

RANI



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A New Crossbred Pig for Multiplier



Developed by



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RANI A New Crossbred Pig for Multiplier

A newly developed crossbred pig with 50% inheritance of Hampshire and Ghungroo pig with higher growth rate, larger litter size at birth and better economic return to the breeder farmers.

Preamble

Pig rearing is one of the most important occupations of rural society of India. These animals are highly profitable for intensive as well as diversified animal farming system due to their less space requirement, high prolificacy, shorter gestation period and smaller generation interval which ultimately results in quick economic turnover. In recent past, the country has experienced increased involvement of farmers and entrepreneurs in piggery sector, which will not only mitigate the demand supply gap in the sector, but also increase the employment generation potential among the rural youths. Involvement of finisher producers in the piggery sector require availability of improved germplasm with maximum growth rate and thus ensures better economic return.

As per ICMR recommendation, out of 60 gm of daily protein requirement for an adult individual, 20 gm should be from animal protein source. Considering a modest figure of 20% of total population consuming pork in the country today, and out of 20 gm daily animal protein, assuming 10 gm from pork source (fish and egg being other major animal protein source); the total pork requirement is around 0.88 million ton (20% of 1210 million human population i.e. $242 \times 0.010 \text{ kg} \times 365 \text{ days}$). Against this; the country as per FAOSTAT, produced 0.33 million ton of pork in 2012. Thus, the present shortfall is 0.55 million ton or 62.5%. Pigs being a live source of insurance particularly for the weaker section of the society, there is a tremendous opportunities to use it as a medium of poverty reduction and mitigate the gap of nutrient requirement of the marginal farmers.



crossbred pigs. Now assuming rearing of one indigenous sow with average litter size of 5.5 and average body weight of 45 kg/animal, a farmer can produce approximately 250 kg pork by selling of 8 months finisher pigs in a period of 1 year. Thus a total of Rs. 25000.00 can be earned by selling of pig assuming cost of pork of Rs. 100.00/kg. On the contrary, keeping improved quality crossbred sow with average litter size of 9.5 and average body weight of 75 kg/animal a farmer can produce approximately 700 kg pork by selling of 8 months finisher pigs in a period of 1 year. Thus a total of Rs. 70000.00 can be earned during the same period. Thus, rearing improved germplasm the farmers' income will be increased upto 2.8 times.

Source/availability

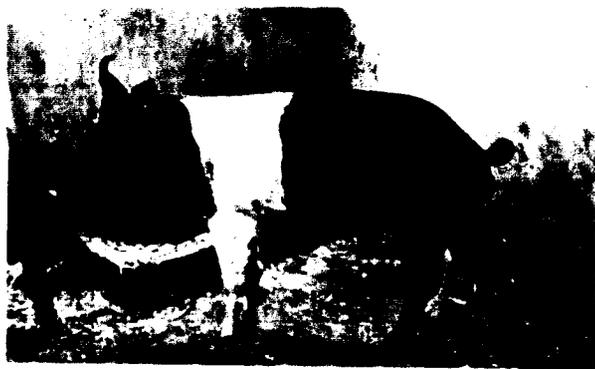
- ICAR-National Research Center on Pig, Rani, Guwahati, Assam
- AICRP on Pig, Central Agricultural University, Imphal, Manipur
- Mega Seed Project on Pig, ICAR-Research Complex for NEH Region, Nagaland Centre, Medziphema, Nagaland
- Progressive farmers of Kamrup and Goalpara districts of Assam
- Besides live animals, the liquid semen of Rani cross is also made available from ICAR-NRC on Pig, Rani, Guwahati.

Conclusion

The newly developed crossbred pigs characterized with higher growth rate, larger litter size at birth and weaning for better economic return to the breeder farmers and are well acceptable to the farming community. The Rani crossbred pig variety has not only benefited the socio-economically weaker communities including women-folk of rural remotes in terms of their sustainable livelihood security, but also improved the production and productivity of pig. Thus it is expected to mitigate the current demand supply gap of pork and pork products in the country, more specifically in North East region.

states viz. Assam, Nagaland, Manipur, Meghalaya and show promising results in terms of growth rate, litter size and adaptability. The performance of the variety has been validated in different districts of Assam. The developed crossbred has widely been distributed to farmers' field by Mega Seed Project on Pig centre of Nagaland and All India Coordinated Research Project on Pig of Manipur centre.

Initially the developed variety was distributed to the stakeholders as live piglets of 2-5 months of age. Subsequently, with the introduction of artificial insemination using the semen of elite bores of the variety, more than 35000 piglets have been produced at farmers' field. Presently the germplasm is available in form of live animal and liquid semen.



Rani crossbred pig at farmers field

Potential of Rani crossbred pig for doubling farmers' income

The developed crossbred pig variety is more prolific in terms of litter size at birth and weaning as compared to local/indigenous pigs. The average litter size at birth of indigenous pigs is 5-6 as compared to crossbred variety of 9-10. The percentage increase in litter size at birth is approximately 70%. Further, the growth rate and feed conversion efficiency of crossbred pigs are also higher as compared to indigenous germplasm. The average body weight at slaughter age of 8 months of most of the indigenous pigs is 40-50 kg as compared to that of crossbred animals of 70-80 kg. So there is approximately 65% increase in body weight of

of total pig population of 10.29 million; 76.14% indigenous and non-descript type (19th livestock census, 2012), characterized by smaller body size and less growth rate. Pork production in India is only 0.45 million tonnes with an average meat yield of about 35 kg/animal, which is much lower than the world average of 80 kg/animal. In order to enhance the pork production of India, there is a need to promote scientific pig farming amongst the households and commercial pig farmers. Apart from providing scientific interventions there is a need for quality breeding stock with better growth potential and suitable for commercial farming system.

Initiative

Sustainability of pig farm depends upon availability of improved germplasm in multiplier farms which can consistently supply its own replacement stock. Looking to the high potentiality of piggery sector for multipliers on one hand and lack of sufficient number of high performing improved pig germplasm in other hand, a breeding programme was initiated at the ICAR-National Research Center on Pig, Guwahati by using Ghungroo as indigenous germplasm and Hampshire as exotic germplasm with the objective to develop a suitable crossbred pig for multipliers of northeastern and neighbouring region and the institute has successfully developed the crossbred pig variety named as Rani, based on the locality name.

Selection of base animals was done on the basis of previous records maintained at the farm. Crossbreeding of Ghungroo with Hampshire was carried out by natural mating initially followed by artificial insemination. The castrated males of Rani were evaluated for growth, development and pork characteristics study; while selection was practiced in other males for inter-se-mating. The breed characters of Rani crossbred has been stabilized for consistent crossbreeding of several generations. The performance of different productive, reproductive, adaptive and carcass characteristics of developed crosses was evaluated and supplied to farmers. Initially ten sire lines of Hampshire and 19 dam line of Ghungroo was used to develop the Rani animals. Mating ratio of 1:2.5 (M: F) was followed. Initially the mating was done

natural mating. However, since 2011 all the mating is done artificial insemination (AI). Top 3 and 8 percent of male and female, respectively were selected (selection intensity) for producing subsequent generation based on performance traits. Generation interval was estimate as 1.5 years.

Rani – A potential crossbred pig

In order to achieve the objective, a planned crossbreeding program with rigorous selection resulted in development of Rani, crossbred pig variety with following features:

- Higher litter size at birth and weaning
- Higher litter weight at birth and weaning
- Promising growth rate
- Better adaptability
- Body condition of sow remain excellent upto fifth farrowing

The developed crossbred pig variety has been tested in different agro climatic conditions of other states of north-eastern India. Large scale validation of the Rani crossbred pig variety was done at Mega Seed Project on Pig centre of Nagaland and All India Coordinated Research Project on Pig centre of Manipur.



Rani sow with piglets



Rani grower Pigs



Rani grower Pigs

Salient economically important traits:

Productive and reproductive traits	
Weight/piglet at birth (kg)	1.20±0.04
Weight/piglet at weaning (kg)	7.12±0.52
Weaning Period (days)	42
Weight at 3 months of age (kg)	18.71±1.66
Weight at 6 months of age (kg)	48.86±3.02
Weight at 8 months of age/slaughter (kg)	78.26±4.70
Pre-weaning growth rate (g/d)	140.95±9.67
Post-weaning growth rate (g/d) (Weaning to 8 m)	359.95±16.41
Adaptive traits	
Pre-weaning mortality rate (%)	4.61%
Post-weaning mortality rate (%)	5.12%
Carcass trait	
Hot carcass weight (kg)	70.56 ±5.69
Dressing percentage (%)	74.22 ±0.91
Carcass length (cm)	96.85 ±5.12
Loin eye area (inch ²)	4.63 ±0.35
Back fat thickness (cm) at 10th rib	1.75 ±0.23

Impact of Rani crossbred pig variety

The Rani crossbred pig variety has made a sizable and meaningful impact among the rural farmers of northeastern region of India in terms of economic gain and livelihood security. The developed variety has been tested in different