

Impact of ICAR-DPR germplasm in Backyard poultry production

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Backyard poultry farming plays an important role in Indian economy. It contributes about 37.2% in Indian poultry population and 16.8% in egg production of the country. ICAR-Directorate of Poultry Research, Rajendranagar, Hyderabad, Telangana and their network research centers of AICRP on Poultry Breeding developed and released more than 10 chicken varieties to improve the productivity and income of backyard poultry farmers. Mostly, these varieties are used for dual purpose (meat and egg). In last 10 years (2010–20), a total of 387.07 lakh chickens were supplied to 3.72 lakh stakeholders in different parts of the country and annual mean contribution was estimated about ₹205.64 crore during the period which ranged from ₹162.45–277.06 crore/year.

Keywords: Backyard poultry, Impact, Poultry production

BACKYARD poultry farming plays an important role in Indian economy in terms of income, employment and livelihood generation for millions of people. It also supports food and nutrition security of the rural and tribal population. It contributes about 37.2% in Indian poultry population with an average growth rate of 45.78%, which is higher than any agricultural sector. Egg production from backyard poultry is about 16.8% with a total of 19.21 billion eggs. Around 30 million farmers are engaged in backyard poultry as per 19th Livestock Census. In India, the backyard poultry farming (BYPF) is mostly based on the native breeds and non-descriptive chicken varieties which had low productivity. Most birds feed on scavenging in the backyards or household leftovers. Low productivity, high rate of morbidity and mortality, and predations are major constraints in backyard poultry farming. But, eggs and meat of backyard farming are preferred by the consumers with higher premium for their produce. In this system, male birds are sold

mostly at 3–6 months of age for meat purposes and eggs are used for household consumption and surplus eggs are sold in the local market or to neighbours. As the native chicken varieties/breeds grow slow and produce lesser number of eggs, uses of such low produces may not be viable on economic scale and hence the ICAR-Directorate of Poultry Research, Rajendranagar, Hyderabad has developed improved chicken varieties and evolved a concept of viable propagation model which was adapted across the country. The authors made an attempt to quantify the impact of these improved chicken varieties developed at different centers of All India Coordinated Research Project (AICRP) on Poultry Breeding, on share of total poultry population of India and contribution to national economy.

Population of backyard chicken in 2007 was 151.35 million and in 2012 it decreased to 111.35 million, but in 2019 there was 2.5-fold increase (280.81 million). Similar trends were seen in backyard desi and improved fowl population in the year 2007, 2012 and 2019 census.

Share of improved chicken in the total backyard chicken population in 2007, 2012 and 2019 were 17.5, 16.26 and 18.95%, respectively.

Both public and private organizations in India, introduced improved chicken varieties resembling the native chicken with high production potential under low resource conditions made a significant impact on backyard poultry farming in the country. ICAR-Directorate of Poultry Research (ICAR-DPR), Rajendranagar, Hyderabad played pivotal role in the development of high yielding backyard chicken varieties and their propagation model across the country. Subsequently, ICAR has strengthened the concept through AICRP on Poultry Breeding (12) and established Poultry Seed Project (PSP) centres (12) across the country. The PSP centers rear the parent lines supplied from ICAR-DPR, produce the improved chicken varieties and distribute the chicks in their respective regions on payment basis. Parent lines are also supplied to state veterinary/agricultural universities, Central Poultry Development Organizations, State

Animal Husbandry Departments, KVKs and other developmental agencies to propagate these improved chickens among rural/tribal population. The AICRP centers developed new location specific chicken varieties like Pratapdhan (Maharana Pratap University of Agriculture and Technology, Udaipur); Narmadanidhi (Nanaji Deshmukh Veterinary Science University, Jabalpur); Kamrupa (Assam Agricultural University, Guwahati); Jharsim (Birsa Agricultural University, Ranchi) and Himsamridhi (Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur) by crossing the local desi variety/breed with the identified high yielding chicken lines. These birds are propagated among farmers in their respective regions with other supports like technical inputs and capacity development. Out of all improved backyard chicken varieties developed by ICAR-DPR, Vanaraja is one of the most popular variety which was well adopted and accepted by the farmers in all the geographical regions (Table 1).

Backyard poultry farming with improved chicken varieties increased the returns to the tune of 1.5–2 times as the productivity of these varieties is higher in terms of eggs and meat. The availability of the quality improved poultry, seed across the country in government organizations made easy access to the seed and reduced the



Vanaraja



Gramapriya



Srinidhi



Pratapdhan



Jharsim



Narmadanidhi



Kamrupa

transportation costs to the farmers.

Impact of ICAR-DPR and AICRP birds in Indian poultry population and economy

The impact of ICAR-DPR and AICRP germplasm in Indian poultry population was estimated on the basis of number of fertile eggs, day-old chicks, grown up birds and parent stock supplied to different stakeholders. Hatchability (75%), Mortality (20%), and other factors (80 chicks reached to farmers from a pair of Vanaraja parents similarly 120 from Gramapriya parents, 100 from Srinidhi parents and 70 from others parent lines) were taken into consideration to estimate the effective population supplied (Table 2). It was observed that, 1 male bird fetches an average ₹210, 1 Vanaraja and Gramapriya

female fetch an average ₹765 and 975, respectively under backyard farming system in a year.

In 10 years (2010–20), a total of 387.7 lakh chicken were distributed to various stakeholders in different parts of the country. Minimum supply (30.86 lakh) was recorded in 2014–15 and maximum supply (51.36 lakh) was noticed in 2011–12. During early days few organizations were involved in the development and supply of improved germplasm in India that led to higher contribution of DPR in 2012. Considering the success of the supply model, many public sectors as well as private sector organizations started and patronized this concept of backyard poultry farming with improved chicken varieties. Therefore, there was a quantum increase in the backyard fowl population in India during the period. Union Territory of India benefitted with ICAR-DPR improved birds, but the majority of beneficiaries were from the southern region. The poultry sector contributes about ₹1.2 lakh crores to the Indian GDP. Backyard poultry also contributes significantly and its contribution is increasing gradually in proportion to the commercial poultry sector. ICAR-DPR has been playing an important role in backyard poultry contribution to the Indian economy. The average annual contribution was estimated about ₹205.64 crore in the last 10 years (2010–2020) from ICAR-DPR which ranged from ₹162.45–277.06 crore.

Table 1. Characteristics of chicken varieties developed by ICAR-DPR and AICRP Centers

Variety and Year of development/release	Purpose	Body weight (kg)			Annual egg production (number)	
		At 10–15, weeks (Cocks)	At 20 weeks (Hens)	At 40 weeks (Hens)	Farm	Backyard
Krishibro, 1992	Meat	1.8–2.0 (at 8 week)		2.0		
Vanaraja, 1999	Dual	1.5–2.0	1.8–2.1	2.3–2.6	150–180	110
Gramapriya, 2001	Egg	1.2–1.5	1.6–1.8	2.3	220–256	160–180
Srinidhi, 2013	Dual	0.98			195–228	140–150
Janapriya, 2020	Dual	1.4–1.5	1.4–1.6	1.7–2.0	185–193	140–150
Pratapdhan, 2012	Dual		1.4–1.75	1.7–2.2		159–170
Narmadanidhi, 2015	Dual		1.4	1.7	224	170
Kamrupa, 2015	Dual		1.3–1.5	1.3–1.6	140–150	118–130
Jharsim, 2016	Dual		1.6–1.8		165	110–130
Himsamridhi, 2017	Dual		1.2	1.6	160	140

Table 2. Estimated chicken population supplied and economic contribution of germplasms of ICAR-DPR and AICRP centers

Year	Chicken germplasm supplied (lakh)	Economic contribution (₹ crore)
2010–11	40.17	215.63
2011–12	51.36	277.07
2012–13	43.15	236.66
2013–14	34.05	179.62
2014–15	30.86	162.45
2015–16	41.86	229.13
2016–17	34.28	179.94
2017–18	32.00	165.22
2018–19	41.60	217.86
2019–20	37.75	192.83
Total	387.07	2056.41

The impact of backyard poultry is seen in the economic terms as well as increased improved chicken population growth rate. Now a days, farmers have wide range of options for improved fowl varieties from different organizations in different places that are either available at their doorstep or nearby their area. A survey in tribal area of Adilabad, Telangana revealed that within 2 years of improved poultry

intervention, poultry productivity in the area increased by 85–90% and income increased by 86% led to higher consumption of poultry produce in the household. Therefore, the backyard poultry farming with the improved chicken germplasm led to much needed nutritional security, employment generation and livelihood improvements in the rural and tribal areas. Considering the ease of adoption and potential benefits associated with this concept, more attention is required by the developmental policy maker to further expand this concept among the rural and tribal masses with secured supply of the improved birds with adequate health care and establishing marketing systems which will help to improve the health and wealth of rural and tribal population of our country.

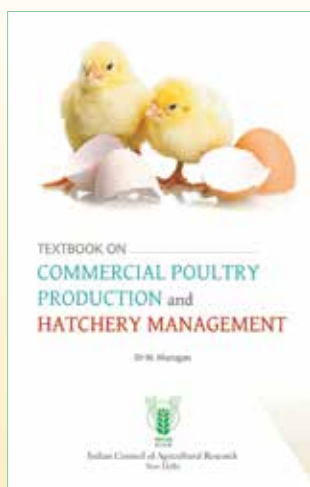
SUMMARY

Improved backyard poultry germplasm developed by ICAR-Directorate of Poultry Research, Rajendranagar, Hyderabad, Telangana and under All India Coordinated Research Project (AICRP) on Poultry Breeding made significant change in the poultry

sector. In last 10 years (2010–20), a total of 387.07 lakh improved chicken varieties in the form of fertile eggs, day-old chicks and grown up birds of 4–6 weeks of age were distributed in all states and Union Territory (UT) of India. There were about 3.72 lakh stakeholders (farmers/entrepreneur/private and government agencies etc) benefitted in the country. However, stakeholders of southern states were major beneficiaries compared to other parts of the country. The calculated annual mean contribution of these birds in Indian economy was estimated about ₹205.64 crore during the period. These birds should be promoted on a larger scale in the country to meet the requirement of poultry farmers due to their higher productivity and adaptive capacity in different climatic condition. Improved backyard poultry is also a good tool to address nutrition security, livelihood and employment generation in rural and tribal area.

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Textbook of Commercial Poultry Production and Hatchery Management



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TECHNICAL SPECIFICATIONS

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