

PIG PRODUCTION SYSTEM AS A SOURCE OF LIVELIHOOD IN INDIAN SCENARIO: AN OVERVIEW

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Abstract: 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. Among tribal communities in India, smallholder pig rearing provides for nutritional, financial benefits, as well as providing for conversion of household waste into fertilizer for agricultural crops.

Keywords: Pig, production, husbandry, breeds, livelihood.

Pig Population and Production dynamics in India

As per 19th Livestock census, India's pig population is 10.294 million which amounts to about 2 % of the country's entire livestock. Total population of exotic/crossbred was 2.456 million while indigenous pigs were 7.837 million. Total population of exotic/crossbreds in rural areas was 2.126 million while it was 0.329 million in urban areas. In case of indigenous pigs, population in rural areas was 7.099 million while it was 0.737 million in urban areas. The total pigs in the country have decreased by 7.54% over the previous census. In rural areas the decline was 7.37 % while it was -9.06 % in the urban areas. Highest share of country's pig population was found in Assam (15.89%) followed by Uttar Pradesh (12.96%), Jharkhand (9.35%), Bihar (6.31%) and West Bengal (6.30%). Highest percentage increase in pig population as compared to previous census was observed in Tripura (37.48%) followed by Jharkhand (31.38%) and Karnataka (8.59%). Number of Pigs per Thousand Households in rural Areas was highest in Arunachal Pradesh (2221) followed by Nagaland (1424), Mizoram (1220), Meghalaya (1124) and Manipur (657). This elucidates the extent of popularity and acceptance of pig rearing in N-E hilly region of India. Number of Households Enterprises and

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Institutions rearing pigs was 2.5 million while 5,000 Non Household Enterprises and institutions were having pigs. As per Department of Agricultural Research and Education (DARE) report, during 2012-13, domestic production of pork was 0.45 mt with an average meat yield of about 39 kg/ animal, which is lower than the world average (79 kg/animal). The share of pork is around 8% of total meat production. Most of pork consumption takes place in unorganized sector in form of locally raised fresh pork meat. The Pork is not widely distributed in the organized retail sector. Given cultural perceptions and consumer perceptions about pork meat, consumption of fresh local meat is more popular to north eastern and eastern India, tribal belts in Uttar Pradesh, Bihar and is also favoured in states of Kerala and Punjab. Swine production in India has remained somewhat unexploited despite the country having an established pig population. Absence of properly defined production practices and organized breeding programmes are among main hurdles in improvement. In subsistence-driven systems, insufficient feeding, ineffective health care and inbreeding are the major hindrance to pigs expressing their full performance. In order to effectively address constraints in pig production systems, holistic approach involving feeding, breeding, health, management and marketing infrastructure is the need of hour. The development of livestock would not only provide a supplementary source of income, but it would also provide protein-rich food such as milk, eggs, meat, and organic manure for crop production (Ajala *et al.* 2007). Smallholder livestock production systems improve livelihood and food security for the poorest people (Dixon *et al.*, 2001; Keoboualapheth & Mikled, 2003). 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 (An *et al.*, 2004). Swine rearing promotes better self-reliance along with greater food security to urban households (Mougeot, 2000) and increases incomes.

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.
- It is low-external input activity relying mainly upon women's labour for rearing
- 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 nonutilization 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 nondescript local breed, whose growth rate is claimed to be poor, and hence, their production is hardly adequate.
- Producers have inadequate knowledge about feeding, health care and breeding management
- The commercial pig production system in India is characterized by improved crossbred/ exotic breeds of pigs that are bred and reared under confinement

North-east India: Huge avenues for pig production

In states of North-East India, almost every household has a small piggery unit. There is a huge demand for pigs because people of this state prefer pork than other meats. Majority of the pigs in this hilly region are reared in intensive production system and fed with homemade cooked feed including kitchen waste and locally available plants (Kumaresan *et al.* 2009). Moanaro *et al.* (2011) reported pig rearing under a low-input production system in the Nagaland State of India where nonconventional feed resources contribute majority of the feedstuffs offered to the animals. Small land holders in Nagaland are adopting more profitable and less labour intensive backyard pig production to increase cash returns, and accumulate capital in banks. As per 2003 livestock census, Nagaland recorded highest human-pig ratio of 3:1 as compared to the national ratio of 76:1 (Njuki *et al.*, 2010). Pig alone accounts for 55.38 % of the total livestock population in Nagaland, but still a wide gap exists between the demand and availability of pork mainly due to traditional production system. Families usually keep an average of 1-2 indigenous or crossbred pigs for fattening with zero to minimum inputs in terms of family labour and feeding (Patr *et al.*, 2014). In Mizoram and Sikkim, it has been reported that crossbred pigs were preferred for better growth performance, higher weight gain, larger litter size and greater back fat thickness (Nath *et al.*, 2013).

Inherent 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 socio-economic strata due to its following advantages:

- 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, fodder, sugarcane, kitchen waste
- Offers employment opportunities to seasonally employed rural farmers and supplement income to improve their living standards
- Require little initial investment on building and gear.
- Pigs can be raised for their entire lifetime in enclosure as they do not contribute to loss of grazing lands (Mpofu and Makuza, 2003).
- Pig products range from primary commodities such as pork, to processed food products such as sausages and smoked hams to cooked salted ears, eaten as snack foods.
- Demand for pig's fat in poultry feed, soap, paints and other chemical industries.
- The small scale pig sector has seemingly greater potential to reduce poverty (Lanada *et al.*, 2005)

Pig germplasm in India

Different pig breeds have been adapted to the most diverse climatic conditions in country which however are low producers. The indigenous pig has been the basis used for pig

production for a long period of time. Huge gap exists between the supply/ demand and availability of pork especially in N-E India. The major reason is that the pigs reared by the farmers are of the nondescript local breed, whose growth rate is claimed to be poor, and hence, their production is hardly adequate for the fast-growing population (Nath *et al.*, 2013). Exotic breeds are now being utilized for crossbreeding to augment genetic base for pig production in the rural areas.

Indigenous breeds of pigs

1. Ghungroo – Pigs of this breed are found along Indo-Nepal border, Jaipalguri and CoochBehar in West Bengal and North Assam. Animals are mostly black coloured with typical Bull dog face appearance. Breed is popular among the local people because of high prolificacy, good mothering ability, docile nature and ability to sustain in low inputs.
2. Jovaka – Breed is found in Mizoram and Manipur. Animals have small, compact body with long legs and weigh around 40 -50 kg at maturity.
3. Ankamali – This breed inhabits states of Kerala, Karnataka, Maharashtra and Tamil Nadu. Typical characteristics of this breed include black to brown coat colour, small, body with long legs and mature body weight of 40 to 50 kg.
4. Desi – It is found in all states of India. Animals have Brown to Black coat colour, small, compact body with long legs and weigh around 40 to 80 kg at maturity.

Exotic breeds of pigs

Several exotic pig breeds are available in India are as follows:

1. Large white Yorkshire – It is most extensively used exotic breed in India. White coat colour with occasional black pigmented spots, erect ears, snout of medium length and dished face are typical characteristics of this breed. Mature body weight ranges from 300 to 500 kg.
2. Middle White Yorkshire – Typical characteristics of this breed include white coat colour, long muscular neck and long back with a mature body ranging from 270 to 360 kg.
3. Landrace – Pigs of this breed are typically white coloured with black skin spots. They have a long body, large drooping ears and long snout. Mature body weight ranges from 250-350 kg
4. Berkshire – Black coloured animals with white patches on feet, snout and tail. Small head, face depressed in middle and saucer shaped body with flexible ribs are typical characteristics of this breed. Mature body weight ranges from 280-350 kg.

5. Hampshire – Animals are black with white strip across forelegs to shoulder. Typical characteristics include small and erect ears, small and compact body. Sows have good mothering ability.

Crossbreds

Under All India Coordinated Research Programme (AICRP) on Pigs, 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

Presently, AICRP centers on Pigs follow a breeding plan to maintain crossbred animals of 75% exotic inheritance. Mega Seed Project on Pig and AICRP on Pig implemented by the National Research Centre on Pig enable regular supply of good quality pig germplasm, location-specific research on pig nutrition and breeding throughout India

Central Sector Scheme on Pig Development

Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Govt. of India provides incentives in terms of capital subsidy for ensuring the viability of the pig breeding, rearing and related activities (Table 1). Goal of scheme is to encourage commercial pig rearing by farmers/ labourers to improve production performances of native breed through cross breeding by using selected animals of high performing breeds. Producer companies, partnership firms, corporations, NGOs, SHGs, JLGs, cooperatives and individual entrepreneurs are eligible for scheme.

Table 2: Components of Central Sector Scheme on Pig Development

Components	Subsidy
Pig breeding farms	25% of the outlay (33 1/3 %) in NE states including Sikkim and hilly areas) subject to a ceiling of Rs. 1.50 lac (Rs. 2.00 lac in NE states including Sikkim and hilly areas)
Pig rearing & fattening units	25% of the outlay (33 1/3 %) in NE states including Sikkim and hilly areas) subject to a ceiling of Rs.19000/- (Rs. 25300/- for NE states including Sikkim and hilly areas)
Retail outlets	25% of the outlay (33 1/3 %) in NE states including Sikkim and hilly areas) subject to a ceiling of Rs. 2.50 lac (Rs. 3.33 lac in NE states including

	Sikkim and hilly areas)
Facilities for live markets	50% of the outlay subject to a ceiling of Rs. 2.50 la

Opportunities for improvement

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. There is need for strengthening the pork marketing mechanisms at the local level to the marketing channels, and integrate production programme with slaughterhouses to ensure better sustainability. Given its prospects, piggery has the potential to have a positive impact on the livelihood of millions of resource poor, under-privileged, landless and marginal farmers.

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