Artificial Insemination - A way forward for improving pig husbandry in resource-poor communities

Agriculture is the prime source of livelihood for the majority (85%) of the rural population in North-East region of India. This region is located on the foothills of the eastern Himalayan ranges and is suitable for pig farming as the climatic conditions are comparatively fair and pleasant. Pig rearing is a very important component of animal husbandry in North-East India and out of total pig population, 40 % are grown in this region. It is an important occupation for livelihood and nutritional security of tribal and weaker section of the society. However, lack of availability of superior quality germplasm, lack of purchasing power and small land-holding are the major challenges in pig-husbandry especially in NE region. Rural areas are lacking good quality pig germplasm which becomes a hindrance to growth of this sector. Conversely, there is a growing demand for pork and pork products due to increasing per capita income, urbanization and changes in lifestyle and food habits. Thus, there is an urgent need for well-planned technology intervention and scientific production practices to boost pig production in the region.

Artificial insemination (AI) has been used to obtain offspring from genetically superior males for more than 200 years. This technology holds enormous promise for genetic improvement programs in farm animals. To commence on this frontage, the AI technology has been introduced successfully by the National Research Centre on Pig (NRCP) with a view to supply and disseminate superior quality porcine germplasm to farming community and thus to increase genetic gain among the rural pig population. The AI programme was initiated for the first time in Assam under Institute Village Link Project (IVLP) in the year 2009 with an aim to distribute good quality germplasm and to validate the developed technology at farmer's field. Initially, two villages viz. Bahupara and Gorgora were adopted under IVLP. Later on, as the technology gained momentum

AI at farmer's field

and popularity, Institute was able to spread the service in several other rural areas. Currently, swine artificial insemination technology is being undertaken widely in the institute and neighbouring areas and more than 80 small villages have already been benefitted with AI service.

The germplasm of genetically superior boars (Hampshire and crossbred) are being used for AI in sows and gilts at farmers' field for production of genetically superior/upgraded pigs with an aim to achieve genetic improvement in rural swine herd. One of the main constraints for widespread adoption of swine AI is the lack of awareness among the farmers, especially in rural areas. The NRCP team led by Dr. M.K. Tamuli overcame this challenge by building a strong rapport with the farmers in neighbouring villages. By developing unique extender (GEPS), high quality boar semen could be preserved in liquid state even upto 7-8 days without losing the fertilizing capacity of spermatozoa. With this proven method of semen preservation (upto 6-7 days preservation), artificial insemination using liquid semen could be performed with satisfactory results. This cost-effective method opens great opportunities for wider adoption of AI in sows and gilts maintained by rural farming communities within a radius of upto 65 kms**.** Recently, the Institute is able to establish collaboration with KVK, Gossaigaon under Assam Agricultural University with successful implementation of AI technology in distant places (road distance upto 220 kms) like Kokrajhar district.

AI-born piglets at farmer's field

So far, a total of 1,868 piglets were born (through AI) out of 230 farrowings with a success rate of above 80% in the farmers' herds. More than 85% of rural farmers adopted the technology and they are highly satisfied due to financial benefit. Previously, farmers were practicing natural service to their female pigs for which they had to spend additionally ₹ 300 as hiring expense for auto-van to bring boar from neighbouring village and ₹ 500 as the charge for the service. After introduction of artificial insemination (AI), farmers could save ₹ 800; and the piglets born from AI were healthy and were larger in size; fetching higher cost in the market. Economic benefits in terms of animal/meat sold and demand are better for AI-born piglets with a higher market price of ₹ 1500/- per piglet in comparison to ₹ 1000/- for piglets born through natural service.

AI is being performed when farmers report sows in estrus. In addition to the AI service farmers also receive technical advice on heat detection, neonatal care, improved feeds and low-cost area-specific feeding methods. The selected farmers were also given training on the modern pig-husbandry practices along with exposure visits to institute's farm complex. Technology intervention through AI to farmers' doorstep at free of cost on demand along with timely technical inputs and veterinary assistance has made the farmers to accept the proposed technology wholeheartedly and as a spin-off effect, the income/expenses ratio is increasing favourably. As a result, farmers in the neighbouring villages are also now ready to adopt AI technology. The increased capacity technology and expertise acquired by the Institute has enabled staff to train AI technicians and also to conduct technical consultancies in neighbouring villages. This successful project exemplifies the efforts of the ICAR in assisting farmers to improve livestock productivity and food security and thus alleviating poverty.