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Scope and Opportunity of Pig Production in India

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In India, majority of pigs are reared in traditional small-scale subsistence-driven Production systems. Pigs in such low-input systems provide value-added output for farmers by consuming feed that would otherwise be lost. Smallholder farming systems improve livelihood and food security for the poorest people. In addition to providing protein for human consumption, pigs are often one of the main sources of cash income in rural areas and provide manure for cropping. Further it provides a financial safety umbrella in distress and playing a role in cultural traditions of communities. Pig production in particular promotes greater self-sufficiency and provides a greater food security to urban households and increases incomes. Pig farming has the potential to provide employment opportunities to seasonally employed rural farmers and supplementary income generation to womenfolk for improving living standards. Lately, entrepreneurs have started showing interest in pig rearing, processing, value addition and marketing of pork and pork products. For realizing the potential, this sector requires a thorough understanding, appreciation of the present scenario, meticulous planning, mobilization of resources and training of manpower on a larger scale.

Sectoral analysis reveals that pig farming constitutes the livelihood of rural poor belonging to lowest socio-economic strata who have limited means and access to undertake scientific pig farming with improved foundation stock, proper housing, feeding and management. Minimal scientific intervention in the sector will not only boost the potential of piggery but also create the employment generation capacity and attract more unemployed rural youth in the venture.

1. Salient features of Pig production system in India

- Pig farming has been adopted by small and landless farmers, and in tribal areas.
- Production is small-scale, backyard, marketed-oriented enterprise.
- Pigs are mainly dependent on locally available feed resources/vegetations, crop residues and kitchen waste which are of low or no cost.
- There is lack of proper housing and shelter under low-input traditional system thus exposing pigs to adverse weather conditions like high temperatures and rain.
- Most of pig sty are located in backyard of house and the unhygienic conditions of these building predispose pigs to diseases.
- Best breeding stock rarely goes to the market, resulting in the use of a foundation stock with poor breeding qualities.
- There is no utilization of improved breeds from government farms and increased use of own stock and that of neighbors, which gives rise to inbreeding and consequently low productivity (Nath *et al*., 2013).
- A wide gap still exists between the need/demand and availability of pork. The major reason is that the pigs reared by the farmers are of the non descript local breed.

2. Status of piggery in India

According to the 19th livestock census of India, its pig population is 10.294 million in comparison to the world population of 977.02 million (FAOSTAT, 2013; http://faostat.fao.org), which constitutes 0.92% of world pig population. The last livestock census demonstrated that pig population is distributed skewed across the country. The highest pig population is found in eastern and north eastern (NE) states (72.21%), followed by northern southern (10.68%), central (7.64%), northern (6.79%) and western India (2.69%). The highest population is in the state of Assam (2.10 million), followed by Jharkhand (1.28 million), Meghalaya (0.70 million) and West Bengal (0.54 million). The Northeastern part of the country houses 46.35% of the pig population of the country. Indigenous pigs (79.03%) are the cornerstone for pork production in the country followed by crossbred and exotic germplasm (20.95%). Though there is a decline of pig population (12.03%) over the last census, but the major pig producing states showed an increase in population. These states include Assam, Meghalaya, Mizoram, Kerala, Jharkhand, Chhattisgarh, Andaman and Nicobar Island and Punjab.

The indigenous pigs of India are identified as a distinct group as a result of gradual domestication of wild pigs to their surroundings. These pigs differ in their characteristics and attributes from region to region within the country depending on the topography and climatic conditions. Till now there are 10 registered indigenous pig breeds of India. These are Agonda Goan, Doom, Ghungroo, Gurrah, Mali, Niang Megha, Nicobari, Purnea, Tanyi-Vo and Zovawk. Registration work of several other indigenous germplasm is going on like Banda, Manipuri Local, Ankamali etc. Besides indigenous, there are about 20.95% exotic and crossbred pig population in India.

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 0.99 million ton (20% of 1350 million human population i.e. 270X0.010 kg X 365 days).The share of pork to the total meat production in India is about 9%. The meat production in the country as per 2018-19 data was 6.6 million tons with a per capita availability of 4.94 kg. Of this, Pig contributed 9% (0.6 MT), which accounts for 40% deficiency in production of the total requirement (Chauhan *et.al*.2016).

3. Problems and opportunities in piggery sector

At present, the country has 10.294 million pigs which is the strength to meet the animal protein deficiency experienced in the country. Ability of the pig to thrive and produce under adverse husbandry conditions is the strength particularly for the weaker and economically down trodden tribal and landless population of the country. Increased demand for pork and pork products like sausage, bacon etc. is the strength for economic upliftment of the pig growers. Pig by-products, namely bristle and inedible offal are strength to support allied industries. Both commercialization and organic pork production are considered strengths to give a meat revolution to the country and thereby provide employment to a large section of the rural poor.

India has still significant number of population living below the poverty line and pig rearing can result in substantial economic development in these groups because of the fewer requirements of the resources for starting piggery. Most of this population is again in the tribal belts of the country where the people are non-vegetarian in their dietary habit and even people of some of the north-eastern states are voracious meat eaters and they prefer mostly pork. Pork consumption being popular among these populations, pig husbandry has been considered an important area for poverty alleviation programme of the Government.

Further, through the initiative of ICAR and other state Government farm the development of high producing crossbred pig germplasm will mitigate the protein deficiency in rural poor by producing larger quantity of pork. Development of good management practice including economic ration including locally available feed ingredients reduces the cost of production and attracts more farmers and entrepreneurs in piggery venture. Recent development and implementation of pig breeding policies adopted by state Government Animal Husbandry Departments will further boost the piggery sector in the country. Promotion of high yielding crossbred germplasm will not only help poverty reduction and employment generation but also help to double the farmers' income in shorter time interval.

4. Weakness of piggery sector

- Poor availability of quality breeding animals/ exotic germ plasm
- Lack of coordinated breeding programmes
- Absence of efficient post-harvest infrastructure
- High cost of the commercially available feed ingredients
- Emergence of transboundary and emerging diseases due to porous border with neighboring countries and poor bio security
- Poor awareness level of stakeholders and low quality feeding
- Lack of structured marketing channels

5. Opportunities of piggery sector

Pigs being a live source of insurance particularly for the weaker section of the community, there is a tremendous opportunities to use pig as a medium of poverty alleviation in the country. Since regions like North East in the country where more than 50% of country's pork is consumed, has to procure live pigs from other parts of the country to meet their pork requirement, a very good opportunity exists for opening up employment generation for rural youth in this sector. Self-employment to another set of pork product processor and workers is yet another opportunities through pig husbandry not to mention about Self Help group (SHG) personnel to be engaged in service delivery like A.I, Vaccination *etc.* Since pig is a prolific breeder, achieving the targeted growth of 10% in meat sector is another opportunity through piggery. In the North Eastern region of the country alone, immense opportunity exists for employment generation for rural youth in the piggery sector.

6. Merits of pig farming

- In comparison to other livestock species, pig rearing has higher potential to contribute to more economic gain for small, marginal farmers or rural poor belonging to the lowest socioeconomic.
- Better feed conversion efficiency of pigs i.e. they attain more unit weight gain per kg of feed consumed as compared to other meat producing animals except broilers.
- Higher fecundity in pigs – Sows produce 6 - 12 piglets in each farrowing.
- Pigs reach sexual maturity at an early age. A sow can be bred as early as 8 - 9 months of age and can farrow twice in a year under optimal management conditions.
- Pigs have shorter generation interval as compared to other classes of livestock.
- Offers quick returns since the market weight of 60-90 kg can be achieved in a period of 7-10 months.
- One of the few livestock animals where nearly all parts of the animal can be consumed by the farm family and/or sold.
- Converts damaged feeds which are either not edible or not very palatable to human beings into valuable nutritious meat.
- Apart from providing meat, it is also a source of bristles and manure.
- Can survive and grow on wide variety of feed stuff viz. grains, vegetables, fruits etc.

7. Pig genetic resources

As per 19th Livestock census, India's pig population is 10.294 million, which amounts to about 2 % of the country's entire livestock. Due to poor performance of indigenous pig germplasm and for further up scaling the performance of piggery sector in India, exotic pigs have been imported by different Government and non-Government organizations during past as per recommendation of National Commission on Agriculture (NCA). These breed were extensively used for subsequent crossbreeding programme. Berkshire, Charmukha, Duroc, Hampshire, Landrace, Large Black, Large White Yorkshire, Middle White Yorkshire, Tamworth and Wessex Saddleback are the major known exotic breeds imported in India for piggery developmental programme. These breeds have well studied in different All India Coordinated Research Project on Pig (AICRP), State Government and privet sector farms.

- **7(A) Indigenous pig germ plasm:** These breeds/varieties are distributed throughout the country with different morph metric traits and production parameters. Most of them are yet to be characterized with appropriate scientific tools. These pigs are of smaller size, and little effort has been made for conservation and selection of indigenous pigs to improve its economic traits, such as litter size, birth weight, weaning weight, average daily gain, feed conversion efficiency and carcass traits. They are well adapted to hot and humid climate and supposed to have better disease tolerance. Prolificacy and adaptability to low management inputs are excellent characters of these pigs. In some regions of the country, local pigs are well preferred over the exotic and crossbred pigs due to quality and taste of pork and their tolerance to the diseases. As a unique feature, some of these native pigs mature at an exceptionally early age. Though these pigs are less or moderately prolific but possess good mothering ability, which directly influence the survivability of their piglets during younger age. The indigenous pigs of India are identified as a distinct group as a result of gradual domestication of wild pigs to their surroundings. These pigs differ in their characteristics and attributes from region to region within the country depending on the topography and climatic conditions.

  7(A.1) Agonda Goan: This breed is found in Agonda region of Goa. The breed is semi-wild in nature. The animals are small in size with predominantly black in color; however, white patches on head and leg are also occasionally found. The animals have short snout with short erect ears. Average adult body weight is 40 kg. This is the third recognized pig breed of India.

  7(A.2) Doom: These are indigenous pigs of Assam found in very less number. These are medium sized pig with an adult weight of about 35 to 45 kg. The animals are predominantly black in colour with white patch found at fore head. The animals have thick bristle in mid dorsal line. Animals are occasionally reared in a group. The registration number of this breed is.

  7(A.3) Ghungroo: These are found in North Bengal and adjoining district of Assam. Color of this animal varies from black to tan with occasional white patches at front and hind feet. The animals have typical bull dog type head with folded skin at face and neck. Long and cylindrical barrel belly, large and drooping ears and docile character are other prominent characters of the breed. This breed is weighing about 55 to 60 kg at maturity. The litter size at birth of Ghungroo is comparatively higher than other indigenous pigs. This is the first recognized pig breed of India.

  7(A.4) Gurrah: These pigs are native to Bareilly division and adjoining pats of Lucknow division of Uttar Pradesh. These are black colored medium sized pigs with flat belly, angular body and long straight snout. Legs below hock joint are white. Thick line of hairs is present from neck to shoulders. Head is elongated with triangular face and short leaf shaped vertically erected ears. Adult male weighs about 46kg and female about 48kg. Litter size is 6.85 at birth and 5.65 at weaning.

7(A.5) Mali: The animals of this breed are found in Dhalai & North District of Tripura. Mali is a black colored medium sized pig with pot belly. There is no specific distinct marking. Medium to small bristle is ubiquitously distributed throughout the body. Animals are characterized with short erect ears lying perpendicular to body axis with concave snout. Adult body weight about 68 kg in males and 71 kg in females. Litter size is 5.15 at birth and 4.46 at weaning.

7.(A.6) Niang Megha: It is a medium sized animal found in hills of Meghalaya. Animals are black in color with diamond or star shaped white patches on forehead. They are ferocious in nature with bright, active and wild look. These animals have uniformly covered glossy coat. The midline is thickly covered with bristles. Ears are small, erect and extend in vertical direction. Adult body weight ranges between 50 to 60 kg. Litter size at birth ranges from 5 to 7. Niang Megha is the second recognized pig breed of India.

7.(A.7) Nicobari: The breeding tract of this pig is Car Nicobar and adjoining islands of Andaman and Nicobar Island. The pigs are short to medium in size with active look. The color varies from mostly black to red-brown, brown, grey and fawn. Average adult body weight is 45-55 kg. These pigs are generally raised in free range and semi-intensive system and sometimes with integrated farming system.

7.(A.8) Purnea Local: This breed is mostly predominant in Purnea and Araria districts of Bihar but is also found in most part of Bihar and some parts of Jharkhand. Purnea local is a black colored medium sized pig with pot belly. There is no specific distinct marking however, in a few animals, white spot at the lower limbs are also seen. Thick line of bristle is present from neck to shoulders. Animals are characterized with round face, short erect ears with slightly concave snout. Adult body weight about 44 kg in males and 42kg in females. Litter size is 5.02 at birth and 4.97 at weaning.

7.(A.9) Tanyi-Vo: The animals are found in Nagaland and adjoining state and also called as Naga Local. Color mostly black with diamond or star shaped white patches on forehead. The animals have moderately dense coat and small, erect ears. Animals are alert and ferocious with active look. The nursing sows are very difficult to handle. The adult body weight ranges between 40 to 60 kg at maturity. Litter size is very small and ranges 4 to 6 at birth. These animals attain early sexual maturity. They are raised on scavenging and backward system by tribal people of Nagaland.

7.(A.10) Zovawk: This is a small size breed found in Mizoram. The animals are predominantly black in colour with potbellied appearance. The mature body weight ranges between 40 to 50 kg and litter size about 5 to 8. These pigs are mainly raised in backyard and semi-intensive system by tribal community of the state.

Conclusion

Pigs are potential source of animal proteins and avenues for additional income and employment that can improve the livelihood in a sustainable manner. Presently, our pig production system has many lacunae namely absence of sufficient number of breeder farmers, tendency of the pig grower to raise pig to marketable age on negligible inputs and lesser preference of the consumers for pork from the local pigs etc. Absence of sufficient number of breeder farmers throughout the country is also a major constraint leading to lesser availability of quality pigs for fattener farmers and market. Therefore, genetic improvement of indigenous pigs must be undertaken on priority for production of superior germplasm. Selective breeding and crossbreeding has to be expanded for improving production and Productivity.

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