

Backyard Poultry for Empowering Rural Women



Directorate of Research on Women in Agriculture
(Indian Council of Agricultural Research)
Bhubaneswar 751 003

Technical Bulletin-15

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Published by

Directorate of Research on Women in Agriculture
P.O. Baramunda, Bhubaneswar 751 003
Phone : +91-674-2384220
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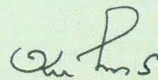
Printed at

AB Imaging & Prints Pvt. Ltd.
62 & 63, Ganga Nagar, Unit-6, Bhubaneswar-751001,
Tel : (0674) 2395887
Cell : 9937233060
email : ab_print@rediffmail.com



Preface

Backyard poultry rearing is a proven gender friendly production practice. Operational constraints related to inputs including quality chicks, feed, water and prophylactic health care measure limit the adoption of backyard poultry as an entrepreneurial activity among resource poor farmwomen. Technology refinement for gender mainstreaming being a mandated activity of Directorate of Research on Women in Agriculture (DRWA), an action research for developing and testing a model for backyard poultry rearing for empowering rural women was successfully carried out by DRWA. The publication gives an account of process and findings of the study and it is hoped that this will be useful for researchers and development professionals in agriculture. I am congratulating Dr. A. K. Misra and his associates for their effort in this direction.


Krishna Srinath
Director

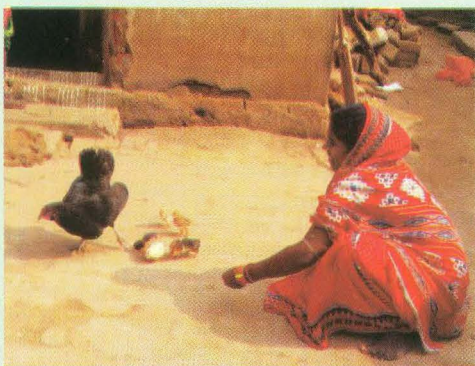
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Background

Over 72% of India's population lives in rural areas and of that, 58 per cent depend on agriculture and associated activities for their livelihoods. The growth of agricultural sector in the last two decades barely exceeded 3 per cent per year. Comparatively, the animal husbandry sub-sector within agriculture is showing good growth, and poultry production has emerged as one of the key segments of the livestock economy that accounted for 10.5 per cent of the total value of livestock output during 2006-07. More than three million people directly or indirectly depend on poultry sector for income and employment (Das, 2008). However, high growth performance of poultry sector is confined mostly to the commercially run large scale sector.



Backyard poultry (BYP) keeping is an age old tradition in India and mainly reared by landless, small and marginal farmers in villages of which a sizable population fall below poverty line. Poor and tribal households' depend more on their poultry for supplementary income and liquid cash compared to other livestock. Growing population, rapid urbanization, rising disposable income and changing consumption patterns have expanded the demand for high value food commodities. Among

them, the demand for poultry is expanding rapidly since poultry meat is one of the best sources of high quality protein with less fat, and accepted by all, irrespective of caste and religion, unlike beef and pork.

BYP keeping is an important livestock activity for rural women as it generates cash income and provides employment opportunities, while increasing production of valuable foods (meat and eggs) that improve household nutrition. Women often control the whole process

of BYP keeping from feeding to marketing, which is not the case in production systems for other livestock enterprises. For women who stay at home, BYP enables them to: (a) help the family in times of need and have cash for emergencies; (b) save money for future investments; (c) obtain an income to provide for the needs of their children and the household; and (d) supplement the family's protein intake. Poultry rearing has significant advantages over other livestock activities to rural women, because:

- It is easy to manage and can be taken up under diversified agro-climatic conditions.
- Its requirements of land, capital and other external inputs are low for small scale units.
- It can provide quick returns and continuous income throughout the year, as it enjoys good market demand and prices.
- BYP is the most efficient converter of household and farm waste into food of high value.
- BYP enhances women's social status and decision-making power in the household by increasing women's income and can be used as a tool to reduce poverty in rural areas.

The role of backyard poultry in poverty alleviation, food security, employment generation, gender empowerment and gender equity is well documented (Gueye, 2000; Rangnekar, 2006; Das, 2008). Though BYP keeping by the rural poor is a common practice, the system of rearing differs, depending upon the prevailing agro ecosystem and the resources available. The farmers evolve low-input production systems based on their traditional knowledge with locally available resources. Under this system, the local, or 'indigenous' birds were found to be more adaptive and productive than exotic breeds in utilizing poor quality feeds that are low in protein (Subrahmanyam and Murthy, 2006). Moreover, rural populations prefer the colour and hardiness of the local birds compared to the commercially produced broilers, and a higher price is paid for rural chickens and eggs (Kumaresan *et al.*, 2006). It has been reported by many authors that the management of BYP is largely the responsibility of women, despite this, research into BYP development is usually narrowly focused on technical aspects with very little attention being paid to the wider socio-economic issues. The increasing demand for poultry products necessitates the introduction of improved breeds. Hence, specific agro-ecosystems based interventions are required to enhance the poultry production, depending upon the preferences of local people. The present study was carried out to analyze the BYP production system, identify gender based constraints, needs and opportunities, and assess the performance of improved birds reared by women under a coastal agro-ecosystem.

Research Methodology

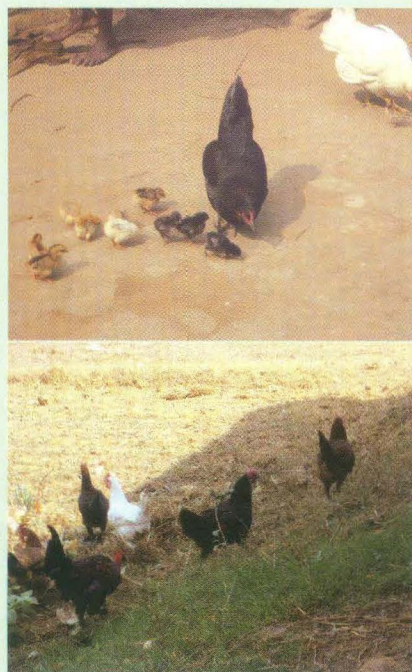
The present study was conducted during 2008-09 in Cuttack and Puri districts of Orissa in two phases. In the first phase, household surveys of farmwomen were conducted through a structured interview schedule to study the traditional BYP rearing practices and constraints faced by them. In the second phase, an action research was conducted with farmwomen to evolve a suitable model of BYP rearing. Focused group discussions and participatory rural appraisals (PRA) were also carried out with women/women self help groups (SHG) in the selected locations to identify gender related constraints, needs and opportunities in BYP for improvements.

Rural poultry production systems

Poultry production systems in India are characterized by the simultaneous existence of the traditional extensive system of backyard production and the modern intensive system of production. The poultry sector has grown from a backyard activity into a major commercial activity in four and half decades, but the backyard poultry sector of rural India still makes up 52 per cent (GOI, 2003) of the total fowl population. Sonaiya *et al.* (1999) classified family poultry production systems as scavenging, semi-scavenging and semi-intensive, based on the productivity of eggs per hen on annual basis. The strengths of different types of BYP rearing systems are discussed here.

(i) Scavenging system

In this system the birds are kept in low-input and low-output system and managed by women and children of the household. Birds are allowed to wander freely and scavenge for all or most of their food. The size and the composition of flocks vary widely. Flock sizes are small with an average of five to ten birds and little investment is made in terms of time, management or money. In some areas, supplementary feeding is provided; however, this is not widespread and is often subject to the seasonal availability of surplus grain. Housing is generally not provided, but the birds may be housed in the family dwelling at night or encouraged to roost in trees near the homestead. There is little or no linkage with input and output supply chain and the chicks are usually obtained by hatching home produced eggs for home consumption or for limited trade within village.



The production levels of scavenging birds are usually considered to be poor. They normally produce an average of 10 to 12 eggs about three times a year. Chick mortality rates are characteristically high and an estimated 50-60 per cent of chicks die before they reach the age of eight weeks, due to a combination of disease, predation and scanty feed resources.

(ii) Semi scavenging system

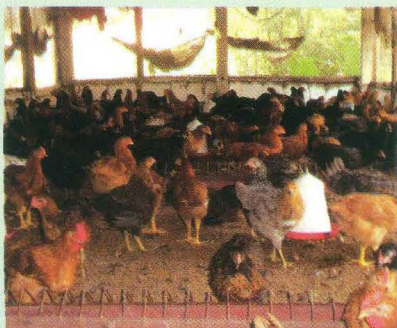


It is an improved backyard system. It includes regular water supply with supplementary feeding, improved shelter and care of chicks in the first week. The vaccination against New castle disease and Fowl pox is needed with treatment for ecto- and endo- parasites. While not confined to a pen during the day, they are expected to scavenge for a large proportion of their feed. Most of the feed used is produced at home and, in some cases, is directed at vulnerable groups, such as hens with a brood of young. While the mortality rate

in this system is lower than in the scavenge-based one, there are still considerable losses, mainly owing to poor nutrition and outbreak of diseases. However, predation is less of a problem than in the scavenge-based system and offtake rates are higher. Producers of this system have reasonable access to markets and the sale of eggs and birds is common. The main input purchased is feed, with veterinary care as a minor input. Flock sizes are similar to those of the scavenge-based systems, but some capital investment is made in terms of housing and human investment to manage the feeding and offtake.



(iii) Semi-intensive system



It is more or less similar to the semi scavenging system but genetically improved chicks are used and nutritionally balanced feed is provided. They are kept in fenced-in areas that normally have some type of shelter. Many producers have specialized in meat or egg production and hence have an interest in improved poultry strains. Flock sizes can vary according to the type of product, with

some producers keeping as many as 200 broiler birds, while egg producers may keep as few as six. The provision of feed is a high priority, since the birds are not allowed sufficient area to scavenge. In addition, mortality and loss rates are relatively low compared with other systems, since the risks of predation, theft and loss caused by poor nutrition are much lower. Health management is also important, particularly where it is not possible to change the area in which the birds are allowed to roam. Semi-intensive production units have good access to markets and most of their produce is sold. However, they do rely on external inputs such as feed, medicines and occasionally labour. In some cases, the external inputs extend to the purchase of day-old chicks from commercial breeders.



Given the present scenario, household rural poultry should be treated as one-of-the-many rather than the only livelihood option. The emphasis should be on increasing their income by improving the existing farming system rather than changing it completely. The choice of system should be determined as per the availability of resources and inputs. Survival and growth in BYP system is affected by competition for feed resource

base in the villages (which includes household waste, crop residue and fodder materials, by-products from local industries, etc). The birds perform well where there is abundance of biomass base but in areas with scarcity of natural resources and poor rainfall, high density of livestock, the competition for natural resources/surplus material with other species can be severe, making it difficult for poultry to grow and survive (both due to stunting growth and poor ability to escape predators). Routine healthcare facilities and basic management practices need to be made available to rural women at their doorstep. This will ensure drastic reduction in production losses due to diseases, poor hatchability and threat from predators.

Problems in backyard poultry keeping

The major problem that plagues BYP is the high mortality rate among the birds. This is the direct result of the utter disregard to the vaccination of the birds. The various constraints identified through PRA and surveys for low returns from BYP are:

1. Heavy mortality in birds due to outbreak of diseases

2. Low production potential (meat and eggs) of birds due to malnutrition and unhealthy birds
3. Lack and difficult access to veterinary services (vaccines and quality chicks) due to distance from villages and inadequate transport facilities
4. Lack of awareness and knowledge about improved practices
5. Limited access to knowledge, technology and extension services such as market information, credit etc.

Other problems mentioned by the women during PRA were attack by predators, theft and lack of scientific management of the chicks during initial 4 to 5 weeks of age. Figure 1 shows the causal factors of low return from BYP, based on the farming systems approach of problem cause analysis. Low return from BYP is due to heavy losses (diseases, predators) and low productivity of birds. Low productivity is a result of inadequate feeding, as well as poor management practices and lack of scientific knowledge. From the women perspective, diseases ranked highest among the production constraints (Figure 2).

Figure 1: Problem cause diagram of backyard poultry

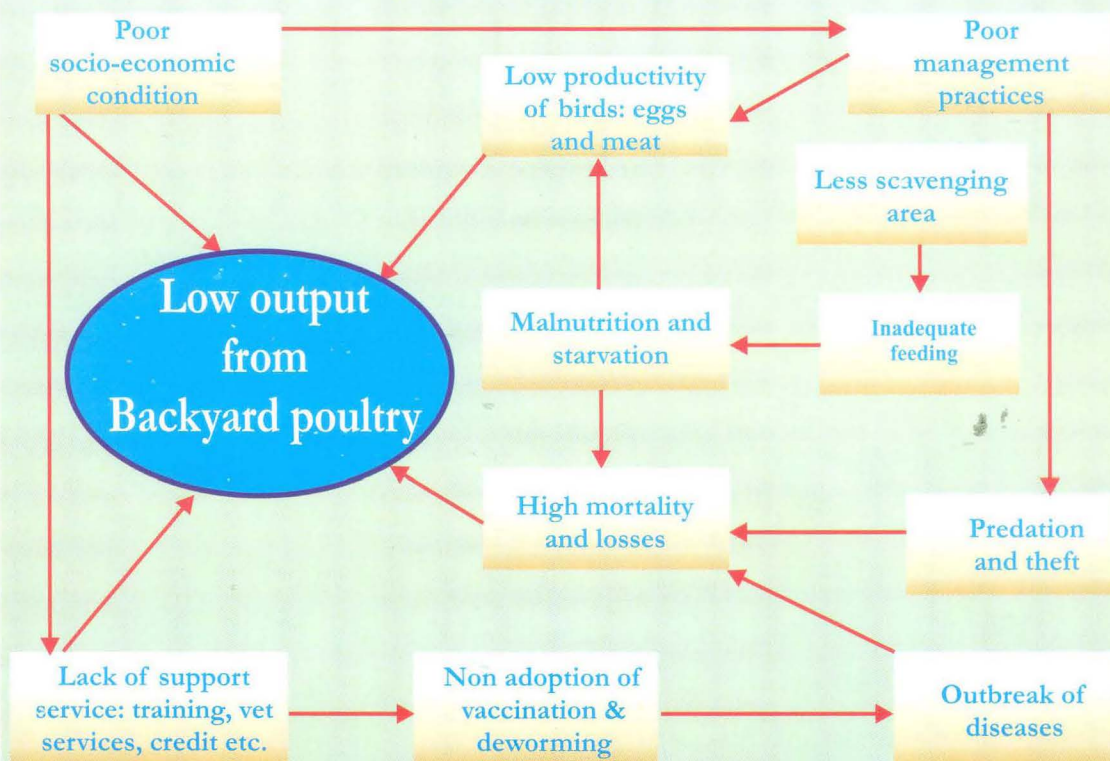
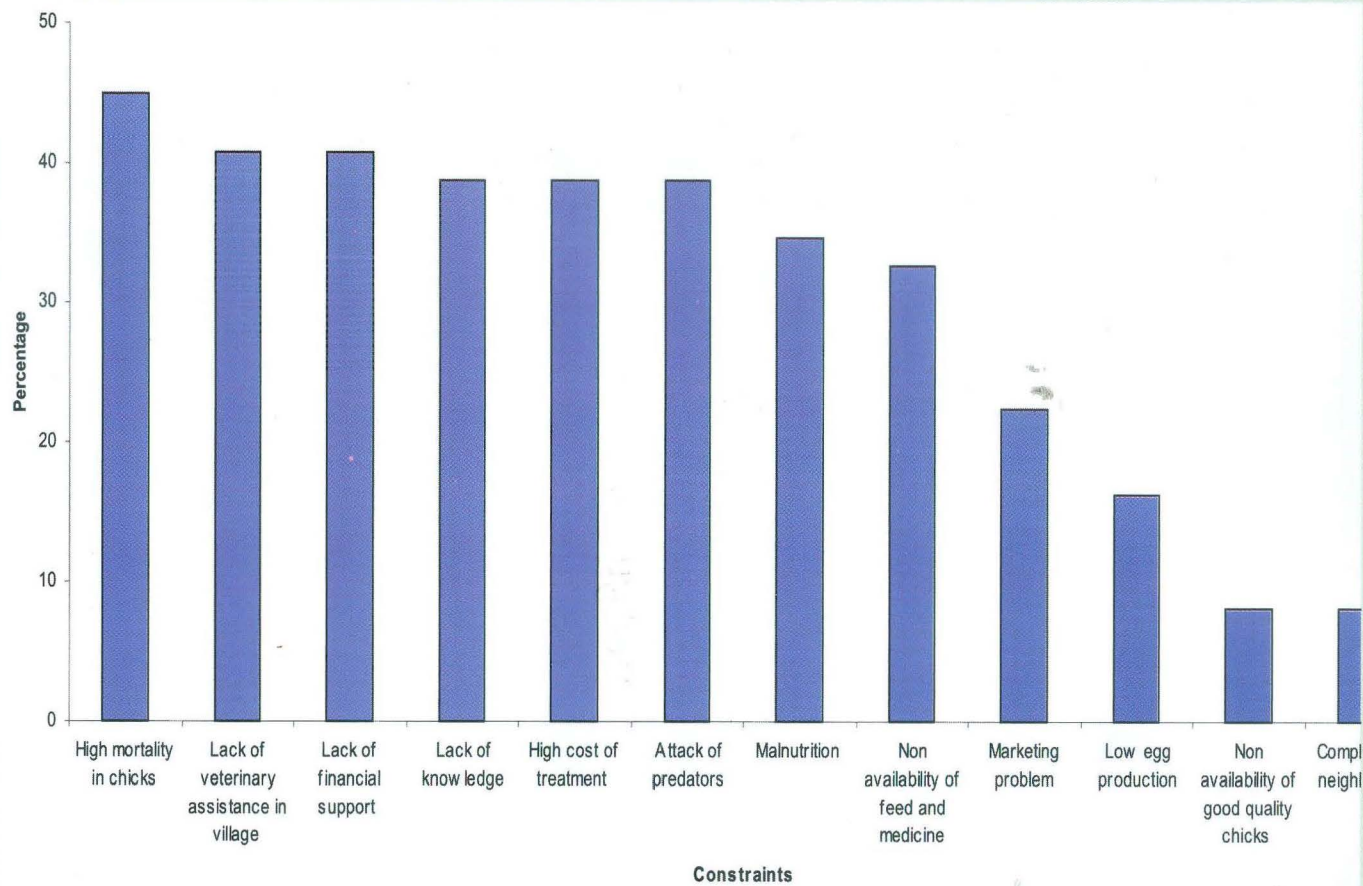


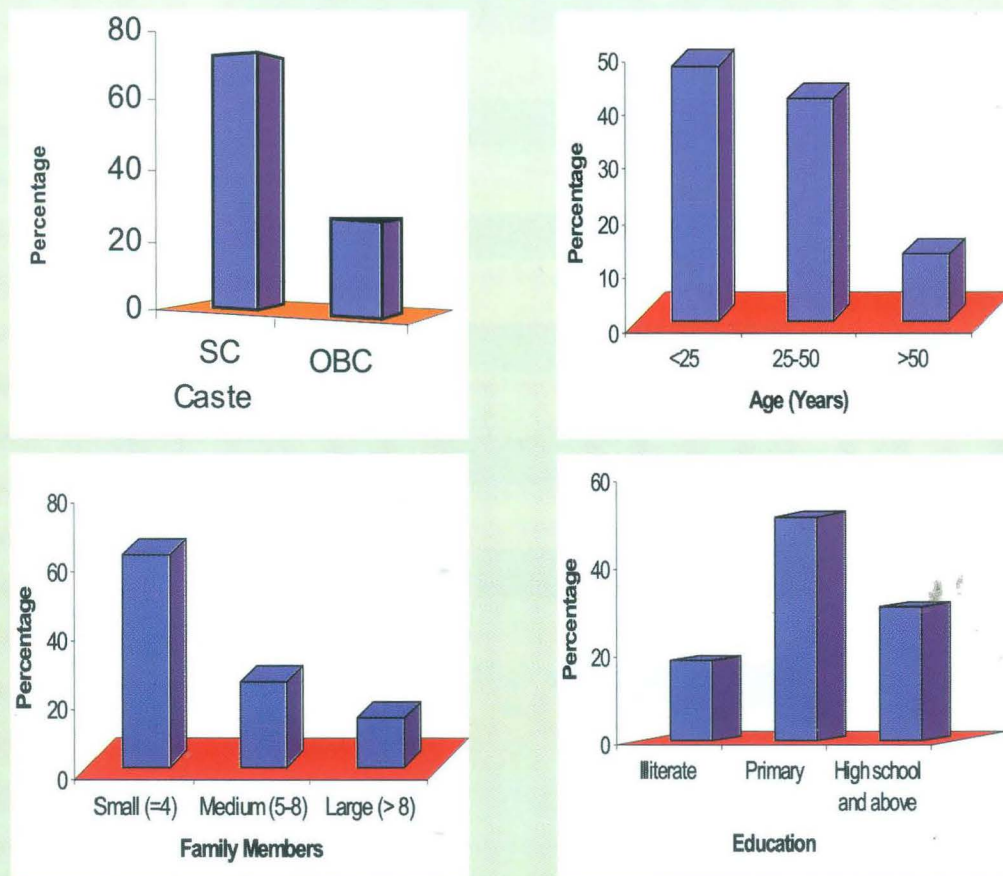
Figure 2 : Constraints in backyard poultry according to rank



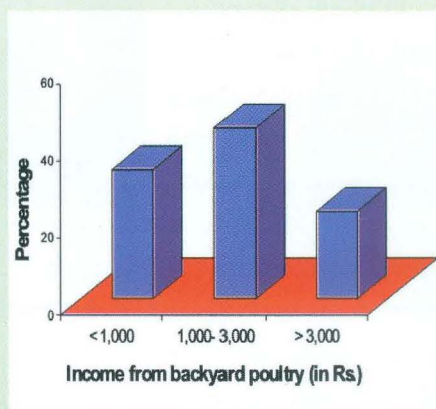
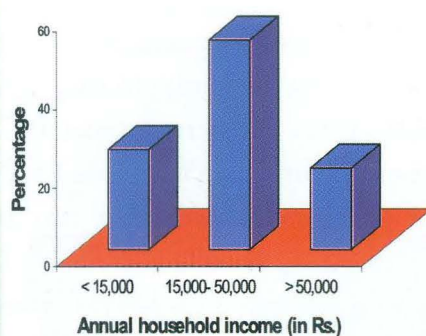
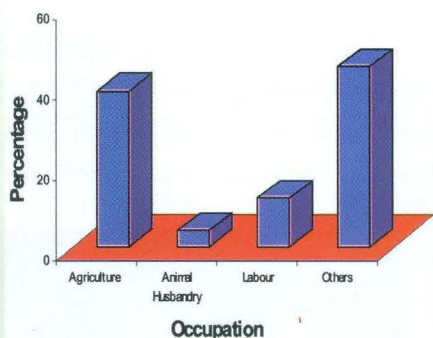
Socio-economic characteristics of respondents

The socio-economic profile of respondents is shown in Figure 3. Backyard poultry is the activity of rural poor. Majority of women involved in BYP were from schedule castes (74%) and other backward castes. The results indicated that majority of the women (47%) belonged to young age group, while 41 per cent were from middle age group and only 12 per cent were from the old age group. The fact that BYP keepers are mostly from the young age group is conducive to the up-scaling, since the younger age group respondents will be more malleable to change. The majority of respondents (61%) belonged to mainly a small family size (up to 4 members), 24 per cent women had medium size of family and only 14 per cent respondents had large family size.

Figure 3: Socio-economic profile of respondents



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Education is one of the important factors which accelerates growth and development of any enterprise. Education could change overall behavior of people, because it is the process of imparting or acquiring knowledge and habit through instruction or study. It was observed that only 18 per cent women were illiterate and majority of the women (82%) were literate, out of which about 31 per cent women have education above high school level. Subrahmanyam and Murthy (2006) reported that literacy has a positive impact on the productivity of birds. The annual household income of more than half of the respondent (53 %) was in the range of Rs 15,000 to 50,000 and 21 per cent respondents have annual income more than Rs 50,000. The data indicated that 33 per cent of women had an annual earning of up to Rs. 1000; 44 per cent earned between Rs. 1000 and Rs. 3000 and 23 per cent earned more than Rs 3000 from the BYP. The analysis on the socio-economic aspect of BYP indicated that at all levels of rearing, whether eggs, chicks or chicken, BYP has a strong potential as an income-generating activity for resource poor people.

Purpose of backyard poultry keeping

The main reasons for keeping poultry by rural women were generation of regular income (43%) and source of nutritious food (14%) for household during festivals and on special occasions (16%). Women consider BYP as 'Mobile Bank' that ensures basic economic return besides providing nutritious food for family and entertainment of guests. Eighteen percent of women mentioned that they were keeping birds as hobby and interest (Figure 4). Birds with coloured plumage were preferred by the women because they fetch good price in the market. Majority of women (67%) preferred the exotic birds which lays brown egg due to their higher egg laying capacity and better growth performance compared to local breeds. However, 33 per cent women had preference for the

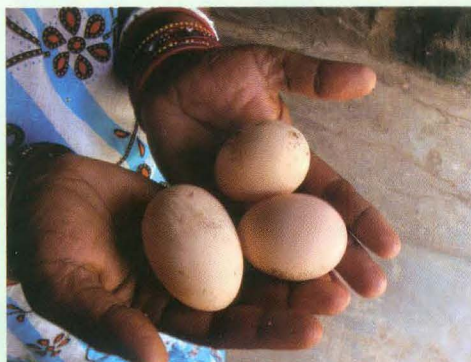
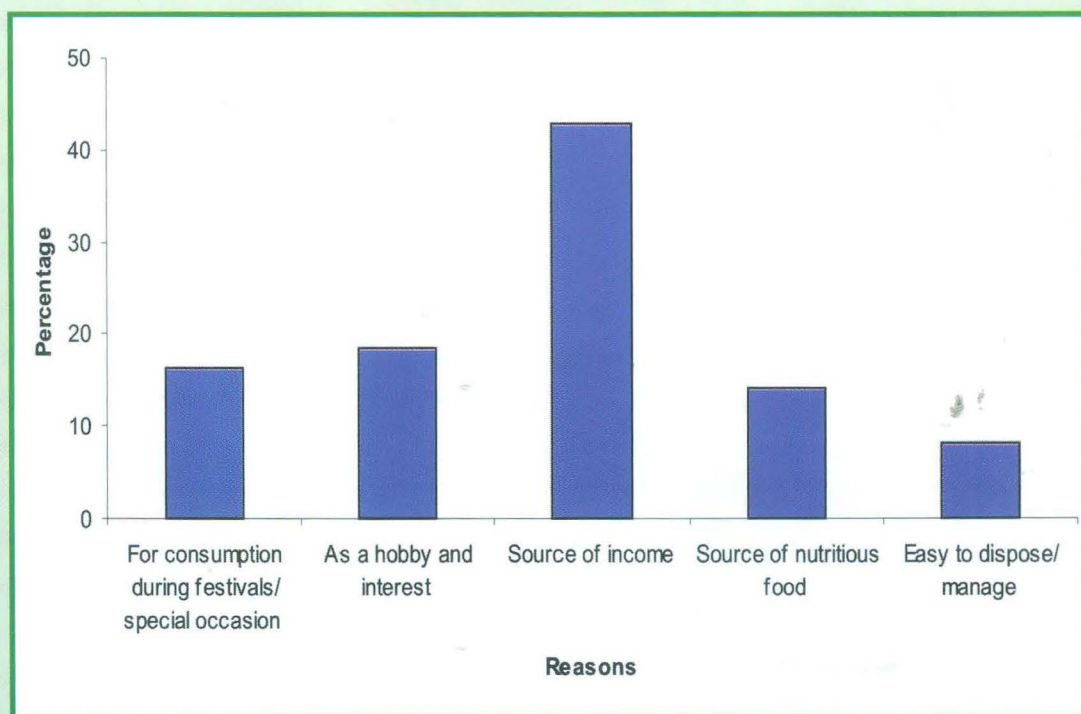


Figure 4: Reasons of keeping backyard poultry



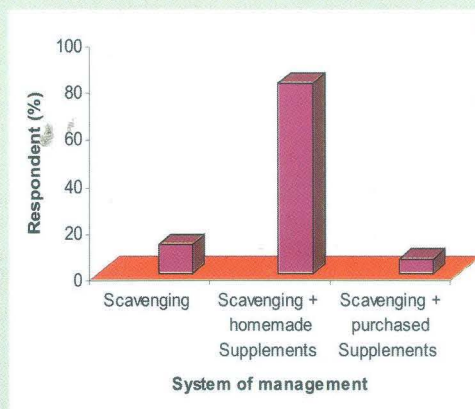
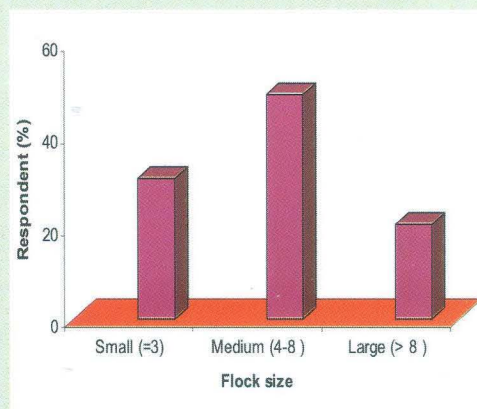
indigenous poultry breeds because they can effectively camouflage with the village surroundings and have greater chances of survivability from animal and sometimes-human predators in village condition. There is higher demand of brown eggs and meat of coloured birds reared under backyard compared to farm egg and broilers, as mentioned by people during PRA.

Production characteristics of backyard poultry

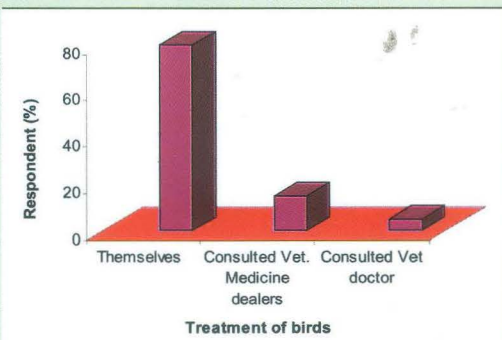
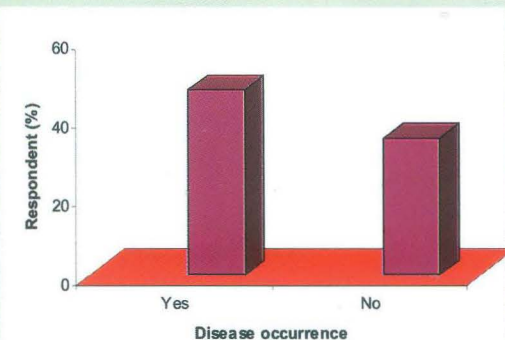
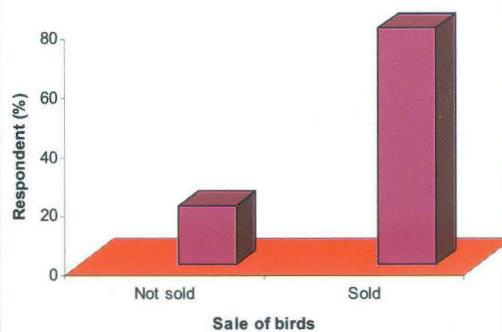
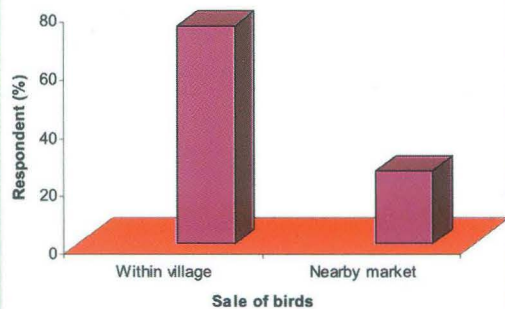
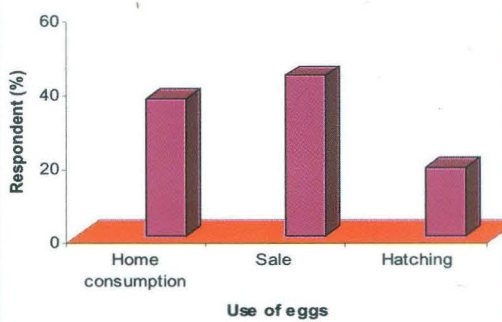
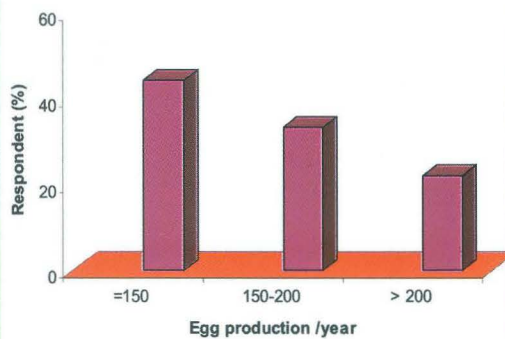
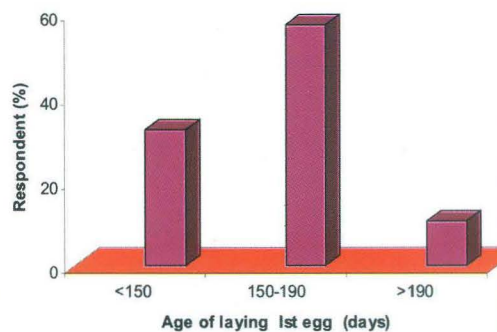
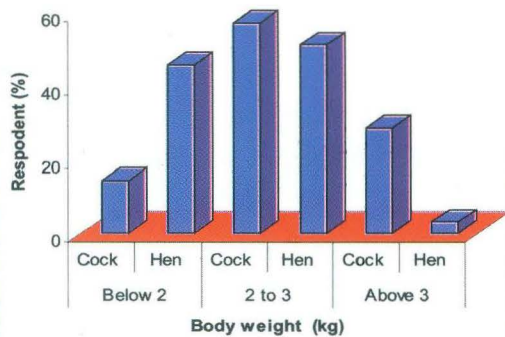
Distribution of respondents according to production characteristics of BYP is presented in Figure 5. The flock size of BYP units is usually small (< 8 birds) and varies greatly from family to family depending upon their affluence and availability of scavenging area. The study showed that majority of the women reared coloured non-descript birds, which are readily available at their doorstep. Thirty one per cent women had a small flock size (up to 3 birds) and 39 per cent had medium flock size (4-8 birds), followed by 21 per cent with a large flock size. It has been reported by Subrahmanyam and Murthy (2006) that the number of birds to be kept in the backyard system should be decided on the basis of the location of the house with specific reference to the availability of scavenging materials in the vicinity of the house.



Figure 5: Distribution of respondents according to characteristics of production system



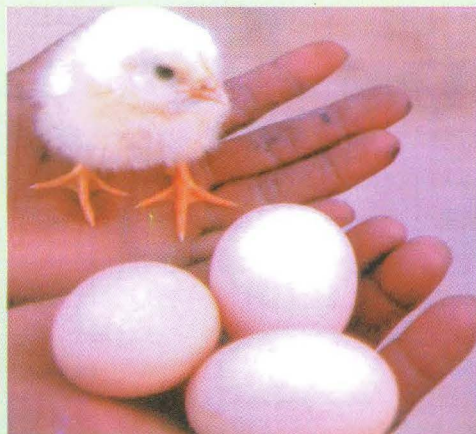
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All the women reared the birds in backyard under free range scavenging system. They released the birds early in the morning and left the birds for scavenging in the surroundings of the house, gardens, fields etc. from where they fulfill their requirement of feed. During scavenging, the birds generally fed on kitchen waste, earthworms, grasshoppers, white ants, green grasses, leafy vegetables, seeds etc. In addition to scavenging, 83 per cent women supplemented their birds with available resources such as broken grains and household left over food, but the feeding practices were very casual with no separate feeding for chicks and adults. The recurring input cost was thus very low or negligible and majority of women did not spend any money on supplementary feed. Only six per cent women mentioned that they were supplementing birds with purchased feed during the initial 4-6 week of age.

Performance of backyard poultry

BYP focuses more on production of meat than production of eggs because returns are very slow from sale of eggs. Eggs are usually obtained in 3 to 4 clutches of 10 - 20 eggs per clutch. The 'clutch' is the period of successive days on which the eggs are laid without any break. Each clutch is followed by rest period, varying from one to more than one day. Broodiness increases the duration of pauses and indigenous hens therefore lays small number of eggs varying from 40 to 80 eggs during the year. Forty four per cent respondents said that their



annual egg production was up to 150 eggs, whereas 33 per cent women had egg production between 150 and 200 eggs. Only 22 per cent household had more than 200 eggs. The smaller the number of birds kept, the larger would be the number of eggs produced per bird in a year. It was observed that the male birds grew faster i.e., 2 - 3 kg body weight at 18-20 weeks of age compared to female (2.0 kg). The average mature weight of indigenous hens does not exceed 1.5 kg and that of cocks 2.0 kg. Majority of respondent (57 %) reported age of 1st egg laying between 150 and 190 days and only 11 per cent mentioned that their birds lays 1st egg after 190 days.

At the village level, contacts between flocks of different households, the exchange of birds as gifts or entrusting, sales and purchases were the main sources of infection transmission.

Similarly, other domestic fowls and wild birds form another source of infection, because the chickens roam freely in the villages. The high helminth burden in village chicken flocks has been attributed to the scavenging diet that includes some of the hosts such as worms and snails. Among the diseases of BYP, New castle disease was ranked as the most important disease. This was due to non vaccination of birds. It was also observed that even chicks sold in the villages by the hawkers were not vaccinated. Forty seven per cent women reported that their birds died due to New castle disease and fowl pox and 14 per cent women said that chick losses were due to predators such as rat, snakes, mongoose, etc. and theft. The women were not much accustomed for taking adequate health care measures. The 80 per cent respondents mentioned that they treated their sick birds by themselves, while; 15 per cent contacted veterinary medicine dealers for treatment and only 5 per cent respondent contacted veterinary doctor. It was evident from focused group discussion also that they were not making any expenditure on treatment of birds.

The sale of village birds was the responsibility of women. Majority of women said that there was no problem in selling birds or eggs. Seventy five percent women sold birds in village itself and 25 per cent women sold birds in nearby markets. The selling price in the village per egg was Rs.3-4, as expressed by 80 per cent of the women; Rs. 150-200 per hen and Rs. 300-350 per cock as indicated by majority of the women. Birds raised in the backyard sector were sold as live



birds in numbers rather than by weight. Sometimes women took the birds to weekly market for sale. Eggs were sold in the village itself. Poultry meat and eggs from the backyard system fetched a premium price; 25-100 per cent more than the price of farm bred chickens. About 37 per cent of the total eggs produced were used for domestic consumption within the family and 44 per cent women sold the surplus eggs for meeting day to-day cash needs, and 19 per cent used to produce replacement stock. However, with regard to selling of birds' majority of the women (80%) sold birds and only 20 per cent women did not sale the birds.

Gender roles, opportunities and challenges in backyard poultry

Participation of women in BYP farming is presented in Figure 6 and involvement in decision making in Figure 7. The results revealed that most of the day-to-day work of BYP

was performed by women. The construction of shelter for birds was the joint responsibility, while health coverage of birds was taken care of mainly by the men; women looked after the feeding aspects of poultry production. Children also play an important role in BYP keeping. Most of the decision related to BYP was taken jointly. Women dominated most of the decisions related to BYP except in case of medication and purchase of medicine, where joint decision was taken.

Figure 6 : Gender role in backyard poultry

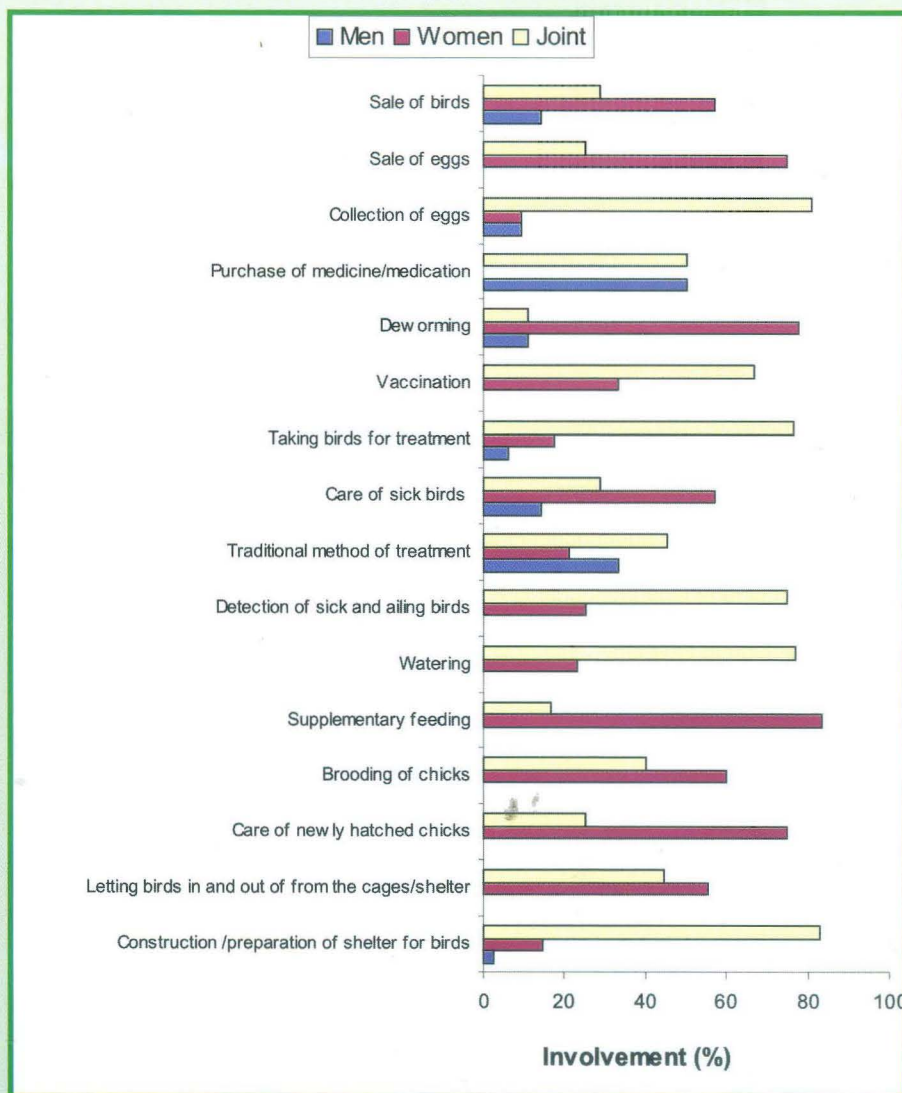
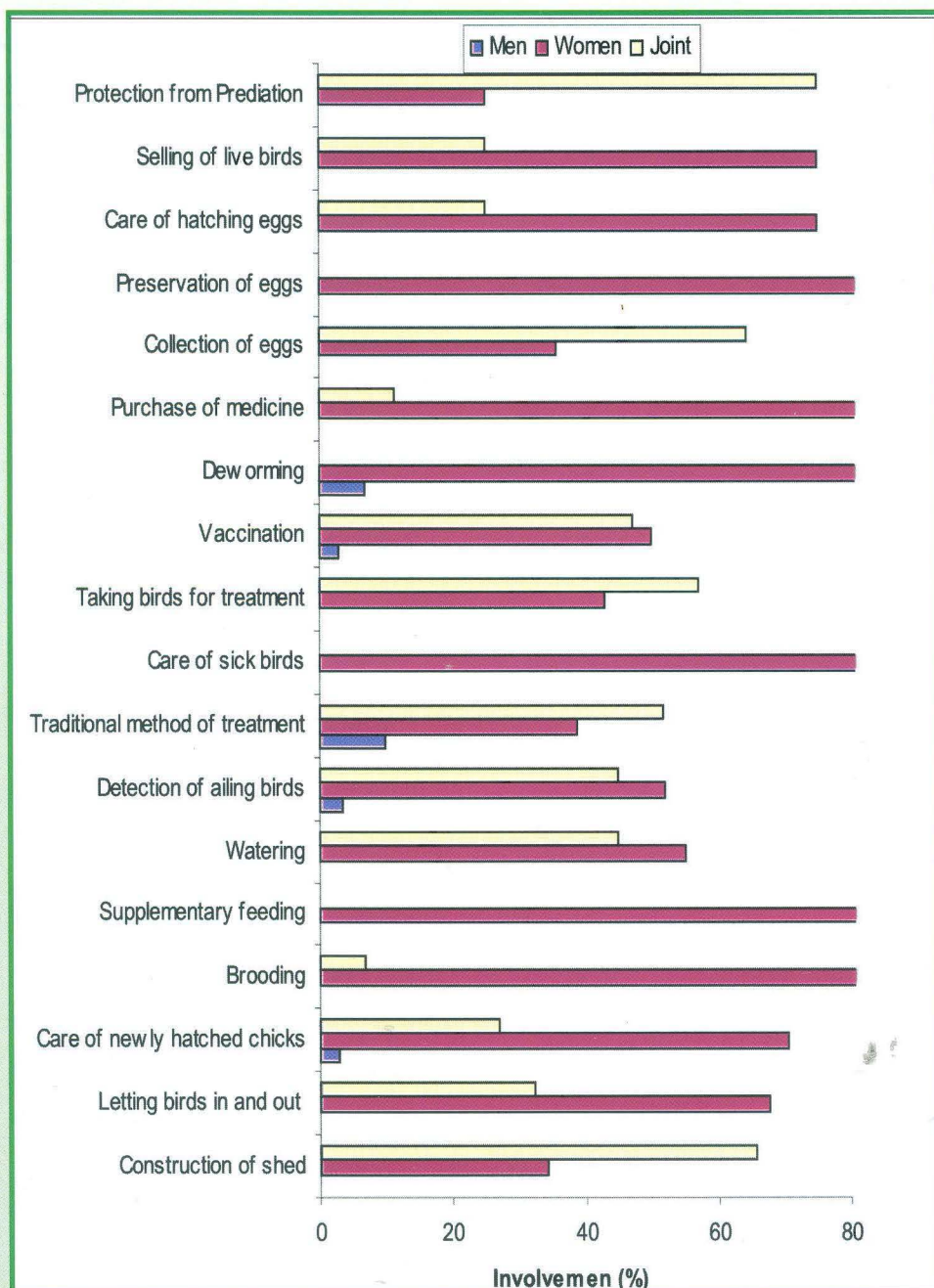


Figure 7 : Involvement of women in decision making in backyard poultry



Gender based needs, constraints and opportunities in BYP were identified during PRA and focused group discussions (Table 1). The lack of participation of women in training programmes could be due to cultural factors or the scheduling of trainings. The key issues that have to be considered in order to ensure the participation of women in BYP are the choice of the venue, the time of day, and the duration of the training that have a strong bearing on women's participation. An activity calendar could be used to schedule training programmes that would allow women to participate. Apart from the time constraint for women to participate in BYP development programmes, women were also challenged

Table 1: Gender-based constraints, needs and opportunities in backyard poultry production

Constraints	Needs	Opportunities
High loss of birds	● Preventive health care services at village level on affordable cost ● Skill in brooding and management of chicks	● Train women as health workers ● Enable women SHG to access regular vaccination ● Enhance skill of making appropriate brooders, feeders, waterers, cages, nests from locally available materials ● Diversify cropping system
Low women's participation in training programmes	● Gender sensitization for enhancing participation of women in formal discussions ● Increased access to information, use of visual aids where there are problems of literacy ● Include women in training and development programmes-very much open to innovations ● Organise training programme in those periods and days when women are not involved in other duties ● Introduce leadership development and confidence building measures	● Adoption of improved technology that can suitably be integrate in traditional production system ● Raise awareness of potential of backyard poultry in increasing household food and nutritional security, and promotion of gender equality ● Conduct training programme in villages with flexibility in schedule and venue

Low scale of production limiting access to inputs and markets	● Introduction of group approach/ women self help group / farmers' groups or associations ● Facilitation of support services at village level (vaccination, deworming, credit etc.) through women self help groups ● Training on capacity building of women SHGs for enterprise development	● Improvements in access to inputs, technical assistance and in marketing system ● Women's empowerment and increasing gender equity
Informal and poor marketing system	● Improvements in infrastructure and transport services ● Improving women's management and skills in value addition and processing	● Increase demand for poultry products and promote production

because of the nature of their calendar of activities, which reflects the interactive nature of the rural farming system.

Alders (1996) observed that involvement of women in rural poultry could have either a negative or a positive impact on gender equity. Involvement of women in rural poultry simply because chickens are small animals or because it is a donor demand, does not guarantee a positive impact on gender equity. However, involvement of women on the basis of better use of human resources and accrued benefits would likely lead to a positive impact on gender equity.

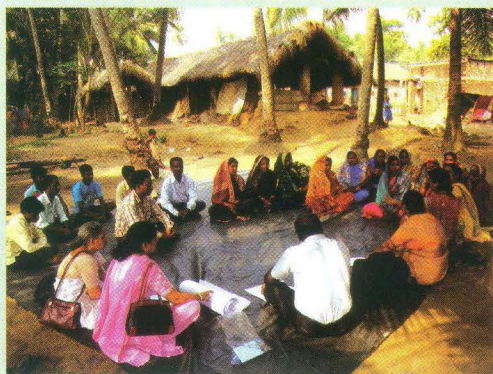
According to Dolberg (2001), poultry production activities can be used as a learning process since one activity alone is not sufficient to lift a family out of poverty. There is, therefore, a need to have an enabling environment that will provide opportunities and make it possible for beneficiaries to establish a small poultry enterprise, to minimize the risks and to take the next step out of poverty by adopting another income generating activity. However, the sale proceeds from BYP and the protein supplementation in terms of meat and egg to poor families is significant. The BYP sector represents the basis on which a sustainable, well adopted semi-commercial sub-sector could be progressively developed (Branckaert and Gueye, 2000). However, at present the backyard poultry sector in India is not well organised. Past initiatives such as the distribution of cockerels and subsidised chick

supply to farmers did not give encouraging results as these activities were not sustainable in terms of technical and institutional mechanisms.

The most crucial challenge to the women's groups continues to be accessing timely vaccinations to immune their birds against endemic diseases. Another grave concern of women in recent years, has been the potential disastrous consequences of a 'bird flu' epidemic, were it to occur. There is a fear among women that the administration would unfairly target BYP and destroy the birds that are the main source of their livelihood (Ramdas, 2009). There is a need to focus development efforts in smallholder poultry, with research and capacity building including the development of thermostable vaccines against major diseases, and the promotion of service delivery models that will be in the interests of the poor (Das, 2008).

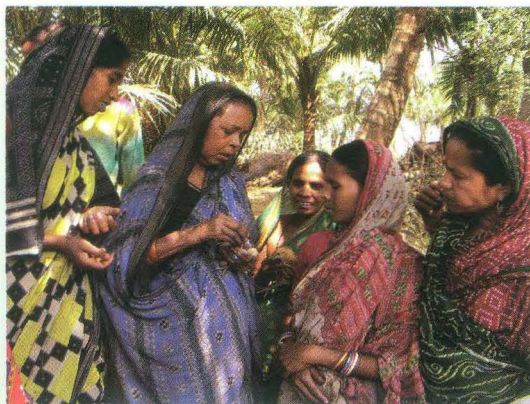
An action research: The process of implementation

Training and exposure visit is considered as very critical inputs for women empowerment. Before introduction of improved breed of birds, awareness campaign was launched. The both men and women's were explained about the availability of improved coloured birds of BYP that were superior to desi birds. For rearing improved birds, they neither spend more money nor change their management practices but the returns they will get much higher. During group



discussion, women showing interest in rearing of improved birds were selected for training and exposure visits. On farm and off farm trainings were conducted on various aspect of poultry keeping such as handling of birds, vaccination, preparation of suitable house, supplementary feeding, identification of ill birds, record keeping, etc. Exposure visits were also conducted to research stations (Regional Centre of Central Avian Research Institute and Central Poultry Development Organization, Bhubaneswar) and

to successful farmer's fields where women's are managing the enterprise. In addition they were shown video films on scientific rearing practices. Leaflets and pamphlets were also provided to them, which explains about the package of practice to be followed.



Realizing the importance of initial brooding and vaccination, capacity building programme were implemented. Simple management skills like vaccination against endemic diseases, covering the bamboo baskets with news paper or plastering with cowdung for insulation during brooding, low-cost balanced feed formulations, awareness about hygiene for feeding and watering of birds, burning of an electric bulb/lamp inside the brooder were demonstrated that could

prevent the chick mortality. The women were also advised to adopt the following vaccination schedule in addition to routine deworming of the birds at every 35 to 40 days interval (Table 2).

Table 2 : Vaccination Schedule of birds

Age (days)	Vaccine used	Dose	Administration route
1	Marek's Disease (HVT MD)	0.2 ml	Subcutaneous
4-7	Ranikhet Disease (Lasota)	One drop	Eye and nostril
28-35	Ranikhet Disease (Lasota)	One drop	Eye and nostril
42-45	Fowl pox Disease (Fowl pox)	0.5 ml	Wing stab
60-70	Ranikhet Disease (R ₂ B)	0.5 ml	Subcutaneous

Model of backyard poultry rearing

Two models of BYP rearing were undertaken depending on the resource availability with the rural women/women SHG. Wherever electricity supply was available, and women were

aware about poultry keeping, the improved strains of day old chicks (RIR-Rhod Island Red, CARI Debendra, Vanaraja, Grampriya, Kadaknath, Aseel) were provided to them. They were trained to brood/rear the chicks. Women reared the chicks under confinement with provision of feed and water for a month along with 1-2 hours of scavenging in the backyard under proper watch and ward to protect the chicks from predators. They vaccinated the chicks against all endemic diseases, as per the recommended vaccination schedule. When these chicks were well acquainted with the surroundings and attained four to five weeks of age, women distributed the chicks among the members of the SHG to rear in the backyard. The birds were allowed free scavenging from morning to till evening. Broken rice, rice bran, ground maize, kitchen waste, etc were offered to chicks during morning and evening when birds returned from scavenging.

In an other model, where electricity supply was not available with the households/or in the village and women were also not aware of the rearing practices, but are very enthusiastic to take up the poultry keeping, training and exposure visit was arranged for them. After training, 4-5 weeks old chicks were provided after vaccination against endemic diseases to rear under backyard. The project staff regularly visits the door steps of women to monitor the performance and offer technical support such as feeding, health care, etc. The body weight of birds was regularly taken by the women to assess growth performance of their birds.



Rearing systems adopted by women

Women adopted two kinds of management system in rearing poultry (group and individual) depending on their resources.

(i) Group rearing : Women constructed low cost poultry house from locally available materials such as bamboo, wooden planks and paddy straw on elevated area. They procured day old chicks and reared them under artificial brooding. Rice husk was spread on the floor of the house as litter material. Old news papers were placed over the litter material in order to prevent eating of litter and subsequent choking of chicks. Brooder guard fitted with

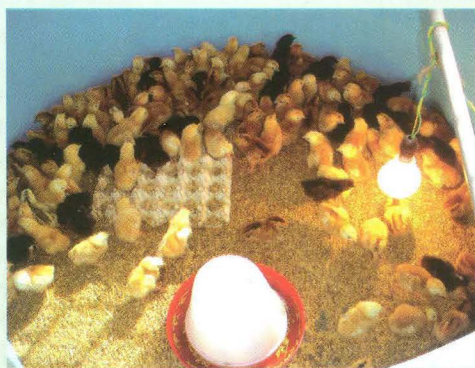
electric bulb was placed in order to provide heat and prevent dampness in the house. Sufficient waterers and feeders were placed around the brooder for easy accessibility of feed and water to chicks. In the beginning for 15 days chicks were offered pre-starter feed made from locally available grains (rice, maize, pulses) cake and mineral mixture. Sometimes they also purchased compounded feed from local market for initial 2-3



weeks of feeding from the market. After 15 days starter feed was given with other outside feed like white ant, earthworm, snails, broken rice, and kitchen wastes. The management of the BYP (feeding, cleaning of shed, etc) was performed in rotation by the women as per decisions taken in their meeting.

After brooding, the grown up chicks were transferred to separate poultry house. Before introduction of birds into the poultry shed, the utensils and house were disinfected with bleaching powder or potassium permanganate/potash. *Ad libitum* drinking water was made available to the birds. For dust bath of birds an earthen pot of about 2 feet diameter filled with clean and dry earth was placed in the house.

Chicken starts laying eggs from 21 weeks onwards and they lay eggs from 21 weeks to 18 months. The birds were allowed to scavenge their feed from village surroundings and also offered supplementary feed. For egg laying bamboo basket/earthen pot were placed in the house. When their egg laying stopped then the old stock of chicken was replaced with a new stock of poultry birds.



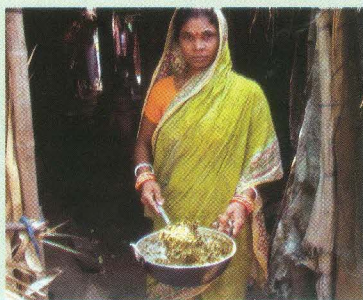
(ii) Individual rearing: Women managed the small units of BYP individually in their surroundings. In majority of the cases, housing was provided only at night and during adverse weather conditions. Separate housing was rare and birds share the same household facilities. Poultry birds were kept in bamboo baskets/cardboard boxes to prevent predation during night. It was observed that most of the poultry houses, if constructed were located

by the side of the dwelling and were mostly made with the locally available materials like clay, stone, bamboo, pieces of wood, polythene sheet, etc. In most of the cases litter material was not provided except in few places unseeded paddy /paddy husk was thrown inside the house during laying period which act as litter material and cushion bed for eggs. Bamboo basket or broken earthen pot was provided for egg laying purpose.

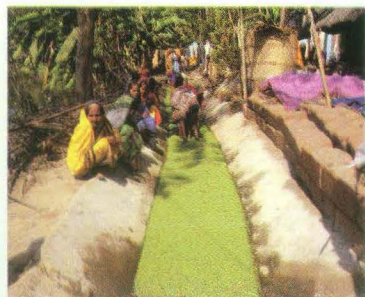
As far as feeding is concerned only few women were providing purchased supplements to their birds for 1 to 2 weeks during the initial brooding period. Birds met most of their feed requirement from outside during the day time. Kitchen wastes, broken rice, rice bran were usually offered to the birds once or twice during the day time. It has been observed that some poultry birds were suffered from diseases even after vaccination for which women used traditional methods for curing the birds. Onion was cut into tiny pieces and mixed with country liquor and fed to birds for two to three days continuously against New castle disease. In some cases, green turmeric, ripened chilies and garlic was mixed with rice kani and fed to birds for three to four days. For controlling fungal infections, mustard paste mixed with lime was put on the wound. White diarrhea was treated with a mixture of chalk powder and bark of *Ailanthus*. Sometimes they also keep lime in one corner of the shed to control against fungal infections. It has been said by the women that by local treatment most of the birds were cured.



Most of the women in Mahinsa village have developed an innovative method of feeding their birds. They prepare feed using locally available forage resources (*Amranthus*), trash



fishes and broken rice. All the material was boiled together and fed twice to birds. Similarly in Jaipur village, women were growing Azolla in water channels/ troughs and supplementing to birds either as such (fresh) or after drying. They also feed white ante to their birds.



The performance of birds reared under backyard production system by women /SHG are given in Table 3. The two indicators of production performance are number of times hen

Table 3: Performance of backyard poultry under different management systems

Details	Management system	
	Group	Individual
No. of birds reared	40-200	6-10
Breed of birds	Gramapriya, Vanaraja, RIR, CARI Debendra	
Chick mortality (%)	31.5	24.3
Age of laying 1 st egg (weeks)	20-22	18-21
Eggs laid/bird (No.)	93	135
No of eggs laid /bird/clutch	12-15	15-18
Adult weight of birds (kg)		
Hen	2.2- 2.9	2.9- 3.5
Cock	2.5-3.0	3.2 4.0
Income/bird (Rs.)	274	365

lays and the number of eggs it gives in each laying was considered. Most of the birds laid thrice a year and some birds laid even four times a year. The performance of birds was highly variable due to wide variation in genetic potential and system of management including feeding, housing and health control measures. Most of the eggs produced are used as a food for home consumption and to meet socio-cultural demands, and only few women used eggs for hatching. It was observed that birds managed by individual women are the most efficient compared to group managed BYP unit. It was also found that smaller the number of birds kept, the larger would be the number of eggs produced per birds in a year. Further, it was observed that the economic gains were more with units maintained by individual women compared to those reared by group. In general BYP gives very high return, as the investment requirement (feed, medicine, etc.) was quite low. BYP provides about Rs. 2000 per unit (rang: Rs. 1500-3200) of 6-8 birds over a period of 5 months. The variation across households was very large. If losses was arrested, income per household increases by 25-30 per cent. Most of the women prefer Vanaraja and CARI Devendra birds for backyard system, as both birds and eggs fetch high price compared to other birds.

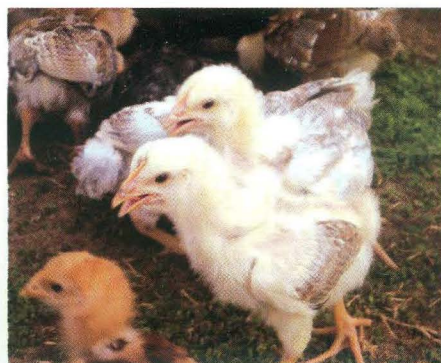


Impact of backyard poultry on women empowerment

Impact of BYP on women empowerment was studied through PRA and focused group discussion. The merit of backyard poultry lies in its ability to contribute a substantial proportion of income of those who are otherwise poor. For the nutritiously starved poor, BYP brings in little pleasures of life within their easy reach - it enables them to indulge in the consumption of the much cherished food (Subrahmanyam and Murthy, 2006). The major findings emerged during PRA with men and women are discussed here.

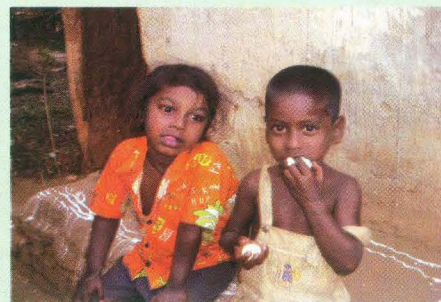


(i) Household income : The BYP keeping has increased average net income per household. Survey results revealed that monthly income from poultry among households to be around Rs. 250-300/household. If home consumption of poultry meat and eggs are accounted, net income per annum per household ranges from Rs. 3500/- to Rs.5,000/- per year. Higher net income in Mahinsa village was attributed to the fact that the most of the women sold



their birds during festivals at premium price and had very good bargaining skills. Women used the earned income in household activities such as purchasing cloth and toys for children during festivals, pay children's educational expenditures, overcoming food shortages etc. Irrespective of the direct contribution to household income, BYP is often recognized as an important contributor to overall livelihood security.

(ii) Food and nutrition security: BYP is mostly preferred by marginal and landless schedule castes and backward caste women. Most of these woman work as daily wage labour on agricultural land or construction sites at Bhubaneswar and often face food insecurity. Rearing improved coloured birds has enhanced food security and household nutrition. About 30 per cent women reported that birds were reared for consumption during festivals. Survey results revealed that 27 per cent produced eggs were consumed as a source of nutritious food. Women said that BYP keeping provide an opportunity to ensure that eggs and to some extent meat became an integral part of their family diet.

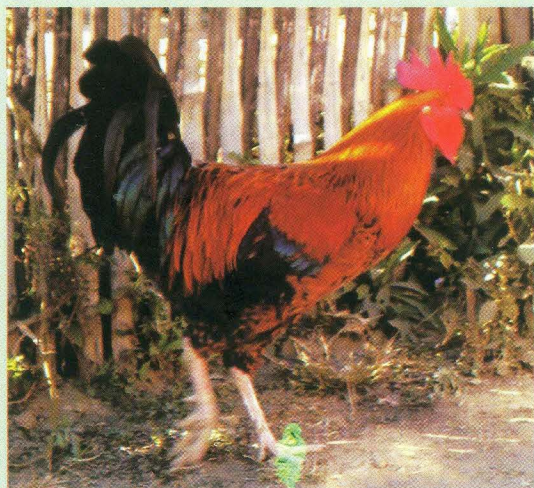


(iii) Women empowerment: The BYP rearing had a remarkable impact on women's livelihoods. Since rural women took care of the birds, they also retained the earnings from poultry keeping. Thus, BYP rearing was an enabling factor in empowering women. This varied from woman to woman based on her 'inner realities' i.e. ability and capabilities to take a diverse set of decisions related to management. Since women got to deal with different people while purchasing and marketing birds or eggs, these women slowly gained

confidence and came out of isolation. Over a period of time improvement in entrepreneur skills and decision making was observed. They are able to create a space for themselves within their households and often making intra-household decisions. In both Jaipur and Mahinsa villages of Orissa, women have formed informal groups to meet and discuss issues resulting in knowledge sharing and gaining strength from group participation. They are now approaching government departments through village panchayat for preventive health care services and other issues related to their welfare.



(iv) Social empowerment: Although income in monetary terms from BYP was not so high, yet women continue to keep it because income greatly influences their socio-economic position in the society. Other functions like security, status, and asset were valued as much as the economic returns. Many festivals were celebrated through money obtained from the bird sale. Birds also provided a social status to the poor and landless women. A big size quality bird was considered a matter of pride. The amount received from sale of few

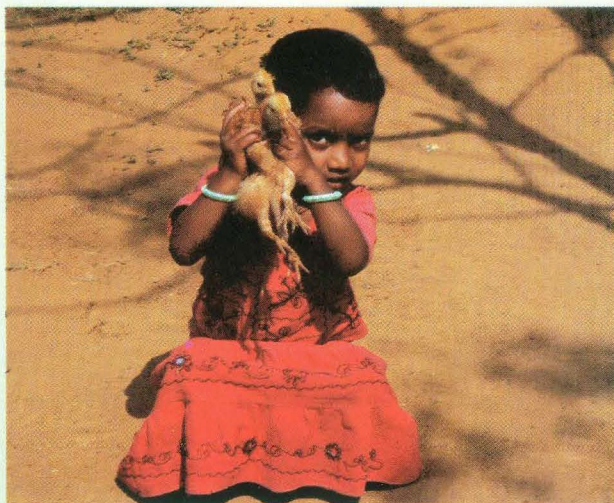


eggs/birds may be small but it does wonders for poor women. Increasing women's incomes through improved poultry production would therefore also increase their social status. Now, BYP is no more considered as a low prestige occupation fit for only weaker sections of the society and it has become full time occupation for many in rural household (Subrhmanium and Murthy, 2006). Rearing of improved bird encouraged women to become more market oriented and entrepreneurial in their attitude.

Way forward

Backyard poultry keeping is environmentally friendly and energy independent in comparison to the commercial poultry sector. It should be noted that BYP production systems are complex and that improvements should be introduced with caution. It is also important to remember that interventions will only be sustainable if they tie in with the limited physical and economical resources of rural households.

DRWA model of BYP keeping is worthy of replication because it shows that women with minimum extra labor would maintain the small poultry unit, that enhanced women's livelihoods, provided economic returns as well as facilitated empowerment. Where women receive training in husbandry practices and gain access to poultry health services, BYP keeping was more successful. However, for effective replication there are still some issues that need to be addressed.



The basic minimum veterinary services should be made available locally. Until vaccination services (New castle disease and Fowl pox) are streamlined, chick mortality will continue to deprive women of their precious livelihoods. Prevention and control of Bird flu is becoming an important national and international issue. However, any initiative in this direction needs to involve the primary stakeholders through joint planning to create a level playing field. There is a need to have an enabling environment that will provide opportunities and make it possible to develop backyard poultry as sustainable enterprise for women SHG at the village level that facilitate easy access to support services (vaccination, training, marketing, credit, etc) for the economic empowerment of the rural women.

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