39)	22.50±4.20(31)	45.77±6.86(70)
7.	Number of days for weaning (d)	42	42	42

Production parameters in 75% Crossbreds pigs

Sl. No.	Traits/characters	CB75%		
		M	F	Total
1.	Litter size at birth (no.)	4.55±0.43(91)	3.82±0.31(65)	7.80±0.58(156)
2.	Litter weight at birth(kg)	4.39±0.45(91)	3.36±0.33(65)	7.04±0.51(156)
3.	Litter size at weaning (no.)	4.28±0.64 (30)	3.16±0.79 (19)	7.00±1.04 (49)
4.	Litter weight at weaning (kg)	29.97±4.43(30)	21.38±5.16(19)	48.30±7.52(49)
5.	Avg. individual weight at birth (kg)	0.98±0.03(171)	0.94±0.03(139)	0.97±0.03(310)
6.	individual weight at weaning (kg)	8.06±0.38(69)	8.28±0.39(50)	8.08±0.35(119)



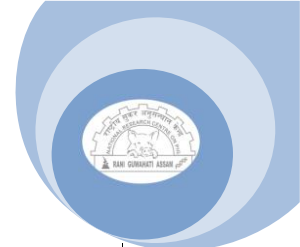
7.	Number of days for weaning (d)	42	42	42
8.	Pre weaning mortality rate (%)	54/220=24.54%	34/206=16.50%	88/426=20.6%
9.	Pre weaning growth rate (g/d)	160.39±0.00(87)	160.71±0.00(83)	160.55±0.00(170)
10.	Post weaning mortality rate (%)	2/220=0.90%	2/206=0.97%	4/426=0.93%
11.	Post weaning growth rate (g/d) (upto 24 weeks)	423.16±0.01(30)	430.72±0.00(44)	427.66±0.00 (74)
12.	Overall growth rate (upto 8 m) (gm/d)	405.99±0.01(21)	413.08±0.00(33)	410.32±0.00(54)
13.	Body weight (kg)1 Month	5.63±0.15(107)	5.53±0.16(89)	5.58±0.11(196)
	2 Month	10.24±0.26(85)	10.33±0.27(83)	10.29±0.19(168)
	3 Month	17.27±0.48(73)	17.64±0.43(79)	17.46±0.32(152)
	4 Month	29.44±0.78(53)	29.16±0.72(62)	29.29±0.53(115)
	5 Month	44.01±1.30(38)	43.11±1.11(54)	43.48±0.84(92)
	6 Month	59.27±1.83(30)	59.96±1.15(44)	59.68±1.00(74)
	7 Month	76.22±2.20(29)	77.67±1.49(42)	77.08±1.25(71)
	8 Month	92.14±3.42(21)	93.67±1.97(33)	93.07±1.78(54)

N.B: Figures in the parenthesis are number of observations; the parameters for which data is yet to be recorded are blank.

Mean±SE of various production parameters of Landrace pigs

Sl. No.	Traits/ Characters	Landrace		
		M	F	Total
1	Litter size at birth (no.)	3.60±0.45(36)	4.50±0.34(45)	8.10±0.56(81)
2.	Litter weight at birth (kg)	3.77±0.43(36)	4.63±0.41(45)	8.40±0.63(81)
3.	Litter size at weaning (no.)	2.16±0.30(13)	3.16±0.40(19)	5.33±0.61(32)
4.	Litter weight at weaning (kg)	19.3±3.62(13)	26.76±3.63(19)	46.11±5.93(32)
5.	Avg. individual weight at birth (kg)	1.03±0.03(21)	1.00±0.04(26)	1.01±0.04(47)
6.	Individual weight at weaning (kg)	8.76±0.54(13)	8.42±0.34(19)	8.63±0.28(32)
7	Number of days for weaning (d)	42	42	42
8.	Pre weaning mortality rate (%)	8/51=15.68%	8/51=15.68%	16/102=15.68%
9.	Pre weaning growth rate (g/d)	204.93±0.01(14)	182.97±0.01(20)	192.01±0.00(34)
10.	Post weaning mortality rate (%)	3/51=5.88%	5/51=9.80%	8/102=7.84%
11.	Post weaning growth rate (g/d) (up to 24 weeks)	416.80±0.00(1)	423.94±0.04(4)	423.94±0.03(5)
12.	Overall growth rate (up to 8 m) (gm/d)	477.23±0.00(1)	398.10±0.01(4)	413.92±0.02(5)
13.	Body weight (kg) 1 Month	6.13±0.40(16)	5.88±0.33(20)	5.99±0.25(36)
	2 Month	12.36±0.73(13)	11.25±0.78(16)	11.73±0.54(29)
	3 Month	19.53±1.24(13)	20.80±1.24(11)	20.11±0.87(24)
	4 Month	32.68±2.82(7)	34.78±1.83(8)	33.80±1.60(15)
	5 Month	47.5±0.00(1)	45.22±1.74(4)	45.68±1.42(5)
	6 Month	62.8±0.00(1)	60.62±4.24(4)	61.06±3.32(5)
	7 Month	85.4±0.00(1)	74.65±5.94(4)	76.08±5.09(5)
	8 Month	108.2±0.00(1)	90.45±3.84(4)	94.00±4.64(5)

N.B: Figures in the parenthesis are number of observations; the parameters for which data is yet to be recorded are blank.



4) Lifetime production traits

Category	Total Litter size at Birth	Average Litter size at Birth	Total Litter Weight at Birth	Average Litter Weight at Birth	Total Litter size at Weaning	Average Litter size at Weaning	Total Litter Weight at Weaning	Average Litter Weight at Weaning
50%CB	8.21±0.58	7.78±0.52	8.30±0.66	7.89±0.64	4.69±0.78	4.69±0.78	49.02±6.08	49.02±6.08
75%CB	9.17±1.10	8.00±0.53	8.28±0.97	7.24±0.49	8.16±1.19	6.08±0.63	51.78±5.83	39.56±3.46
Landrace	9.00±1.06	8.11±0.61	9.33±0.88	8.53±0.64	6.40±1.75	5.10±0.68	55.34±14.90	44.32±6.35

5) Specific Managemental practice:

- i) **Identification method:** Four percent silver nitrate solution is used for marking the body in white pigs. The black piglets as well as adults 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
- iii) **Castration:** The piglets are usually not castrated on farm, however, in feed efficiency trial, the castrated barrows are used. In that case, the castration is done by open method at the age below 60 days.

6) Mortality parameter

- i) Causes of mortality:

Causes of mortality in pigs during 2014-2015

Sl. No.	Category of pigs				Total
	Causes of mortality	CB 75%	Landrace	Desi	
1	Pneumonia	6	-	-	6
2	Septicemia	1	3	4	8
3	Autolysis/ NSD	3	1	1	5
4	Enteritis	8	7	-	15
5	Haemo-pericardium	1	-	-	1
6	Trauma Asphyxia	-	1	-	1
7	Still birth	11	5	-	16
8	Pulmonary edema	1	-	-	1
9	Weakling	12	-	-	12
10	Chronic wasting	-	1	-	1
11	Hepatic rupture	-	1	-	1
	Total	43	19	5	67

ii) Measures taken to minimize mortality

- a) **Managemental measures:** Round the clock farrowing management to minimize mortality.
- b) **Prophylactic measures:** The iron and Vitamin B-Complex injection 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, 335 animals were vaccinated against FMD and 268 animals were vaccinated against Swine Fever. The deworming (355 animals) and disinfection are accomplished. Treatment of ailing cases is also regularly done regularly.



Health care management of practices

Sl. No.	Symptoms/ Ailments	Number of cases
1.	Wound/Injury	312
2.	Lameness	65
3.	Digestive problem/ Diarrhea	179
4.	Skin lesions/ Dermatitis/ Pox like lesions	72
5.	Fever	22
6.	Weakness/ Dullness	176
7.	Hernia	8
8.	Rectal Prolapse	1
9.	Orchitis	8
10	Annexia	13
11	Abscess	38
12	MMA syndrome	7
	Total:	901

iii) **Disposal of diseased carcass:** Usually sent to PM Section where incineration is done after the PM examination.

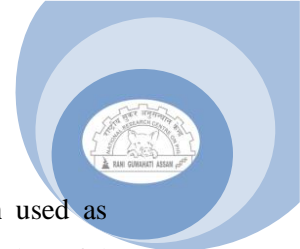
7) Nutritional experimentation:

Effect of feeding swine based probiotic on gut health, faecal, microflora and immune response in grower-finisher pigs

Supplementation of probiotics had no effect on pH in grower phase (28-90 days) while significantly (P<0.05) decreased in finisher phase (90-180 days). Faecal NH₃-N concentration was reduced significantly during grower (P=0.002) and finisher (P<0.001) phase in both probiotic groups. By feeding either of the probiotics, the population densities of beneficial microbes like lactobacilli and bifidobacteria significantly increased, whereas, of harmful microbes like *E.coli* and *clostridium* significantly decreased in the faeces of the pigs (Table 1). The Cell Mediated Immune response was significantly improved in Lac-18 group followed by Lac-15 and then control. But the Humoral Immune response was improved (P<0.005) with supplementation of probiotics irrespective of its source as compared to control.

Microbial counts in the faeces of piglets in the different groups in grower phase

Attributes	Group	Grower Phase		Mean	P Value
		0-45d	45-90d		
<i>E.coli</i> (cfu/g)	Lac-0	8.71	8.59	8.65 ^b	T,P,T×P
	Lac-15	7.76	6.77	7.26 ^a	
	Lac-18	7.60	6.69	7.14 ^a	
	Mean	8.02 ^y	7.35 ^x		
<i>Lactobacilli</i> (cfu/g)	Lac-0	8.68	8.60	8.60 ^a	T
	Lac-15	9.08	9.38	9.23 ^b	
	Lac-18	9.35	9.40	9.37 ^b	
	Mean	9.03	9.12		
<i>Bifidobacterium</i> (cfu/g)	Lac-0	12.08	12.42	12.25 ^a	T,P,T×P
	Lac-15	12.42	12.73	12.57 ^b	
	Lac-18	12.56	12.82	12.69 ^b	
	Mean	12.35	12.66 ^y		
<i>Clostridia</i> (cfu/g)	Lac-0	8.53	8.67	8.60 ^b	
	Lac-15	7.70	6.61	7.16 ^a	
	Lac-18	7.90	6.83	7.36 ^a	
	Mean	8.05 ^y	7.37 ^x		



The study revealed that the lactobacilli culture irrespective of their source when used as probiotics, modulate the gut health by increasing the beneficial microbes and decreasing the harmful microbes. The lactobacilli culture from pigs was superior as compared to that from dairy animals as the immune response was better in the former group than the latter one and the control group.

8) 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.

9) Extension programme with success story:

i) At Institute:

- Scientists delivered lectures on various aspects of swine production technology during Farmers' training (theory and practical classes) organized at Krishi Vigyan Kendra during the year. During these programmes, many farmers, either interested or practicing, were provided with the technical know-how.
- Farmers from nearby areas were provided the information on pig production on their visit to the Swine Production Farm. The direct consultancy in the form of farmers-scientists interaction also became an effective mode of transfer of technology during the period.
- Required information relating to pig/ livestock health management were directly provided to the farmers through Kisan Call Centre (at ATIC, IVRI) as well as through mobile telephony too.
- Scientists took part in development of Programme on Improvement of swine farming in rural areas, which was being broadcasted through Doordarshan Kendra, Bareilly and dissemination of technical know-how was also accomplished through Radio talks (AIR, Bareilly; AIR, Rampur).

ii) At the Farmer's field: Advisory services were given.

10) Salient achievement during the report period: The centre produced 310 piglets with 75% exotic blood in the current year to select future breeding stock.

11) Scientific publications

i) In peer-reviewed journals: 2 No.

Abstracts published in conferences/seminars: 3no.

12) Distinguished visitors:

Dr. Gurbachan Singh, Chairman, ASRB

Dr. S.P.S.Ahluwat, Former Director & VC, Vikram University, Ujjain (M.P)

Dr. M.P.Yadav, Ex.Director IVRI Izatnagar Bareilly



Learning AI Technique by our staff at NRC, Rani



Group from Punjab took training at SPF, IVRI



Chairman, ASRB visiting IVRI farm



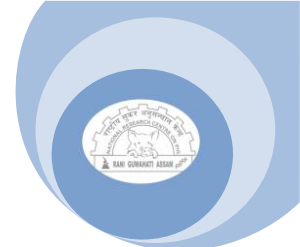
Flycatchers have been introduced in all sheds



Newly introduced free range system at our farm



Sow with good litter size



ICAR RESEARCH COMPLEX FOR GOA, OLD GOA

Goa and coastal states are having more per capital income in the country. The states are popular for tourism, where domestic as well as foreign tourist visit often. Therefore, these state has continuous demand of meat, beef, sausages, chicken etc. Livestock improvement will help rural population to increase the related products which will help them to be more sustainable. The production of pork and pork products is a household activity through the traditional knowledge in most of coastal areas of our country. Availability of higher quantity of pork for preparing the products will help to make the activity self sustainable. The activity may become self sustained over a period of time only when there is use of advanced techniques. Pig industry is slowly growing in past 10 years. This change is not in terms of population but from quality point of view. Livestock census 2012 of the Goa state indicated that there is increase in crossbred pig population in the state indicating pig grower's interest in advanced technology. 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 knowhow to the pig growers of the region through trainings and demonstrations.

1) Herd dynamics

CROSSBREED 75% (LWY X AG)

Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglet (upto42days)	10	90	-	9	81	-	10
2	Grower(42days-5months)	6	X	81	3	32	6	46
3	Finisher(5m-8months)	2	X	32	1	25	-	8
4	Breeding female	10	X	12				22
5	Boar	5	X	13			4	14
Grand total		33	103	138	25	138	10	100

AGONDA GOAN

Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglet(upto42days)	6	38	0	4	24	0	10
2	Grower(42days-5months)	0	X	24	2	1	21	0
3	Finisher(5m-8months)	0	X	1	0	1	0	0
4	Breeding female	24	X	0	2	0	7	15
5	Boar	12	X	1	1	0	3	9
Grand total		42	44	26	15	26	31	34

LARGE WHITE YORKSHIRE

Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglet(upto42days)	5	59	-	5	59	-	0
2	Grower(42days-5months)	3	X	59	1	3	34	24
3	Finisher(5m-8months)	0	X	7	0	7	0	0



4	Breeding female	10	X	2	0	0	4	8
5	Boar	9	X	5	1	0	5	8
Grand total		27	60	58+4= 62	19	58	40	40

50% CROSSBREED (LWY X AG)

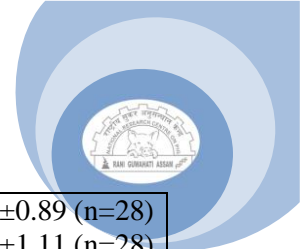
Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1	Piglet(upto42days)	0	41	-	3	34	-	4
2	Grower(42days-5months)	0	X	34	1	5	9	19
3	Finisher(5m-8months)	0	X	5	-	-	-	5
4	Breeding female	11	X	0	0	0	10	1
5	Boar	9	X	-	--	---	7	2
Grand total		20	41	39	4	39	26	31

2) 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 75 % crossbred. One breeding boar is allotted for three breeding females. AI is the common practice for breeding. Agonda Goan, Large White Yorkshire and crossbred 50% are maintained for production of crossbred 75% so as to avoid inbreeding.

3) Performance of animals (Tabular form) CROSS BREED 75%

	Traits/Characters	Mean±SE		
		M	F	Total
1	Litter size at birth (n=13)	4.31±0.55	3.38±0.55	7.69±0.82
2	Litter weight at birth (kg) (n=13)	4.09±0.56	3.05±0.49	7.15±0.88
3	Litter size at weaning(no.) (n=13)	3.07±0.46	2.50±0.36	5.79±0.60
4	Litter weight at weaning(kg) (n=13)	26.67±3.40	21.70±2.92	48.37±4.51
5	Avg. Individual weight at birth (kg)	0.95±0.29(n=56)	0.90±0.38(n=44)	0.93±0.23(n=100)
6	Avg. Individual weight at weaning(kg)	6.80±3.00(n=51)	7.06±4.47(n=40)	6.91±2.56(n=91)
7	Number of days for weaning(d)	D=40 days (all breeds)		
8	Pre weaning mortality rate (%)	8.92%	9.09%	9.0%
9	Pre weaning growth rate(mg/d)	147.36±7.71	152.53±12.33	149.59±6.86
10	Post weaning mortality rate (%)	2.22%	0.00%	0.96%
11	Post weaning growth rate (mg/d)	226.44±7.12(n=8)	205.15±7.20(n=5)	218.25±5.72 (n=13)
12	Overall growth rate (up to 9m) (mg/d) (up to 10m) (mg/d)	208.65±9.21(n=8)	186.31±14.68(n=5)	200.06±8.24(n=13)
		217.32±7.02(n=8)	199.08±5.55(n=5)	210.31±5.31(n=13)
13	Bodyweight (Kg) 1 month 2 month	5.48±0.33 (n=17)	5.36±0.79 (n=11)	5.432±0.36 (n=28)
		8.76±0.68 (n=17)	8.83±1.22 (n=11)	8.789±0.62 (n=28)



	3 month	13.42±.99 (n=17)	12.70±1.73 (n=11)	13.136±0.89 (n=28)
	4 month	20.41±1.37 (n=17)	17.89±1.83 (n=11)	19.418±1.11 (n=28)
	5 month	29.10±2.10 (n=17)	24.07±2.4 (n=11)	27.125±1.63 (n=28)
	6 month	37.72±3.32 (n=16)	30.44±2.84 (n=10)	34.912±2.39 (n=26)
	7 month	45.09±4.47 (n=13)	39.13±3.18 (n=8)	42.824±3.13 (n=21)
	8 month	52.00±4.96 (n=13)	46.66±3.97 (n=8)	49.971±3.46 (n=21)
	9 month	57.42±2.61 (n=8)	51.34±2.18 (n=5)	55.085±2.22 (n=13)
	10 month	66.25±1.60 (n=8)	60.62±2.13 (n=5)	64.077±1.62 (n=13)

4) Nutritional experimentation:

Swirl feeding is a common practice in pig rearing in the area but the quality of material is not sure. Many times only poor carbohydrates like rice or barkers products are available and most of the time very low protein is available. To study scientific way of utilizing biological waste a trial on feeding of broiler offal is initiated. Proximate analysis of different parts of offal like head, shanks, and skin viscera was undertaken. Skin/subcutaneous portion had very high crude fiber. To prepare balanced diet head and shanks were minced and used as major portion of ration. Feeding trial is in progress and details of analysis etc will be reported after completion of trial.

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

6) Production economics:

- i) **Cost of production/pig up to slaughter age:** Rs. 4970/- per pig (8 months)
- ii) **Cost of production/kg pork:** Rs. 101/- per kg pork (if dressing is 70%)

7) Extension programmer with success story:

i) **At the institute:** More than 250 farmers, commercial pig growers and professionals have approached for the technical advice. Technical advice in respective aspect as well as practical training was demonstrated to them.

ii) **At the farmers' field:** Demonstration unit of Mr. Custodio at Sanem taluka was visited frequently for improvement in housing and feeding practices. Management of excreta was adopted by biogas plant. More than 25 pig units of farmers were visited and advised for improvement in hygiene and feeding practices.

8) Salient achievement during the report period:

Crossbred pig was popularized among the pig growers of the region. Farmers were convinced regarding benefits of crossbred pig rearing. Many farmers have initiated crossbred pigs by availing AI facility. AI is becoming popular in the Goa and adjoining Maharashtra region. Synchronization of estrous and AI were undertaken at institute as well as at the farmers field. Agonda Goan local pig was registered with NBAGR as a breed of pig and accession number is allotted.

9) **Scientific publications:** i) in peer-reviewed journals: 2 nos

Papers presented in symposia: 2 nos

10) Project work of students (MVSc./Ph.D.)

M. V. Sc. Student Khadse Abhishek Sanjiv M. V Sc. student of Department of Animal

Reproduction, Gynecology and Obstetrics K. N. P. College of veterinary science, Shirwal Dist-Satara. Maharashtra animal and fishery sciences university, Nagpur- 440 006. The topic of study was “Comparison of different extenders and storage temperatures on seminal attributes of boar semen” He had tried commercially available buffers like MRA, MRA3, BTS, Modena etc. for their performance to store boar semen at 16 and 4 degree temperature.

11) Distinguish visitors: Hon. Shri. Radha Mohan Singh, Union Minister of Agriculture, Govt. of India visited ICAR Research Complex for Goa on 3rd August 2014.

12) Success story: Mr. Custodio Fernandes, Salcete - Goa has started a pig farm maintaining about 100-150 pigs in remote areas of Canacona taluka of South Goa district. First he started with local ND pigs as trial but with AICRP pigs Goa centre’s intervention he has modified housing, feeding and introduction of crossbred pigs has increased the margin of profit. He is able to sale at least 2-3 animals per week and is able to earn 3500 profit per week. Hotel kitchen waste is the major part of feeding which is fortified with maize powder and mineral mixture.



Estrous detection in natural cycle and induced estrous for AI and training to Farmers



Integrated Farming unit(Pig and muscle farming)



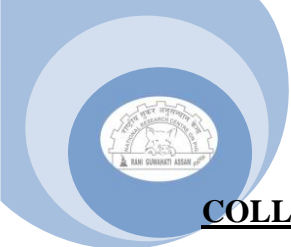
Agonda Goan Pig (Accession No. INDIA_PIG_3500_AGONDAGOAN_09003)



Semen Collection and Artificial Insemination in farmers field



Training on AI aspects to professionals from AICRP Kerala centre



COLLEGE OF VETERINARY SCIENCES & ANIMAL HUSBANDRY, CENTRAL AGRICULTURAL UNIVERSITY, SELESIH, AIZAWL, MIZORAM

In the state of Mizoram, pig is by far the most popular livestock. The pig population of the state was 2,45,238 as per 19th Livestock Census, 2012 and shows the highest percentage of growth in its population. The cross bred population make up for 85 % of the total population, the rest 15 % was of indigenous pig. Considering its 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 farmer’s 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.

1) Herd dynamics:

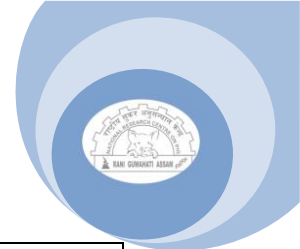
Age-wise and sex-wise herd strengths of 75% Crossbred (¾ LWY x ¼ Zovawk), Zovawk, 50% Crossbred (1/2 LWY x 1/2 Zovawk), and LWY at the end of reporting period (31.03.2015) were presented in Table 1, 2, 3 and 4 respectively. It was revealed that a total of 187 were available at the end of reporting period.

Herd Strength of 75% Crossbred as on 31.03.2015

Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 days)	-	42	-	1	-	-	-	-
2	Grower (42 days-5 months)	35	-	-	2	-	2	3	9
3	Finisher (5-8 months)	-	-	-	-	-	6	5	13
4	Breeding female	-	-	-	1	-	-	25	
5	Boar	-	-	-	-	-	-	10	
	Grant total	35	42	-	4	-	8	65	

Herd Strength of Zovawk as on 31.03.2015

Sl. No.	Categories	Opening balance	Additions			Disposals		Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 days)	-	8	-	-	-	-	3	5
2	Grower (42 days-5 month)	1	-	-	-	-	-	-	-
3	Finisher (5-8 months)	12	-	-	-	-	2	-	-
4	Breeding female	16	-	-	-	1	9	13	
5	Boar	14	-	-	-	4	7	7	
	Grant total	43	-	-	-	5	18	28	



Herd Strength of 50% Crossbred as on 31.03.2015

Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 days)	14	47	-	3	-	-	-	-
2	Grower (42 days-5 months)	2	-	-	2	8	1	13	5
3	Finisher (5-8 months)	27	-	-	1	-	28	5	3
4	Breeding female	6	-	-	-	-	2	21	
5	Boar	4	-	-	-	-	6	10	
	Grant total	53	47	-	6	8	37	49	

Herd Strength of Large White Yorkshire as on 31.03.2015

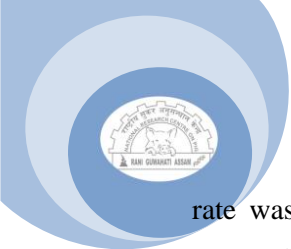
Sl. No	Categories	Opening balance	Additions			Disposals		Closing balance	
			Births	Transfers	Deaths	Transfers	Sold	M	F
1	Piglet (upto 42 days)	25	55	-	4	-	-	-	-
2	Grower (42 days-5 months)	18	-	-	2	49	13	7	5
3	Finisher (5-8 months)	15	-	-	1	-	4	5	5
4	Breeding female	7	-	-	-	-	5	16	
5	Boar	10	-	-	-	-	7	5	
	Grant total	75	55	-	7	49	29	45	

2) Breeding strategy of the farm:

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. Index methods of selection were employed for selection of 50 % breeding males and females to produce 75 % LWY x 25% Zovawk. The index constructed for males was $I = -5.35 X_1 + 0.828 X_2 + 0.085 X_3$, where X_1 = birth weight, X_2 = weaning weight and X_3 = 8 months weight and for that of females, $I = 11.536X_1 + -12.878 X_2 + 0.733 X_3 + 1.132 X_4$, where X_1 = litter size at birth, X_2 = litter size at weaning, X_3 =Litter weight at birth and X_4 = litter weight at weaning. Number of functional teats (at least 6 pairs) of the gilts was also given due consideration after the selection based on index before putting for breeding. After selection, a total of 25 breeding sows and 10 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 18 (5 males and 13 females) had been generated during the reporting year. Regular heat detection has been done with teaser and/or by visual observation. Natural mating has been followed as per the mating plan. During the later part of the reporting year, AI has been initiated as per the approved technical programme.

Breeding Record:

The data on reproduction traits were presented in Table 5 (75% LWY x 25% Zovawk), Table 6 (Zovawk), Table 7 (50% LWY x 50% Zovawk), and Table 8 (LWY). For production of 75 % Crossbred, 7 females (50 % crossbred) had been served during the reporting period and conception rate was 85.7 %. In Zovawk, 1 female had been served during the reporting period and conception



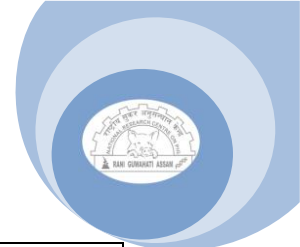
rate was 100%. In 50 % Crossbred, 9 females had been served during the reporting period and conception rate was 77.7 %. In LWY, 8 females had been served and conception rate was 85.7 %.

Breeding Performance

	50% crossbred	Zovawk	50% LWY x 50% Zovawk	Yorkshire
Numbers of gilts/sows put to boars	7	1	9	7
Numbers of boar used	5 + AI	1	5 + AI	5 + AI
Numbers of services given	14	2	20	14
Av. Services/ female	2	2	2	2
Conception rate (%)	85.7	100	77.7	85.7

3) Performance of Animals: 75 % Crossbred

SL.NO.	TRAITS/CHARACTERS	$\frac{3}{4}$ LWY x $\frac{1}{4}$ ZOZAWK (MEAN \pm S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	3.16 \pm 0.40 (6)	3.83 \pm 0.30 (6)	7.00 \pm 0.44 (6)
2	Litter weight at birth (Kg)	4.68 \pm 0.59 (6)	4.23 \pm 0.68 (6)	8.91 \pm 0.68 (6)
3	Litter size at weaning (no.)	3 \pm 0.51 (6)	3.83 \pm 0.54 (6)	6.80 \pm 0.60 (6)
4	Litter weight at weaning (Kg)	17.93 \pm 2.00 (6)	22.43 \pm 1.99 (6)	40.36 \pm 2.99 (6)
5	Avg. Individual weight at birth (Kg)	1.08 \pm 0.04 (19)	1.10 \pm 0.04 (23)	1.09 \pm 0.03 (42)
6	Avg. Individual weight at weaning (Kg)	5.66 \pm 0.28 (18)	5.85 \pm 0.29 (23)	5.76 \pm 0.20 (41)
7	Number of days for weaning (d)	42	42	42
8	Pre weaning mortality rate (%) (As on 31.03.2015)	2.38	-	2.38%
9	Pre weaning growth rate (g/day) (As on 31.03.2015)	108.89 \pm 6.64 (23)	113.55 \pm 7.04 (18)	111.4 \pm 4.84 (41)
10	Post weaning mortality rate (%) (As on 31.03.2015)	2.43	5.28	7.71%
11	Post weaning growth rate (g/day)	276.16 \pm 18.05 (10)	255.53 \pm 5.40 (25)	268.42 \pm 11.56 (35)
12	Overall growth rate (upto 9 m) (g/d)	255.85 \pm 14.32(10)	255.01 \pm 2.26(25)	255.54 \pm 8.59 (35)
13	Body weight (Kg) (Average)			
	1 month	4.87 \pm 0.24 (19)	5.13 \pm 0.25 (23)	5.02 \pm 0.17 (42)
	2 month	7.32 \pm 1.02 (18)	7.89 \pm 1.34 (23)	7.60 \pm 1.21 (41)
	3 month	10.98 \pm 0.42 (17)	11.54 \pm 0.08 (19)	11.26 \pm 0.31(36)
	4 month	16.58 \pm 1.43 (33)	17.64 \pm 2.23 (32)	17.11 \pm 1.92(65)
	5 month	31.50 \pm 1.45 (33)	31.75 \pm 1.23 (32)	31.66 \pm 1.37 (65)
	6 month	42.12 \pm 4.30 (31)	41.78 \pm 3.70 (32)	41.95 \pm 3.91 (63)
	7 month	54.58 \pm 3.90 (27)	53.97 \pm 2.10 (32)	54.27 \pm 3.40 (59)
	8 month	61.50 \pm 2.93 (15)	58.66 \pm 0.92 (25)	60.43 \pm 1.85 (40)
	9 month	70.20 \pm 3.80 (10)	69.83 \pm 0.66 (25)	70.06 \pm 2.28 (35)
14	Age at slaughter (d)	300 (2)	-	300 (2)
15	Weight at slaughter (Kg)	87.00 \pm 1.50 (2)	-	87.00 \pm 1.50 (2)
16	Dressing percentage (%)	75.85 \pm 1.24 (2)	-	75.85 \pm 1.24 (2)
17	Carcass length (cm)	86.00 \pm 1.24 (2)	-	86.00 \pm 1.24 (2)
18	Back fat thickness (mm)	3.00 \pm 0.75 (2)	-	3.00 \pm 0.75 (2)
19	Feed conversion efficiency	4.29 (2)	-	4.29 (2)

**Performance of Animals: Zovawk (Mizo Local)**

SL. NO.	TRAITS/CHARACTERS	ZOVAWK (MEAN ± S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	3 (1)	5 (1)	8 (1)
2	Litter weight at birth (Kg)	1.5 (1)	2.25 (1)	3.75 (1)
3	Litter size at weaning (no.)	-	-	-
4	Litter weight at weaning (Kg)	-	-	-
5	Avg. Individual weight at birth (Kg)	0.500 (3)	0.450 (5)	0.468 (8)
6	Avg. Individual weight at weaning (Kg)	-	-	-
7	Number of days for weaning (d)	42	42	42
8	Post weaning growth rate (g/day)	154.04 ±1.47 (4)	149.49 ±2.13 (6)	151.76 ±1.89 (10)
9	Overall growth rate (upto 9 m) (g/d)	147.63 ±2.50	142.66 ±1.14	145.14 ±1.74
10	Body weight (Kg) (Average)			
	1 month	-	-	-
	2 month	-	-	-
	3 month	-	8.76	8.76 (1)
	4 month	-	8.76	8.76 (1)
	5 month	15.46±1.08 (3)	14.77±1.63(5)	15.11±1.35 (8)
	6 month	17.18±0.23 (4)	16.86±0.38 (6)	17.02±0.30 (10)
	7 month	25.70±1.24(4)	24.84±1.94(6)	25.27±0.59 (10)
	8 month	34.50±1.74 (4)	34.00±2.85 (6)	34.25±2.35 (10)
	9 month	40.50±2.54 (4)	39.00±4.11 (6)	39.75±3.49 (10)
11	Feed Conversion efficiency (:)	5.23 (4)		5.23 (4)

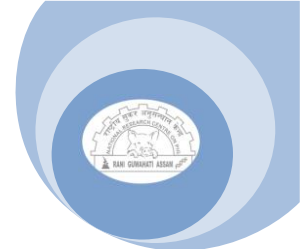
Performance of Animals: 50% Crossbred

SL.NO.	TRAITS/CHARACTERS	½ LWY x ½ ZOVAWK (MEAN±S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	2.57 ± 0.64 (7)	4.14± 0.63 (7)	6.71 ± 0.86 (7)
2	Litter weight at birth (Kg)	2.91 ± 0.88 (7)	3.20 ± 0.60 (7)	6.12± 0.94 (7)
3	Litter size at weaning (no.)	2.42 ± 0.61 (7)	3.85 ± 0.45 (7)	6.28 ± 0.56 (7)
4	Litter weight at weaning (Kg)	16.65 ± 3.38 (7)	17.62 ± 5.06 (7)	32.06 ± 4.75 (7)
5	Avg. Individual weight at birth (Kg)	0.88 ± 0.03 (28)	0.83 ± 0.03 (19)	0.85 ± 0.02 (47)
6	Avg. Individual weight at weaning (Kg)	4.76 ± 0.31 (27)	4.75 ± 0.23 (17)	4.76 ± 0.19 (44)
7	Number of days for weaning (d)	42	42	42
8	Pre weaning mortality rate (%) (As on 31.03.2015)	2.12 (1)	4.25 (2)	6.37%
9	Pre weaning growth rate (g/day) (As on 31.03.2015)	93.83 ± 7.76 (27)	91.94 ± 5.61 (17)	92.92 ± 4.8 (44)
10	Post weaning mortality rate (%) (As on 31.03.2015)	4.54	2.17	6.71%
11	Post weaning growth rate (g/day)	232.99 ± 13.52 (18)	218.01 ± 15.37 (8)	227.00 ± 10.01 (26)
12	Overall growth rate (upto 9 m) (g/d)	226.43 ± 11.91 (17)	214.35 ± 11.49 (8)	221.60 ± 8.36 (25)

13	Body weight (Kg) (Average)			
	1 month	3.40±0.20(28)	3.47±0.19 (19)	3.43±0.13 (47)
	2 month	6.16±0.41 (33)	6.12±0.47 (24)	6.14±0.25 (57)
	3 month	9.98±1.07 (33)	8.76±0.94 (24)	9.37±1.04 (57)
	4 month	11.80±1.09 (18)	10.98±0.68 (21)	11.39±0.95 (39)
	5 month	23.47±1.02 (18)	22.76±0.97 (21)	23.11±1.04 (39)
	6 month	34.28±1.59 (12)	32.57±1.24 (21)	33.42±1.42 (33)
	7 month	47.45±1.08 (12)	46.80±1.26 (21)	47.42±1.11 (33)
	8 month	53.88±2.58 (10)	49.71±2.26 (21)	52.22±1.94 (31)
	9 month	60.14±3.71 (10)	58.83±3.07 (21)	60.76±2.26 (31)
14	Age at slaughter (d)	300 (5)	-	300 (5)
15	Weight at slaughter (Kg)	74 ± 1.15 (5)	-	74 ± 1.15 (5)
16	Dressing percentage (%)	74.79 ± 1.14 (5)	-	74.79 ± 1.14 (5)
17	Carcass length (cm)	78.33 ± 10.10 (5)	-	78.33 ± 10.10 (5)
18	Back fat thickness (cm)	3.9±0.34 (5)	-	3.9±0.34 (5)
19	Feed conversion efficiency (:)	4.56 (5)	-	4.56 (5)

Performance of Animals: LWY

SL.NO.	TRAITS/CHARACTERS	LWY (MEAN ± S.E)		
		Male	Female	Total/Average
1	Litter size at birth (no.)	5.16 ± 0.87 (6)	4.00± 0.57 (6)	9.16 ± 1.16 (6)
2	Litter weight at birth (Kg)	7.04 ± 1.36 (6)	5.15 ± 0.74 (6)	12.19 ± 1.77(6)
3	Litter size at weaning (no.)	4.60 ± 0.66 (6)	3.66 ± 0.33 (6)	8.33 ± 0.881(6)
4	Litter weight at weaning (Kg)	30.72 ± 4.20 (6)	24.93 ± 3.38 (6)	55.65 ± 6.18 (6)
5	Avg. Individual weight at birth (Kg)	1.27 ± 0.04 (31)	1.39 ± 0.06(24)	1.33 ± 0.03 (55)
6	Avg. Individual weight at weaning (Kg)	6.58 ± 0.22 (29)	6.50 ± 0.37 (22)	6.54 ± 0.20 (51)
7	Number of days for weaning (d)	42	42	42
8	Pre weaning mortality rate (%) (As on 31.03.2015)	3.63%	3.63%	7.26%
9	Pre weaning growth rate (g/day) (As on 31.03.2015)	127.92 ± 7.39 (29)	122.52 ± 12.35 (22)	125.35 ± 6.88 (51)
10	Post weaning mortality rate (%) (As on 31.03.15)	6.97%	-	6.97%
11	Post weaning growth rate (g/day)	334.13 ± 12.60(22)	323.82 ± 12.54 (17)	329.37 ± 8.67 (39)
12	Overall growth rate (upto 9 m) (g/d)	285.38 ± 8.7 (20)	280.11 ± 8.67 (16)	282.54±5.97 (36)
13	Body weight (Kg) (Average)			
	1 month	5.42 ± 0.21 (29)	5.20 ± 0.31(22)	5.32 ± 0.18 (51)
	2 month	9.28 ± 0.24 (45)	9.12 ± 0.13 (41)	9.21 ± 0.17 (86)
	3 month	13.11 ± 1.45 (45)	12.97 ± 1.23 (41)	13.04 ± 1.31 (86)
	4 month	25.23 ± 0.87 (15)	24.91 ± 0.45 (22)	25.07 ± 0.64 (37)
	5 month	38.57 ± 0.95 (10)	37.93 ± 1.10 (18)	38.75 ± 1.04 (28)
	6 month	47.98 ± 1.17 (10)	47.52 ± 1.42 (18)	47.75 ± 1.24(28)
	7 month	61.22 ± 2.43 (8)	60.84 ± 2.18 (16)	61.03 ± 2.27 (24)
	8 month	72.40 ± 2.10 (5)	72.24 ± 2.29 (16)	72.31 ± 1.50(21)
	9 month	78.08 ± 2.40 (5)	76.94 ± 2.29 (16)	77.46 ± 1.60 (21)
14	Feed conversion efficiency (:)	3.74 (5)	-	3.74 (5)



4) Lifetime Production Traits:

- Average litter size at birth per sow was 8.38 ± 0.75 , 7.30 ± 0.44 and 9.43 ± 0.76 in 75% crossbred, 50% crossbred and LWY respectively.
- Average litter weight (Kg) at birth per sow was 8.71 ± 0.74 , 5.76 ± 0.55 and 12.77 ± 1.21 in 75% Crossbred, 50% Crossbred and LWY respectively.
- Average litter size at weaning per sow was 6.46 ± 0.45 , 7.91 ± 0.61 and 8.41 ± 0.62 in 50% Crossbred, 75% Crossbred and LWY respectively.
- Average litter weight (Kg) at weaning per sow was 48.74 ± 6.22 , 53.39 ± 5.74 and 69.815 ± 4.73 in 50% Crossbred, 75% Crossbred and LWY respectively.

5) 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 which has been started from 2nd week to weaning
- Weaning of piglets at 8 weeks of age
- Castration at weaning (2-3 months)
- Cross fostering and artificial milk feeding of piglets undertaken if necessary.
- New born/ young piglets have been provided with artificial heating arrangement.
- Data generated are regularly recorded in computer as well as in respective registers in scientific formats.

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

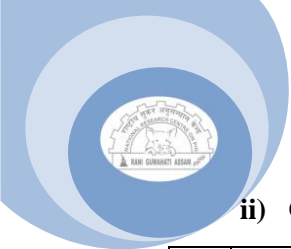
Castration Method: Castration has been/was done surgically by open uncovered method.

6) Mortality parameter

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

Pre- and Post-weaning Mortality Rate (%)

Age (Month)	MIZO LOCAL			50% CROSSBRED			75% CROSSBRED			LWY		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
0-2	-	-	-	2.12	4.25	6.37	2.38	-	2.38	3.63	3.63	7.26
2-6	-	-	-	4.54	-	4.54	2.43	2.43	4.86	4.12	-	4.12
6-12	-	-	-	-	2.17	2.17	-	2.85	2.85	2.85	-	2.85
12 & >	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	6.66	6.42	13.08	4.81	5.28	10.09	10.6	3.63	14.23



ii) Causes of Mortality (Specific Cause):(As per Post-mortem report)

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)	-	-	-	1	2	3	2	1	3	3	2	5
2	Enteritis	-	-	-	2	1	3	-	1	1	2	-	2
3	Lymphadenitis	-	-	-	-	-	-	-	-	-	-	-	-
4	Accident	-	-	-	-	-	-	-	-	-	-	-	-
5	Dehydration	-	-	-	-	-	-	-	-	-	-	-	-
	Total	-	-	-	3	3	6	2	2	4	5	2	7

(As on 31.03.2015)

iii) Measures Taken to Minimize Mortality:

1) Managemental Measures:

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

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

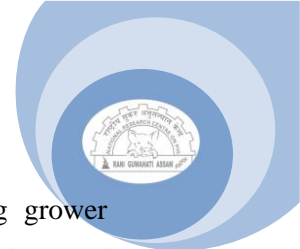
Sl. No.	PROPHYLACTIC MEASURES	Zovawk			50% Crossbred			75% crossbred			LWY		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
1	Vaccination against Classical Swine Fever	15	17	32	30	32	62	24	41	65	34	23	57
2	Deworming (Ivermectin /Albendazole)	13	15	28	32	33	65	39	28	67	35	32	67
3	Iron Injection (on 4 th & 14 th day of birth)	3	5	8	28	19	47	20	22	42	29	24	53
4	Vitamin B-complex Injection (on 5 th & 15 th day of birth)	3	5	28	28	19	47	20	22	42	29	24	53

iv) 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.

7) Nutritional experimentation: There are three nutritional trials under this project:

- i) Feeding of mixed boiled feed (Banana stem, Japan - hlo, Colocasia at 2:1:1 ratio) by replacing standard concentrate mixture at 50 % level adversely affected the growth performance of the local pig.



- ii) Feeding of wheat bran and rice bran based diet by replacing maize up to 60 % in pig grower ration did not have any adverse effect on the growth performance, nutrient utilization and blood biochemical parameters in the growing local pig.
- iii) A research work is being conducted to study the protein and amino acid requirement in growing crossbred (Yorkshire × Zovawk) pigs

8) SURVEY ON MARKET OF PORK PRODUCTION: Survey on pork production in Aizawl district had been started. On an average 5,50,000 kg of pork had been produced in a month. The market rate of pork is Rs.250.00/Kg. The butcher had purchased the live animal by fixing a price on the basis of chest girth. For example, if the animal is of 40 inches chest girth, the approximate carcass weight is around 67- 70 Kg. Some other butchers used a formula for estimation of expected carcass weight, which is given below:

$$\text{Expected carcass weight (Kg)} = \frac{(\text{Chest girth in inches} - 26) \times 10}{2} \pm 2$$

Addition and subtraction of another 2 kg is done to compensate length of the animal.

9) 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.

10) Production economics:

- i) **Cost of Production/Pig up to Slaughter Age:**
 - a) **For Zovawk,**
 - Average slaughter weight= 43 kg
 - Dressing % = 66
 - Meat production (kg) = 28 kg
 - Feed consumption from weaning to slaughter age = 202 kg
 - Cost of feed = 202 kg x Rs. 25 = Rs.5050
 - Cost of medicine & health care = Rs. 450.00
 - Labour charge = 300 days x Rs. 4 = Rs.1200
 - Miscellaneous = Rs.100
 - Cost of production/pig up to slaughter age = Rs.5050+Rs.450+Rs.100+ Rs.1200= Rs. 6800.00
 - b) **For 50 % Crossbred,**
 - Average slaughter weight= 74 kg
 - Dressing % = 75
 - Meat production (kg) = 55 kg
 - Feed consumption from weaning to slaughter age = 312 kg
 - Cost of feed = 343kg x Rs. 25 = Rs.7800
 - Cost of medicine & health care = Rs. 450.00
 - Labour charge = 300 days x Rs. 4 = Rs.1200
 - Miscellaneous = Rs.100
 - Cost of production/pig up to slaughter age =Rs.7800+Rs.450+Rs.100+Rs.1200= Rs.9550.00
 - c) **For 75% Crossbred,**
 - Average slaughter weight= 87 kg
 - Dressing % = 75
 - Meat production (kg) = 65 kg
 - Feed consumption from weaning to slaughter age = 342 kg



Cost of feed = 342kg x Rs. 25 = Rs.8550

Cost of medicine & health care = Rs. 450.00

Labour charge = 300 days x Rs. 4 = Rs.1200

Miscellaneous = Rs.100

Cost of production/pig up to slaughter age =Rs.8550+Rs.450+Rs.100+Rs.1200= Rs.10300.00

d) For LWY,

Average slaughter weight= 110 kg

Dressing % = 74

Meat production (kg) = 81 kg

Feed consumption from weaning to slaughter age = 381 kg

Cost of feed = 381kg x Rs. 25 = Rs.9525.00

Cost of medicine & health care = Rs. 450.00

Labour charge = 300 days x Rs. 4 = Rs.1200

Miscellaneous = Rs.100

Cost of production/pig up to slaughter age = Rs.9525+Rs.450+Rs.100+ Rs.1200=Rs.11275.00

ii) Cost of Production/Kg Pork

a) For Zovawk = (Rs.5050+Rs.450+Rs.100+ Rs.1200)/ 28 = Rs. 243.00

b) For 50% Crossbred = (Rs.7800+Rs.450+Rs.100+ Rs.1200)/55 = Rs. 174.00

c) For 75% Crossbred = (Rs.8550+Rs.450+Rs.100+ Rs.1200)/65 = Rs. 158.00

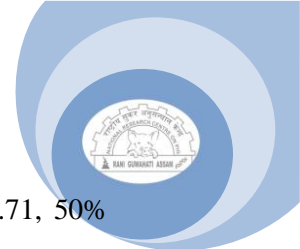
d) For LWY = (Rs. 9525+Rs.450+Rs.100+ Rs.1200)/81= Rs. 139.00

11) Extension programme with success story:

- i) Supply of Piglets to the farmers at subsidized rate.
- ii) Supply of Piglets to Non Government Organization (NGO) at subsidized rate.
- iii) At the Institute: As course director, course co-ordinator and resource person in the vocational training (11th to 24th March, 2015) conducted by the parent organization on following aspects-
 - a)Scientific Pig Farming and Value Added Meat Products lectures were given to the farmers on the following topics
 - 1.Prospect, Advantages and disadvantages of Pig Production
 - 2.Breeds and Breeding of Pig
 - 3.Selection of feed ingredients and feed quality control
 - 4.Feeding methods of Pig
 - 5.Feed formulation for Pig
 - 6.Care at the time of farrowing and lactation

12) Salient achievement during the report period:

- i. A total of 28 Zovawk, 49 Crossbred (50%), 65 Crossbred (75%) and 45 Large White Yorkshire are stock position at the end of the reporting year.
- ii. Average litter size at birth and weaning 75% Crossbred (7.00 ± 0.40 and 6.8 ± 0.60) were higher than that of 50% Crossbred (6.71 ± 0.86 and 6.28 ± 0.56).
- iii. The average individual weight at birth (Kg) and weaning in 75% Crossbred (1.09 ± 0.03 and 5.76 ± 0.20) were more than that of 50% Crossbred (0.85 ± 0.02 and 4.76 ± 0.19).
- iv. The average weights at 8 months in Zovawk, 50 % crossbred and LWY pigs were 34.25 ± 2.35 , 52.22 ± 1.94 , 60.43 ± 1.85 and 72.31 ± 1.50 Kg respectively.



- v. The pre and post-weaning mortality rate (%) in 75% Crossbred were 2.38 and 7.71, 50% Crossbred were 6.37 and 6.71 respectively, and that of LWY were 7.26 and 6.97.
- vi. During the reporting period, a large number of LWY breed of piglets were supplied to the farmers as well as NGO at a subsidized rate.
- vii. Feeding of mixed boiled feed (Banana stem, Japan - hlo, Colocasia at 2:1:1 ratio) by replacing standard concentrate mixture at 50 % level adversely affected the growth performance of the local pig.
- viii. Feeding of wheat bran and rice bran based diet by replacing maize up to 60 % in pig grower ration did not have any adverse effect on the growth performance, nutrient utilization and blood biochemical parameters in the growing local pig.
- ix. Development of traditional low cost housing system using locally available materials such as bamboo, woods etc to evaluate the performance of the pigs.

13) Scientific publications: Abstracts- 4 nos.

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

Ongoing M. V. Sc. research work

1. To study the effect of low crude protein diets supplemented with synthetic amino acids on performance of growing crossbred (LWY x Zovawk) pigs.
2. Morphological characterization of indigenous (Zovawk) and its crosses with Large White Yorkshire pig under organised farm condition.

15) Distinguished visitors:

- i) Dr. K.M.L. Pathak, DDG (Animal Science), ICAR on 18.05.2014
- ii) Dr. Gaya Prasad, ADG (AH), ICAR, New Delhi on 23.08.2014
- iii) Dr. Arvind Kumar, DDG (Education), ICAR on 28.08.2014
- iv) Dr. D.N. Mohanty, Professor & Head of ARGO, CVSc & AH, Bhubaneswar on 19.09.2014
- v) Dr. Phaniraj K.L., Veterinary College, KVAFSU, Shivamogga on 20.11.2014
- vi) Franklin Laltinkhuma, Aizawl District Commissioner on 26.02.2015



Weaned Piglets (75% LWY x 25 % Zovawk)



Weaned Piglets (25% Zovawk x 75% LWY)



Growers (LWY)



Crossbred Growers (50% Zovawk x 50% LWY)



Pregnant Female (Zovawk)



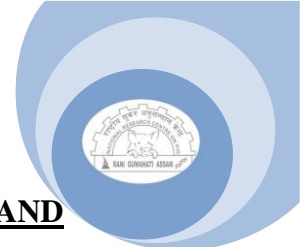
Breeder Male (50% Zovawk x 50% LWY)



Dr. K.M.L. Pathak, DDG, ICAR, visiting AICRP farm



Dr. Arvind Kumar, DDG (Education), ICAR visiting AICRP Farm



**NAGALAND UNIVERSITY, SCHOOL OF AGRICULTURAL SCIENCES AND
RURAL DEVELOPMENT, MEDZIPHEMA CAMPUS, NAGALAND**

Majority of the household in Nagaland depend on agriculture and livestock especially pigs for their livelihood. Backyard piggery is less labour intensive, profitable, converts available resources into cash in the living bank (Rural piggery). As such the hilly tribal people of Nagaland are into pig rearing, a trade sustainable for the marginal farmers that brings in additional family income and resolve festive carnivals during which pork meat is an important item. The state also has the highest per capita consumption of pork. As per 2013 state statistical record pork production and number of pig slaughtered recorded are 50.36 M.T. and 543494 nos. respectively, inclusive of locally reared and imported from neighbouring states. 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.

The AICRP-Pig Nagaland Centre started the project maintaining Local Indigenous pig (Tenyi Vo) in the year 2009-2010, to study the performance of the local breed and Upgrade with Hampshire boar. The Upgraded Tenyi Vo (50%) exhibited good mothering ability, early sexual maturity, aggressive during farrowing and lactating period. The up-graded 75% sow exhibited milder temperament, good mothering ability, better growth rate and reproductive performance over the local Indigenous and Upgraded Tenyi Vo (50%). Presently the centre is maintaining Upgraded 75% sow and crossing with Hampshire boar.

1) Herd dynamics: As on 31.03.2015

a. Indigenous (Tenyi vo)

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing Balance
			Births	**Transfer	Deaths	transfers	sold	
1.	Piglet (upto 42 days)	0	2	0	0	2	0	0
2.	Growers(42 days- 5 months)	1	0	2	0	1	0	2
3	Finisher(5 m -8 m)	0	0	1	0	1	0	0
4	Breeding female	3	0	1	0	0	1	3
5	Boar	0	0	0	0	0	0	0
	Grand total	4	2	4	0	4	1	5

**Pen to pen transfer within farm

b. Upgraded 50%

Sl. No.	Categories	Opening balance	Additions		Disposals			Closing Balance
			Births	**Transfer	Deaths	transfers	sold	
1.	Piglet (up to 42 days)	5	14	0	0	9	10	0
2.	Growers(42 days- 5 months)	0	0	9	0	9	0	0
3	Finisher(5 m -8 m)	0	0	9	0	5	0	4
4	Breeding female	3	0	5	0	0	0	8
5	Boar	0	0	0	0	0	0	0
	Grand total	8	14	23	0	23	10	12

**Pen to pen transfer within farm

**c. Upgraded 75%**

Sl. No.	Categories	Opening balance	Additions			Disposals		Closing Balance
			Births	**transfer	Deaths	transfers	sold	
1.	Piglet (up to 42 days)	18	270	0	5	90	145	48
2.	Growers(42 days- 5 months)	6	0	90	0	66	0	30
3	Finisher(5 m -8 m)	0	0	66	0	16	0	50
4	Breeding female	2	0	16	0	0	0	18
5	Boar	0	0	0	0	0	0	0
	Grand total	26	270	172	5	172	145	146

**Pen to pen transfer within farm

d. Hampshire

Sl. No.	Categories	Opening balance	Additions			Disposals		Closing Balance
			Births	**transfer	Deaths	transfers	sold	
1.	Piglet (upto 42 days)	0	25	0	0	15	10	0
2.	Growers(42 days- 5 months)	13	0	15	0	3	9	16
3	Finisher(5 m -8 m)	0	0	3	3	3	0	0
4	Breeding female	3	0	2	0	0	3	2
5	Boar	1	0	1	0	0	0	2
	Grand total	17	25	21	0	21	22	20

**Pen to pen transfer within farm

- Number of piglets produced (April 2014 – March 2015) = 312
- Number of piglets sold = 175
- Number of animal culled = 4

2) Breeding strategy of the farm as approved:

Naga Indigenous gilts (Tenyi Vo) X Hampshire boar

Up-Graded Tenyi Vo 50% X Hampshire boar

Upgraded Tenyi vo (75%) X Hampshire boar

3) Performance of pigs: Upgraded Variety (75%)

Sl. No.	Trait/Characters	Mean \pm SE (no of observation)		
		Male	Female	Total
1	Litter size at birth (no)	3.51 \pm 1.09(39)	3.57 \pm 0.81(40)	7.08 \pm 1.9(79)
2	Litter weight at birth (kg)	2.48 \pm 0.46(113)	2.57 \pm 0.48(93)	5.09 \pm 0.94(206)
3	Litter size at weaning (no)	3.23 \pm 1.08(39)	3.67 \pm 0.76(40)	6.9 \pm 1.84(79)
4	Litter weight at weaning (Kg)	13.47 \pm 0.93(110)	13.22 \pm 1.26(93)	26.69 \pm 1.56(203)
5	Avg. Individual weight at birth (Kg)	1.05 \pm 0.16(102)	1.08 \pm 0.13(106)	1.07 \pm 0.14(208)
6	Avg. Individual weight at weaning (kg)	4.91 \pm 1.30(102)	4.89 \pm 1.33(104)	4.90 \pm 1.31(206)
7	No of days for weaning	42	42	42
8	Pre weaning mortality rate (%)	1.3%	1.9%	1.6%
9	Pre weaning growth rate (g/d)	92	91	91.5
10	Post weaning mortality rate (%)	Nil	Nil	Nil
11	Post weaning growth rate (g/d)	170	163	167
12	Overall growth rate (upto 8 m) (g/d)	160	154	157



13	Body weight (Kg)			
	1 month	3.56±0.76(76)	3.70±0.76(72)	3.63±0.76(148)
	2 month	8.77±0.41(20)	8.97±1.10(47)	8.91±0.95(67)
	3 month	13.84±0.19(20)	13.67±1.57(32)	13.73±1.23(52)
	4 month	18.85±0.14(20)	18.76±0.96(25)	18.80±0.72(45)
	5 month	23.79±0.25(20)	23.63±1.77(25)	23.75±1.29(45)
	6 month	27.95±0.17(20)	27.92±1.32(25)	27.93±0.98(45)
	7 month	30.36±0.65(20)	29.87±3.5(16)	30.14±2.35(36)
	8 months	38.50±0.85(10)	37.07±3.14(13)	37.69±2.49(23)
14	Age at slaughter (month)	10		
15	Weight at slaughter (Kg)	58		
16	Dressing percentage (%)	70		
17	Carcass length (cm)	87.5 cm		
18	Back fat thickness (cm)	4		
19	Amount of pork produced per sow (Kg)	58		
20	Feed conversion efficiency (ratio)	4.2:1		

4) Lifetime production traits:-

- Average litter size at birth per sow : 7.08±1.9(79)
- Average litter weight at birth per sow : 5.09±0.94(206)
- Average litter size at weaning per sow : 6.925±1.22 (40)
- Average litter weight at weaning per sow : 26.69±1.28 (204)

5) 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

6) Mortality parameter:

i) Pre-weaning mortality

Sl. No.	Traits/Characters	Pre-weaning		
		male	female	Causes of mortality
1	Nagaland Indigenous (Tenyi vo)	-	-	-
2	Upgraded pigs	3	7	Asphyxia, iron toxicity
3	Hampshire pigs	2	2	Asphyxia

ii). Post-weaning mortality

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

iii) Measures taken to minimize mortality:

a) Management measures :

First week after farrowing providing warm bedding, gunny bags slings and 100 watt electrical bulb in the creep area to control cold stress during winter season

Second week provide creep ration



- Helping the weak piglets to suckle mother’s milk or bottle feedings
- Toning up weak animals with vitamins and mineral supplements
- Daily morning and evening cleaning of pig pen, use of disinfectants twice a week

b) Prophylactic measures:

- Iron injection first and second dose on the 7th & 14th day post farrowing
- De-worming done at 21-25 days old piglets, de-worming of adult pig at six month interval
- Segregation of sick animal for symptomatic treatment
- Vaccination of all 3 months old pigs against Swine Fever 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 application

7) Nutritional experimentation: A feeding trial using sweet potato based ensilage is carried out with 3 levels of supplemental feeding. It was found that concentrate feed can be replaced up to 30% with sweet potato base ensilage without affecting the growth rate.

8) Adoption of integrated farming system: Integrating pig farming with fodder crops cultivation using pig manure and fishery is farmers friendly.

a) Cultivation of *Ficus hoorkeri*, Pavill indicus locally grown in the wild, sweet potato and tapioca using pig manure gave a rich harvest of fodder during July –September and sufficient quantity round the year. The leaves and vines ensilaged fodder incorporated successfully for economic ration, replacing 25% to 30% concentrate feed. These green fodder crops apart from providing green foddors keeps the environment clean and fresh.

b) Catfish fingerlings introduced in the fishery pond during the month of July and harvested in the month of November, a pig based integrated-farming system, a demonstration model for pig farmers to enhance rural economy.

9) Disposal pattern of farm waste, pig excreta etc:

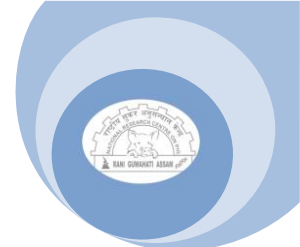
The farm washing and excreta is directed into the fish-pond which is dry from December to May, natural decomposition of manure is collected on to a shallow pit and used for the farm garden. The remaining manure utilized by Agricultural research Scholars and Horticultural farms, flower- beds and animal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

10) Production economics

Assumption

a. No of sows	:	37
b. No of piglets farrowed in 12 months	:	312
c. Cost of feed @Rs.25 per kg x 23,634	:	Rs. 5,90,850/-
d. Wages 1 person @Rs.150/-p day x 365 days	:	Rs. 54,750/-
e. Power surcharge @Rs 210/month x 12m	:	Rs. 2,520/-
f. Medicine & feed additives@Rs.80/sow/month x 12m	:	Rs. 35,520/-
Sub-total	:	Rs. 6,83,640/-

Production Cost of 1 piglet (Rs.6,83,640 ÷ 312) = Rs.2,191/-



11) Extension program with success story:

Date/Month	Venue	Program/Activities	Participant/Beneficiaries
03.04.2014	AICRP-Pig Farm	Awareness on the formation of piggery self Help Group	24 farmers from three villages (Medziphema, Rüzaphema & Sirhima Villages)
13.05.2014-14.05.2014	NU, SASRD	Training on Pig Farming for Village Animal Health Worker	28 Farmers from Kohima and Dimapur district
08.07.2014 & 09.07.2014	Dept. of APM,NU SASRD	Refresher Course for Village Animal Health Worker	13 from Kohima & Dimapur District
10.07.2014 & 11.07.2014	Dept. of APM,NU SASRD	Refresher Course for Village Animal Health Worker	11 from Kohima district
04.08.2014	NU SASRD	Awareness Program on Management of Livestock feed & diseases during drought period in collaboration with NRC on Mithun	101 Farmers
21.11.2014	AICRP-pig, Farm	Prevention & Control of pig Diseases and wild fodder prevention	31 from Kohima & Dimapur district
December 2014 to February 15	In and around Medziphema	Awareness cum Swine fever vaccination	Campus staffs In and around Medziphema Campus (342 pigs vacc.)

12) Salient achievement during the reporting period:

1. Successful up-gradation of Indigenous *Tenyi Vo* (50% & 75%) the supplied piglets performing well in the farmer's
2. field under local housing and feeding system
3. Sale proceeds amounting to Rs. 4,51,325/- (four lakh fifty one thousand three hundred thirty five) from sale of
4. Upgraded piglets, fattened, culled adults all to the rural farmers a step forward to enhance the rural livelihood
5. condition.
6. Conducted eight successful out-reach programs for the rural farmers, livestock health workers, faculty staffs Subject Matter Specialist on campus and off-campus programs.
7. Practicing Artificial Insemination using Hampshire boar semen (semen from Mega Seed Project, ICAR Research Complex, Jharnapani) in the farm and in the farmer's field.
8. Plantation of the local herbal plants around the farm premises and preservation of locally grown wild fodder crops
9. Ensilaged incorporated in the pig ration replacing up to 20-30% of concentrate feed
10. Institutional linkage vaccination program carried out in the field by the staffs of AICRP on Pig, collaboration with the Department of Veterinary and Animal Husbandry, Nagaland for vaccine supply and awareness programme with ICAR, Jharnapani.
11. Facilities provided to two post graduate students for research studies

13) Scientific publications: ‘Studies on the morphological characteristics and performance of up-graded ‘*Tenyi Vo*’

14) Project work of students: Two Post Graduate Students, M.Sc. (Ag)

15) Distinguish visitors:

- a. Prof. B. K. Konwar, Vice Chancellor, Nagaland University, HQ Lumami
- b. Dr. Dilip Kumar Sarma, Director NRC on Pig, Rani Guwahati
- c. Prof. Glenn T. Thong, Dean, Research, Development & Consultancy, NU, Lumami
- d. Prof. M. Aleminla Ao, Dean, NU-SASRD, Medziphema Campus
- e. Dr. M.K. Tamuli, Principal Scientist, NRC-Pig, Rani Guwahati
- f. Progressive farmers more than 300 plus.



Up-graded sow with her litter



Up-graded 75% Sow with 1-week-old litter



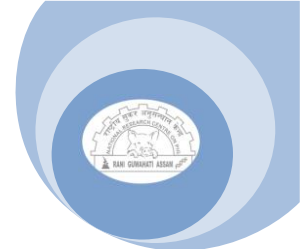
45 days old Weaners ready to be transported for Benreu village



Prof. B.K. Konwar, Vice- Chancellor, Nagaland Univ. inaugurating the new sow unit

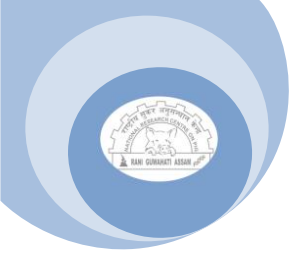


Training of Village level Animal Health Workers of NEPED

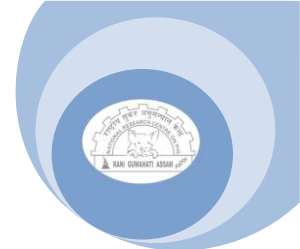


FUTURE PROGRAMME IDENTIFYING THE ACTIVITIES/TARGET

Sl. No.	Centre	Programme	Activities/Target
1.	All centers of AICRP on Pig	i) Maintenance of 75% upgraded animals	<ul style="list-style-type: none"> Maintained as per technical programme/breeding plan fixed for each centre
		ii) Conservation and characterization of indigenous pigs	<ul style="list-style-type: none"> All the centre shall maintain indigenous pig available in the respective state with a minimum breedable population of 20 (4 breedable male and 16 breedable female) Phenotypic characterization is to be done at farmers' field as well as institute farm. Molecular characterization may be done in collaboration with NRC on Pig/NBAGR. Documentation of indigenous germplasm available in the centre.
		ii) Adoption of integrated farming systems	<ul style="list-style-type: none"> Adoption of integrated farming system at farmers' field by incorporation of fisheries and agriculture with piggeries. Development of integrated farming system demonstration unit at the centre.
		iii) Survey and market value system linkage	<ul style="list-style-type: none"> Survey of local market and market value system linkage should be done
		iv) Housing and management	<ul style="list-style-type: none"> Individual centre should develop model housing and management strategies for climate resilient pig production
		v) Artificial Insemination	<ul style="list-style-type: none"> Propagation of AI at institute farm and farmers' field need to be carried out
		vi) Disposal of diseased carcass	<ul style="list-style-type: none"> Scientific method of disposal of carcass needs to be initiated.
		vii) Establishment of biogas plant	<ul style="list-style-type: none"> Biogas plant for utilization of pig manure needs to be initiated.
		viii) Extension activities	<ul style="list-style-type: none"> Awareness programme on improved pig production to be initiate in nearby area. Various on-campus and off-campus training on improved pig production to be done at AICRP. Provision of consultancy service to the farmers



Mega-Seed Project on Pig



NAME OF THE CENTRE AND PRINCIPAL INCHARGE

Mega-seed Project on Pig		Name of Incharge
Old centers		
1.	College of Veterinary Science, Assam Agricultural University Khanapara, Guwahati, Assam-781022	Dr. Dhireswar Kalita
2.	College of Veterinary Science, Birsra Agricultural University, Kanke, Ranchi, Jharkand -834006	Dr. L. B. Singh
3.	ICAR-RC for NEH region Jharnapani, Medziphema, Dimapur, Nagaland 797 106	Dr. Manas Kumar Patra
4.	A.H. & Vety. Farm Complex, Veterinary Department, Govt of Mizoram Selesih, Aizawl, Mizoram – 796014	Dr. K. Lalrohluia
New centers		
5.	State Animal Husbandry and Veterinary Department, Govt. of Arunachal Pradesh	
6.	Kerala Veterinary and Animal Science University, Pookode, Kerala	
7.	Animal Resource Development Department, Govt. of Tripura, Agartala, Tripura	
8.	Chhattisgarh Kamdhenu Vishwavidyalaya, Durg, Chhattisgarh	



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

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

2. Objectives:

- Production of 900 piglets in each state to target production of quality pig covering 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

3. Target Fixed:

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

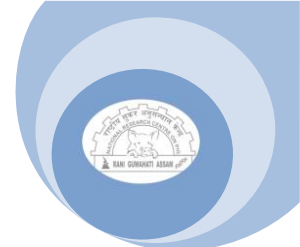
4. Activity assigned and target fixed

General:

1. Impact assessment along with economics of production at farmers' field needs to be carried out by the individual centers.
2. Number of farm families/ beneficiaries should be included in the report.
3. Artificial insemination should be used at all the centers.

Technical programme:

1. All the centers should maintain sufficient number of breeding stock of specific crossbred germplasm as indicated in centre wise recommendation as to produce targeted number of piglet production.
2. Maximum number of farm families need to be targeted for distribution of piglets.



5. Action point discussed in Review Meet of ‘All India Coordinated Research Project on Pig’ and ‘Mega Seed Project on Pig’ held Indian Veterinary Research Institute, Bareilly in 2013

AAU, Khanapara

Targets	Action Taken
<ul style="list-style-type: none"> Target of production 1500 piglets of 50% Hampshire should be achieved. AI should be used at all the centers 	<ul style="list-style-type: none"> The breeding stock of 50% Hampshire genetic group was proposed to increase 125 sows to achieve the target of 1500 piglets and accordingly 1574 piglets were produced during the year 2014-15 A total of 21 sows were inseminated during last part of the year 2014-15. The insemination programme was done in collaboration with the Department of ARGO

BAU, Ranchi

Targets	Action Taken
<ul style="list-style-type: none"> The centre will maintain T&D crosses with a targeted production of 1000 piglets. 	<p>The centre is maintaining T&D crosses, but maintaining the target of 1000 piglet production is not possible because of insufficient housing space for such large stock. So, we are forced to maintain the breeding female stock up to 60-65 in place of 100. However, if you see our herd strength and production of piglets we are fulfilling the target more than 90%.</p>

ICAR RC for NEH, Nagaland Centre, Medziphema

Targets	Action Taken
<ul style="list-style-type: none"> The centre will maintain only one crossbred (Ghungroo X Hampshire 50% exotic inheritance) with a targeted production of 1000 piglets during the period 2014-15. 	<p>In the reporting year a total of 18 gilts and 2 boars of Hampshire cross were kept as replacement for the existing Large Black breed. During the reporting year more than 1000 piglets get birth and a total of 879 piglets were distributed among the beneficiaries in Nagaland, Assam and Arunachal Pradesh.</p>

Veterinary Department, Government of Mizoram, Aizawl

Targets	Action Taken
<ul style="list-style-type: none"> Necessary steps need to be taken up to achieve a production of 900 piglets/annum of Large White Yorkshire (2014-15) 	<p>In order to enable to achieve the assigned target for production of 900 nos. quality piglets, the centre is reserving the farm stock breeding stocks to 88 numbers comprising of 46 Sows, 1 Boar, 24 Gilts and 17 Weaned Female Piglets at the time of preparing the report. A total of 386 piglets were born in reporting period.</p>

5. Salient Achievements of the Mega-seed till Date:

Under this project improved variety of piglets were produced and distributed to the farmers. A total of 1388, 2268, 2877, 2851 and 3664 nos of improved variety of piglets were produced for distribution in 2010-11, 2011-12 2012-13, 2013-14 and 2014-15, respectively.



ASSAM AGRICULTURAL UNIVERSITY, KHANAPARA, GUWAHATI

The Indian Council of Agricultural Research, 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 Cross and T&D are 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.

1) Herd dynamics:

Herd Strength: Year 1.4.2014 - 31.3.2015

Sl. No.	Categories	Opening Balance on .4.14	Addition*		Disposals			Closing Balance on 1.3.15
			Births	Purchase	Deaths	Transfers	Sold	
1	Piglet (Upto 42 days)	202	1574	-	57	-	-	181
2	Grower (42 days – 5 months)	15	59*	-	101	-	1264	118
3	Finisher (5 m – 8 months)	-	-	-	1	-	97	21
4	Breeding female	68	128*	-	9	-	93	92
5	Boar	19	6*	-	-	-	19	18
Grand Total		304	1767	-	168		1473	430

* A total 353 pre-weaned and adult pigs were transferred from the Directorate of Research (Vety.) on 12.05.2014

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	187	3.74±0.09	3.83±0.10	7.57±0.11	3.58±0.09	3.69±0.09	7.27±0.11

Pre weaning and Post weaning mortality

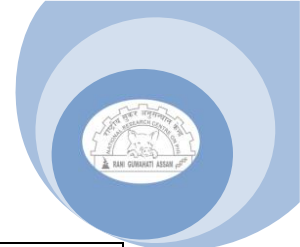
Genetic Group	Pre weaning mortality (%) (0-42 days)	Grower Mortality (%) (42-5 months)	Finisher (%) (5 m – 8 months)	Adult Mortality (%) (over 8 months)
50%H	3.21 (57)	5.69 (102)*	Nil	4.07 (9)*

Within parenthesis are the number of died animal

* Mortality due to Swine Fever

2) Number of piglets produced during the reporting period: April 2014-March'2015

	Total no. of piglets born			Total no. of piglets died			No. of live piglets produced		
	M	F	T	M	F	T	M	F	T
1st quarter	200	214	414	8	5	13	192	209	401
2nd quarter	190	191	381	9	10	19	181	181	362
3rd quarter	227	230	457	5	6	11	222	224	446
4th quarter	163	159	322	7	7	14	156	152	308
Annual	780	794	1574	29	28	57	751	766	1517



3) Number of piglets sold during the reporting period:

	No. of live piglets Produced			No. of piglets Sold			Amount realized (Rupees)
	M	F	T	M	F	T	
1 st quarter	192	209	401	147	147	294	Rs. 42,02,350/-*
2 nd quarter	181	181	362	162	182	344	
3 rd quarter	222	224	446	136	122	258	
4 th quarter	156	152	308	198	170	368	
Annual	751	766	1517	643	621	1264	

* Total receipt include from piglets and adults



50% Hampshire sow with piglets



50% Hampshire gilt



A team of trainee from ICAR-NRC on Pig, Rani visited MSP on Pig on 13.09.2014



Dr. K. M. Bujarbaruah, Vice Chancellor, AAU, Jorhat distributed piglets to the farmers of Boko under TSP-Pig



BIRSA AGRICULTURAL UNIVERSITY, RANCHI, JHARKHAND

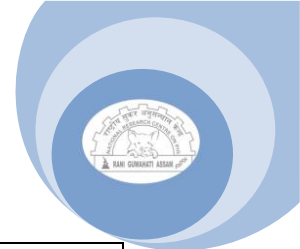
Jharkhand is one of the leading states in the country where piggery has been accepted by rural people as remunerative enterprises. The farmers have accepted the NATP Mission mode on pigs in past with great enthusiasm which provided tremendous employment opportunity to local people through integrated piggery development programme in limited area mostly in and around Ranchi. Now a day’s farmers are getting benefit of Mega seed project. MSP on Pig supplying improved variety of pig T&D to the farmers and gradually farmers are interested to rear this variety because of benefit in comparison to desi pigs under village management conditions resulted into progressive increases in the number of pig breeders. Approximate more than 300 2nd line pig breeder have been developed who are supplying improved germplasm of pig to the neighboring farmers. But still the centre is not able to fulfill the 100% demand of piglets in Jharkhand. Presently, approx 60% population of pig in Jharkhand are of indigenous/local type. But gradually the centre will be able to replace local pig with improved variety. Success of piggery development programmes in target districts depends on regular supply of “T&D” pigs to farmers because desi pigs of the area can safely be replaced by identical colour “T&D” pigs with significant increase in growth rate and reproductive performances. Demands for “T&D” pigs are increasing day by day. In Jharkhand, pig production has assumed greater importance even among extremely low resource poor farmers.

1) Herd dynamics:

Sl. No.	Categories	Opening balance	Additions			Disposals		Closing balance
			Births	Transfers	Deaths	Transfers	Sold	
1.	Piglet (up to 42 d)	181	551		33	-	-	53
2.	Grower (42d-5 m)	23	-		9	-	619	25
3.	Finisher (5m-8 m)	12	-		2	-	9	7
4.	Breeding Female	60	-		4	-		66
5.	Boar	16	-		2	-		14
Grand total		336	551		50	-	628	165

2) Number of piglets produced during the reporting period

	No. of piglets born			No. of piglets died			No. of piglets produced		
	M	F	T	M	F	T	M	F	T
1 st quarter	83	80	163	11	08	19	73	71	144
2 nd quarter	75	80	155	07	09	16	67	71	138
3 rd quarter	61	63	124	03	03	06	57	60	117
4 th quarter	55	54	109	02	07	09	52	48	100
Annual	274	277	551	23	27	50	249	250	499



3) Number of piglets sold during the reporting period:

	No. of piglets produced			No. of piglets sold			Amount realized (Rupees)
	M	F	T	M	F	T	
1 st quarter	73	71	144	93	64	157	263105.00
2 nd quarter	67	71	138	75	62	137	240614.00
3 rd quarter	57	60	117	60	66	126	323373.00
4 th quarter	52	48	100	94	114	208	435792.00
Annual	249	250	499	322	306	628	1262884.00

4) Success Story:

Success story of Sri Jatru Mahto Ramgarh, Jharkhand

In the year 2009, Sri Mahato constructed eight pens by an expenditure of Rs. 50000/- for maintaining large herd size. After completing the construction he is maintaining approx 50-60 pigs at a time and every 2-3 months he is selling the piglets/pigs. After construction of new farm and an auto on loan basis, he starts earning approx Rs. 6.0-7.0 lakhs every year. He has repaid the loan of auto. Now there is huge market and persons coming to her home for purchasing the animals.



Sri Mahto's Farm



ICAR RC FOR NEH, MEDZIPHEMA, NAGALAND

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 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 48.4 % 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. In last three years, the Mega Seed Project has produced a total of 1976 no. of piglets, of which 1251 no. of distributed for promotion of breeding. Many entrepreneurs have come forward to take up pig breeding program and have generated self employment and additional income. 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.

1) Herd dynamics:

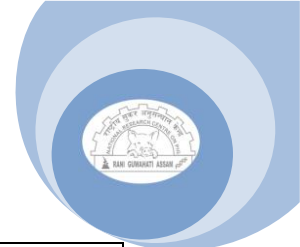
Sl. No.	Categories	Opening Balance	Additions			Disposal		Closing balance
			Birth	Transfer	Death	Transfer	Sold	
1	Piglets (upto 42 d)	269	1153	Nil	282	38	879	223
2	Grower (42d – 5m)	Nil	X	38	10	14	Nil	14
3	Finisher (5m- 8m)	Nil	X	14	Nil	Nil	4	10
4	Breeding female	79	X	Nil	4	Nil	12	63
5	Boar	10	X	Nil	Nil	Nil	2	8
Grand Total		358	1153	52	296	62	897	318

Genetic constitution breeding stock maintained at the centre as on 31.03.2015

Breed	Age group	Male	Female	Total
Ghungroo	Breeding female	2	12	14
Hampshire	Breeding female	3	13	16
Hampshire Cross	Breeding female	2	13	15
Large Black	Breeding female	1	23	24
Total		8	63	71

2) Number of piglets produced during the reporting period:

	Total no. of piglets born			No. of piglets died			No. of piglets produced		
	M	F	T	M	F	T	M	F	T
1 st quarter	190	124	314	30	38	68	160	86	246
2 nd quarter	145	110	255	37	30	67	108	80	188
3 rd quarter	120	138	258	32	41	73	88	97	185
4 th quarter	177	149	326	40	34	74	137	115	252
annual	632	521	1153	139	143	282	493	378	871



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

	No. of piglets produced			No. of piglets sold.			No. of adult sold			Amount realized (Rs)
	M	F	T	M	F	T	M	F	T	
1 st quarter	160	86	246	127	82	209	0	2	2	
2 nd quarter	108	80	188	142	108	250	2	0	2	
3 rd quarter	88	97	185	99	115	214	0	4	4	
4 th quarter	137	115	252	127	79	206	4	6	10	
Annual	493	378	871	495	384	879	6	12	18	

4) Other information:

Artificial insemination in pig was introduced and popularized successfully for the first time in Nagaland to enhance the production of piglets from superior breeding stock. The performance appraisal of artificial insemination program from adopted organized farm and farmers' field were conducted and documented. The conception rate was recorded as more than 83% in farm condition following double insemination with average litter size 10.09. However, in field condition the conception rate was slightly lower (71.21 %) with litter size average 6.17 due to practice of single insemination and improper heat detection and insemination by the farmers' themselves. Several capacity building programs were undertaken to popularize the improved pig breed for establishment of pig breeding unit and to popularize artificial insemination technique in Nagaland.

Artificial insemination record during 2014-15

Location of AI adopted farm	No. of insemination	No. of animals conceived	Conception rate	Service per conception	Litter size
Mega Seed Project farm	56	47	83.93	1.19	10.09 (3-19)
Dimapur town	21	15	71.43	1.40	6.4 (1-12)
AICRP on Pig farm, SASRD Medziphema	15	10	66.67	1.50	5.75 (2-11)
Jharnapani village	10	9	90.0	1.11	6.0 (3 -9)
Medziphema Village	8	5	62.50	1.60	4.60 (2-7)
Punluwa village	7	4	57.14	1.75	5.0 (4-6)
NEPED piggery model farm	5	4	80.0	1.25	9.25 (8-11)
Total in Field condition	66	47	71.21	1.40	6.17 (1-12)



Visit of progressive pig farmers at ICAR-Mega Seed Project Unit



Director, NRC on Pig visiting the project site



Hampshire-Ghungroo cross piglets produced at the centre

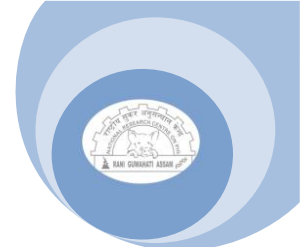


Demonstration of AI techniques in pig



Training on Pig Husbandry





VETERINARY DEPARTMENT, GOVT. OF MIZORAM, AIZWAL

Pork is the most favoured meat among the people of Mizoram as revealed by the latest report on Integrated Sample Survey in Mizoram for the year 2012 - 2013. According to the sample survey report, 6892 tones of pork were produced during 2012 - 2013 out of the total meat production of 12037 tones. Pork accounts for 57.25% of the total meat production. This data also clearly showed that pig farming has a big potential and a huge economic importance in Mizoram.

The Mega Seed Project on Pig, Mizoram Centre was sanctioned on the 24th November, 2008 by the National Research Centre on Pig, ICAR, Guwahati and was practically commenced *w.e.f* the 29th March, 2009 by inducting 3 young boars and 27 young gilts from Kolkata after reconstructing, repairing and renovating the existing Departmental Farm building at A.H & Vety. Farm Complex, Selesih, Aizawl. Since its inception, the Mega Seed Farm produced 1320 nos. of piglets and sold 1117 nos. of good quality Large White Yorkshire piglets to the pig farmers till the end of the reporting period.

1) Herd Dynamic :

SL. NO	Categories	Opening Balance	Addition			Disposal		Closing Balance
			Birth	Transfer	Death	Transfer	Sold	
1.	Piglet (upto 42d)	41	386	x	24	19	302	82
2.	Grower (42d-5m)	27	x	19	x	31	x	15
3.	Finisher (5m-8m)	14	x	31	x	23	x	22
4.	Breeding Female	29	x	22	4	x	6	41
5.	Boar	1	x	1	x	x	x	1
Grand Total		112	386	73	28	73	308	161

2) Numbers of Piglets produced during the reporting period:

Sl. No.		No. of piglet born			No. of piglet died			No. of piglet produced		
		M	F	T	M	F	T	M	F	T
1.	1 st quarter	30	26	56	4	4	8	26	22	48
2.	2 nd quarter	45	48	93	2	2	4	43	46	89
3.	3 rd quarter	43	41	84	1	2	3	42	39	81
4.	4 th quarter	76	77	153	6	3	9	70	74	144
Annual		194	192	386	13	11	24	181	181	362

3) Numbers of Piglets sold during the reporting period :

Sl. No.		No. of piglet produced			No. of piglet sold			Amount realized (Rs.)
		M	F	T	M	F	T	
1.	1 st quarter	26	22	48	41	12	53	1,32,500.00
2.	2 nd quarter	43	46	89	18	20	38	1,04,900.00
3.	3 rd quarter	42	39	81	45	35	80	2,43,000.00
4.	4 th quarter	70	74	144	70	61	131	4,10,000.00
Annual		181	181	362	128	128	302	8,90,400.00

4) Constrains faced:

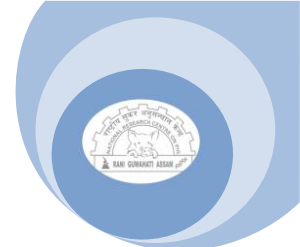
- (i) Outbreak of PRRS in the Mega Seed Farm:
- (ii) Inadequate pig sty



5) Success story:

Success stories were collected from ten (10) farmers as under:

- Mrs. Thiangi, Aizawl District: Mrs. Thiangi started rearing sows by purchasing 5 piglets from Mega Seed Farm in 2014 for fattening purpose. She had been very successful and purchased 30 piglets during 2014-2015. At present, she had extended her farm to 50 fatteners unit. She had sold 28 pigs during the period at an average of Rs.28,000.00 per Pig.
- Mr. Zosangliana, Sihphir: Mr. Zosangliana has been rearing pigs for breeding by purchasing 2 female piglets from Mega Seed Farm. He had extended his sows unit to 5 and 10 fatteners unit on April 2014. He had informed us that he purchased most of his house holdings like dining table, television, etc. from the money he had earned from selling of his piglets.
- Chawikungi, Sesawng : Who is also a widow earns her daily live-hood by doing hard labour to support her family. She had purchased 2 piglets from Mega Seed Farm in June, 2014. One for fattener and another for breeding Sow. She had been successful and from her earnings she had purchased another 3 female piglets for breeding and now she earns her daily live-hood by rearing her pigs and she is now self-employed. Her boar had served 16 sows during 2014-2015 and charged Rs.1500/- per service.
- Mrs. Lalbiaknii, Chhiahlang: Mrs. Lalbiaknii who a widow earns her daily livelihood by doing hard labour to support her one mentally-illed son. She started rearing pigs in 2011 and purchased 3 female piglets for breeding. She had been very successful and extended her farm to 7 sows unit and 5 fatteners in 2014. She has reported that she had earned over rupees one lakhs during 2014-2015 from selling her fatteners and piglets.
- Mrs. T. Laldinpuii, Serchhip District: Mrs. T. Laldinpuii purchased 4 female piglets for breeding and 5 piglets for fatteners in February, 2014. She reported that she had sold her 5 fatteners on August 2014 at an average rate of Rs.25,000/- each and two of her breeder farrowed on March 2015 with 8 piglets each.
- Mr. Lalhriatpuia (Ruallung Piggery Society): Mr. Lalhriatpuia is the Chairman of a Piggery Society consisting 23 members from in and nearby his village. The society purchased 35 piglets from Mega Seed Farm on 31.10.2015. The piglets were distributed to each members, some for fatteners and breeders. The Chairman of the society reported that to this-day the pig are in good health conditions and they are expecting to produce piglets soon during 2015.
- Mr. C. Lalronunga, Zawngin Village: He purchased 2 Large White Yorkshire male piglets for breeder on March 2012 and another 3 male piglets on February 2014. Since pig farmers in and nearby his village do not get a regular A.I for their pigs, he is very helpful to the pig farmers. His boars have mated around 38 sows in the last 3 to 5 months and earned more than Rs.30,000/- from his boar service charges.



6) Distinguish Visitors:

- Mr. Thatkunga, Secretary, A.H & Vety. Deptt. Govt. of Mizoram (9.6.2014).
- Mr. C. Ngunlianchunga, Minister, A.H & Vety. Dept., Govt. of Mizoram (26.7.2014).
- Director, ICAR Research Complex for NE Region, Umroi Road, Meghalaya (13.10.2014).



Internal footh-path re-constructed during 2014-2015



Sale Counter cum Weaners' Pen constructed during 2014-2015



Toilet constructed during 2014-2015



Inside view of Sale Counter-cum-Weaners' Pen



Private farms/beneficiaries of Mega Seed Project on pig, Mizoram center



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