Code: SAGP05

Good Practice Note

Government-Led Integrated Approach for Delivery of Services to Small Holder Poultry Farmers

REGION : South Asia
COUNTRY : India
STATE : Chhattisgarh
DISTRICT : Bastar

SOUTH ASIA
Pro Poor Livestock Policy Programme
A joint initiative of NDDB and FAO

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Government-Led Integrated Approach for Delivery of Services to Small Holder Poultry Farmers - *Traditional Poultry Rearing becomes a Profitable Activity for the Villagers of Bastar*

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1. Introduction

India has traditionally been an agriculture-based economy, in which livestock has always played an integral role in the livelihoods of rural people. Agriculture and allied sectors contribute nearly 22% of India's Gross Domestic Product (GDP), with about 65–70% of the population being dependent on agriculture for their livelihood.

Livestock rearing is central to the livelihoods and survival of millions of small and marginal farmers, and landless agriculture labour across the country, particularly in the dry land regions of India. They rear diverse species ranging from milch cattle to sheep and poultry. It is estimated that almost 18 million people derive their livelihood from livestock. Women continue to play a key role in livestock production at the household level, with over 71% of the labour force dedicated to livestock being women. The livestock economy penetrates sections of rural society both vertically and laterally, supposedly more equitably than land holdings. Hence, a major chunk of the poorest of the Indian population depends on livestock as an important secondary source of livelihood. Evidence shows that smallholders obtain nearly half of their income from livestock. (*Source: Institute of Financial Management and Research - http://www.ifmr.ac.in/cirm/livelihood-livestock.htm*)

Within the livestock sector, poultry is one of the fastest growing segments in India. Whereas the annual production of agricultural crops has been rising at the rate of 1.5 to 2%, the rise in eggs and broiler production has been at the rate of 8 to 10% (Mehta et al., 2002). This growth has been attributed largely to the commercial poultry sector, which has shown remarkable growth over the past four decades. At present, India ranks fourth in egg production in the world, producing about 45 billion eggs annually. Although backyard poultry rearing is traditionally embedded in the Indian agricultural system, the population of *Desi* (local, non-descript) fowls has increased only by 8.3% per annum between 1997 and 2003. During the same period, *Desi* birds made for 52% of the total fowl population and contributed 23% of the eggs produced. Both the traditional, extensive, backyard poultry production and the modern, intensive system have ensured livelihoods to over three million people, directly or indirectly (FAO, 2008).

The rapid growth of the commercial poultry sector has led to speculation that large-scale commercial units will undermine the viability of small-scale livestock units, thereby increasing rural poverty (Delgado et al., 1999; Steinfield, 2002). A key factor that could prevent this and ensure that smallholder units can contribute and benefit from the growth of the sector is a supportive government policy for small units so that small-scale producers are able to increase the productivity of their livestock (Conroy, 2004). This has also been acknowledged by policy makers in the 11th Five year Plan.[1]

Although it is an established fact that livestock rearers in rural areas require improved technologies for greater productivity, these technologies, if they are to be successfully adopted, ought to be appropriate to their needs and must consider practical difficulties such as the constraints and vulnerability of the resource poor (ibid., 2004). Furthermore, there must be adequate back-up support and services such as training, advisory services, input supply and marketing support.

There have been many efforts to enhance indigenous poultry because it contributes to income, employment and rural-assets creation, which in turn contribute to improved livelihood.[2] One such example is the Bastar Integrated Livestock Development Project

[1] Eleventh Five Year Plan, 2007-12, Volume III, *Agriculture, Rural Development, Industry, Services and Physical Infrastructure*, Page 24, Section 1.79, "The goals of Eleventh Five Year Plan for the livestock sector....."

[2] http://sapplpp.org/goodpractices/small-holder-poultry/

(BILDP), implemented by the Government of Chhattisgarh (GoCh) in India and initially supported by the Danish International Development Assistance (DANIDA).

This good practice showcases how simple cost-effective interventions, with adequate extension and support systems, have contributed to the improvement of poultry and farm-management capabilities of tribal farmers, thereby contributing to poverty reduction. The intervention is a government programme, which was initially started under a bilateral aid programme from DANIDA for a period of four years from 1999 to 2003; it was subsequently up-scaled and sustained by the state government with the phasing out of DANIDA support in 2004.

The commitment of the Chhattisgarh government to promoting the livestock sector is also demonstrated by the fact that the state is one of the few in the country with a comprehensive livestock policy in place. This was developed through a participatory multi-stakeholder process, supported by the Capitalisation of Livestock Programme Experiences India (CALPI).[3] It brought key stakeholders—government agencies, NGOs and donors—together and gave them a platform for skill development and multi-stakeholder dialogue, so as to contribute effectively in the policy development process as well as to learn during its development.

[3]CALPI: A programme of the Swiss Agency for Development and Cooperation (SDC) and Intercooperation

2. Background

Figure 1: Location of Chhattisgarh

Chhattisgarh is a relatively new state that came into existence in 2000. It is broadly divided into three agro-climatic zones, comprising the northern hilly region, the Chhattisgarh plains and the Bastar plateau. The total area of the state is approximately 1,35,000 sq km, 44% of which is covered by forests and 36% by cultivable land, of which only 20% is irrigated. Paddy is the main crop grown over approximately three-fifths of the total cultivable area, and is largely rain-fed. The landless, small and marginal fe/male farmers, who constitute 81% of the total rural households, maintain 88% of the state's poultry, and 67% of the pigs and small ruminants in the state (Government of Chhattisgarh and CALPI, 2007). Backyard poultry mainly comprises indigenous stock that is auto-generating[4] in nature. This production system has suited small holders well for centuries and, as a result, about 70% of the rural households successfully maintain small units in their backyards, thereby contributing to the egg and poultry meat production of the state (30% and 35%, respectively) (Government of Chhattisgarh and CALPI, 2007). The farmers depend significantly on poultry for supplementary income and liquid cash and, therefore, any developmental effort to strengthen rural household poultry production will contribute significantly to poverty reduction.

The Bastar plateau, situated in south Chhattisgarh, is one of the most backward regions of the country. Seventy per cent of the region's population is tribal (ibid, 2007). The region has dense forests rich in minor forest produce (MFP), for instance, *chironji*, *amla*, mangoes, *shikakai*, tamarind and cashew. Through this MFP, the region contributes significantly to the state revenue. Traditionally, tribal communities such as the *Gond*, *Halba*, *Abhuj Maria* and *Dhruva* depend heavily on MFP for their livelihood; they also keep small animals such as goats, pigs and poultry in their backyard to supplement income.

However, the life of tribal communities is rapidly changing due to their shrinking access to forest produce, migration in search of work, and continuous unrest because of the Naxalite movement[5]. The leadership is changing from the traditional headman to the elected *Panchayat* members. Tribal families used to depend primarily on forest produce; they are now gradually shifting to rain-fed, subsistence agriculture (ibid, 2007). Lack of drinking water facilities and shortage of electricity are problems faced by all in the region. Infant mortality is 84 per 1,000 live births. Eighty-one per cent of the population above 19 years of age is illiterate whereas the literacy rate among women is below 10% in most of the interior villages.

Poultry rearing is a major activity in rural households because it is low input-low output.

[4]After an egg-laying cycle, the indigenous hens sit on the eggs and hatch chicks

[5]Naxalites or Naxalvadis (named after the village of Naxalabari in the Indian state of West Bengal where the movement originated) are a group of far-Left radical communists, supportive of Maoist political sentiment and ideology. Their origin can be traced to the split in 1967 of the Communist Party of India (Marxist), leading to formation of the Communist Party of India (Marxist-Leninist). Initially the movement had its centre in West Bengal. In recent years, it has spread to the less-developed areas of rural central and eastern India such as Chhattisgarh and Andhra Pradesh through the activities of underground groups such as the Communist Party of India (Maoist). (Source: Wikipedia)

As per the 17th Livestock Census 2003, the poultry population is 8,004,859, of which 29.37% (2,351,004) are the *Desi* poultry, reared by village-based smallholder livestock owners in Chhattisgarh. Tribal households have been traditionally rearing birds; women are the main caretakers of the flock and derive supplementary income through this activity. It also provides them with nutritional supplements in the form of valuable animal protein because milk and milk by-products are not part of the tribal diet. The flock sizes are highly variable and vary from as low as 2 hens to 10 hens per household. Men usually rear poultry for gaming purposes and champion cockerels are the pride of owners (Shinde and Shrivastava, 2006).

Box 1: The Pulls and Pushes of Backyard Poultry

Advantages of backyard poultry

*Ensures significant contribution to family household assets.

*Focuses on enhancing nutrition and reducing rural poverty by creating an additional income source.

*Has high employment potential relative to investment if the right conditions exist.

*Has relatively higher participation by and role for women when compared to the care of other animals.

*Proves profit efficient for small-scale rural producers.

*Fetches 25–30% higher price than exotic hybrids.

Five biases limiting the potential of backyard poultry:

Approach: Top Down: Transfer of technology only to progressive farmers.

Species: Focus on large ruminants only.

Yield: Focus on intensive system to maximize yield, neglecting other aspects.

Area: Services concentrated in higher potential areas—urban and peri-urban.

Gender: Extension provided by men to men whereas women's role in backyard poultry is high.

Source: Dr P.K. Shinde, Livestock and Poultry Sector in Chhattisgarh: Present Status and Approach for the future, Intercooperation

The colour and sex of the bird is of great importance to some communities because of religious and socio-cultural values attached to these. Scavenging poultry are good brooders, foragers, efficient mothers and are comparatively more resistant to diseases and adapt easily to the local environment. Most of the eggs laid are saved and hatched. Moreover, small-holder poultry rearing is an important source of ready cash when required. The meat and the eggs of scavenging country fowls fetch 50% and 40% higher prices respectively, compared to commercially produced broilers and eggs. Most importantly, household poultry rearing empowers women because they are the main managers and owners of household poultry (Government of Chhattisgarh and CALPI, 2007).

Although the bacterial or viral load is low in backyard flocks when compared to commercial stock, Ranikhet disease and fowl pox are endemic throughout the state and cause considerable losses (Shinde and Shrivastava, 2006). Moreover, the mortality rate in growing chickens is high due to predation. Parasitic infection is a common problem because both ecto-parasites such as ticks, lice and mites, and endo-parasites such as round worms and tape worms are found in household poultry. Endo-parasites compete for food inside the alimentary canal of infected birds and multiply rapidly. As a result, infected birds become dull, emaciated, show ruffled feathers and reduced egg production. Young chicks, up to 2 months old, are particularly affected because once they become weak they cannot compete with other chickens for scavenging and are also liable to get killed by predators. Poor hygienic surroundings, and *kuchcha* (temporary, made of mud) housing aggravates the parasitic infestation, leading to economic losses that are direct—mortality due to debility, and indirect losses accrued by making the birds more susceptible to other diseases. The farmers' lack of access to credit, training and relevant extension information further complicates the practice of backyard poultry rearing. Moreover, although the system is auto-generating and self sustaining, forward and backward linkages are absent (Government of Chhattisgarh and CALPI, 2007).

3. The Good Practice

The BILDP commenced its activities in 1999 in the tribal district of Bastar (which was then a part of Madhya Pradesh state) initially in eight blocks, with financial assistance from DANIDA. The project was designed to target '***tribal communities in transition***' and to provide adequate support for better management of their livestock. Although the project was initiated in 1999, a lot of time was taken in creating the required management infrastructure and in building the capacities of the personnel involved. Chhattisgarh was formed in 2000, and new institutional arrangements for project implementation were developed. By the time actual work by village facilitators (VFs) was initiated in programme villages, DANIDA was in the process of phasing out its funding support as a bilateral programme partner. However, seeing the potential of the model created by BILDP and following the phasing out of DANIDA support in 2004, the Animal Husbandry Department (AHD), Government of Chhattisgarh had the foresight to continue with funding the project and made allocations for it in the budget. Moreover, retaining the same set of officials/veterinarians facilitated stability in programme implementation.

It was recognised that a poultry rearing initiative should build on the traditional practices followed by the community and, at the same time, attempt to introduce technical innovations in these existing practices. The first step was to encourage and support tribal communities to build upon their traditional system and slowly evolve from Step 0 through to Step 3, as suggested by Bessei (1987) and explained in Table 1.

Table 1: Gradual Change by Building upon Indigenous Knowledge

Production System		Blocks
Step 0	Scavenging: No regular water or feed, poor night shelter	Bastar Division Lohandiguda Bakawand
Step 1	Offered water and supplementary feed, improved shelter, Day Old Chicks (DOC) care in first week, Newcastle Disease vaccination	Bastar Hatkondal Dantewada Narayanpur Geedam
Step 2	As in Step 1 plus better feeding, watering, further improved housing, treatment for parasites, additional vaccinations	Jagdalpur Kondagaon Farshgaon Narharpur
Step 3	As in Step 2, with improved breeds and balanced diets—semi intensive system	Kanker Bhanupratappur Bastar

The aim of low-cost, pro-poor technologies was to strengthen household poultry production through ***protein-rich feeding, de-worming, vaccination, housing and egg-candling, and by using bamboo feeders and waterers***. An additional aim was to improve the risk management capacity of farmers by ***promoting regular, economically***

sustainable, doorstep animal health services on a user payment basis, through trained VFs (para-vets) at the village/hamlet levels.

Usually, veterinary dispensaries are located in urban or peri-urban areas, and veterinary care in rural areas and villages away from the road-head is often not possible, on account of limited staff availability. Further, animal health-care services for livestock and poultry required in villages are what a trained para-vet can easily provide. In addition to providing extension on poultry health and management services to poultry farmers, the BILDP invested significantly in identifying and training VFs, who provided health services to poultry rearers. Indigenous knowledge combined with scientific knowledge was used to provide basic health services at the doorsteps of the farmers, thus making it easily acceptable and understandable. Ethno-veterinary practices to combat common diseases such as cough and cold, diarrhoea, fowl pox, fly repellents, wounds, endo-parasites and ecto-parasites, which contribute to morbidity and mortality in birds (Box 2) can be easily adopted and cost practically nothing. The Chhattisgarh Livestock Policy, issued in December 2006, acknowledges and endorses these ethno-veterinary practices as low–cost, effective means for control and treatment of animal diseases.

Box 2: Ethno-Veterinary Practices for Common Problems*

Cough and Cold

- Pound 10 gm of fresh ginger rhizome, squeeze out juice and mix the juice with 250 ml of water and 10 gm of brown sugar. This mixture is sufficient for 10 birds and is given as drinking water.

Wound

- Grind a clove of Garlic and a 1 centimetre piece of turmeric rhizome together with enough coconut oil to make a paste. Apply this paste twice a day until the wound heals.

Diarrhoea

- Crush 7–10 garlic cloves and a fingernail-sized piece of turmeric rhizome. Mix this amount in the feed every day; this is sufficient for 10 birds.

Ecto-parasites

- Rubbing of fresh as well as dry tobacco leaves on the skin of the bird is helpful in killing lice.

Endo-parasites

- Six cloves of garlic are ground and mixed into feed. This quantity is recommended for 10 chickens for 1–2 days. Repeat it once a month.

**For more such cures see Annexure 2*

Box 3: Pulse Ranikhet (Newcastle) Drive

A team comprising veterinary doctors, veterinary field officers, Village Facilitators (VFs), trained women group members and interested persons is formed. Four or five villages are selected for the drive at a given time. The team members are then divided into various sub-groups, in which one sub-group is responsible for ice and vaccine distribution to the others, and the other groups are allocated different areas. All the required inputs such as vaccine doses, ice and ice boxes are stored in sufficient quantities a day before the operation. The *Panchayat* (local government institution) supports the awareness campaign, and the active participation of school children plays an important role. The vaccination is begun from a pre-decided common place early in the morning or evening; in the later stages, door-to-door vaccinations are provided. A total of seven such drives, undertaken in 2008–2009, have helped vaccinate 1,651,510 poultry birds.

The project also initiated innovative vaccination schemes such as Pulse Ranikhet (Box 3) to fight diseases such as Newcastle disease which has contributed to a wider outreach for the vaccination of birds. These mass vaccination drives are unique to Bastar and are made possible because of the network of VFs operational in remote villages.

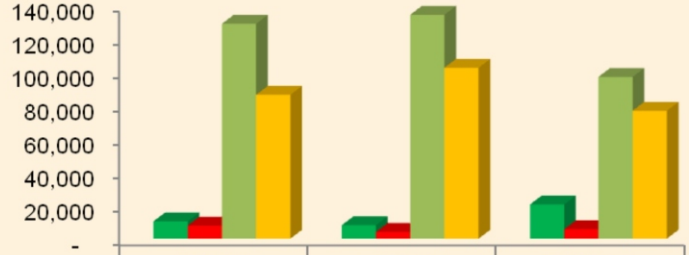
Overall, the project has facilitated health awareness regarding poultry among beneficiaries and has contributed to reducing mortality, with a resultant positive effect on the livelihoods of the rural population, many of whom comprise the poorest communities in these tribal regions. The

timely availability of health services has helped in the promotion of backyard poultry, which in turn is contributing to better nutrition and the availability of ready cash. Learning from DANIDA-supported interventions[6] in the agriculture sector, the extension and information dissemination activities through self help groups (SHGs) created a knowledge sharing platform for information on poultry maintenance and upkeep.

The project has also impacted small ruminants. About 42% of the rural households, comprising the landless, and marginal and small landowners, rear approximately 67% of the total small ruminants in the state. The Bastar region has low sheep holding whereas the share of goats and pigs is quite large among tribal communities (Government of Chhattisgarh and CALPI, 2007).

The major change that the government intervention has brought about is the availability of prophylactic services through VFs to fight preventable, small-ruminant diseases such as *Peste de petits Ruminants* (PPR) and *Enterotoxemia* (ET). Besides providing regular vaccinations, the VFs also undertake first aid and de-worming of small ruminants, impacting the livelihoods of goat keepers positively. Figure 2 shows the number of small ruminants vaccinated for ET and PPR, and large ruminants vaccinated for *Haemorrhagic Septicaemia* (HS) and *Black Quarter* (BQ) between 2005 and 2008, under the aegis of the programme. Village Facilitators have also been trained to castrate large ruminants, and provide support to the artificial insemination programme of the Animal Husbandry Department. A few Village Facilitators have been trained and promoted as AI workers, similar to the *Gopalmitra* in Andhra Pradesh.

Figure 2: Number of Small Ruminants Vaccinated (BILDP) (2005-2008)



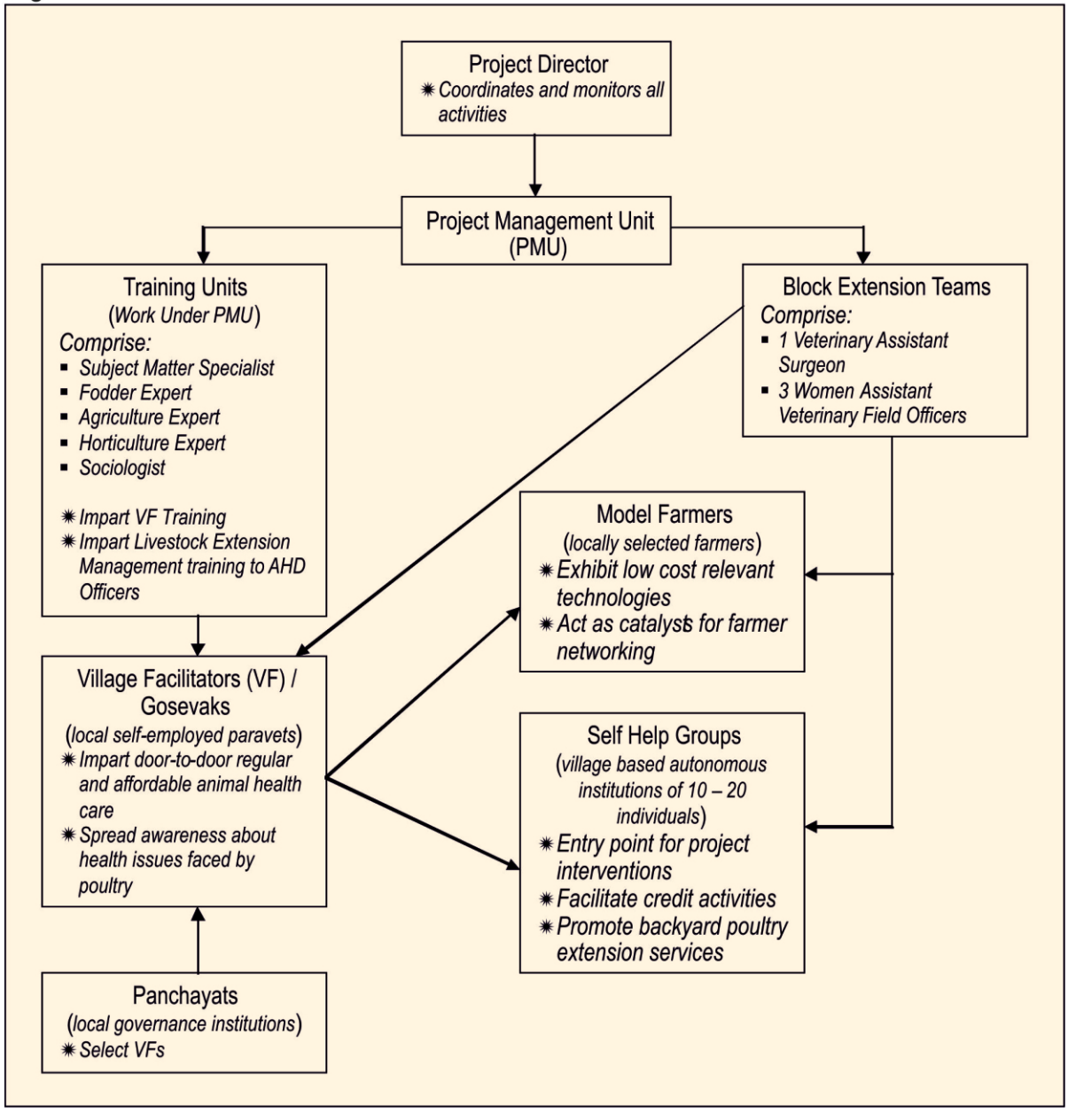
	2005-06	2006-07	2007-08
ET	10,414	8,071	20,539
PPR	7,850	4,024	5,632
HS	128,995	134,397	97,116
BQ	86,365	102,627	76,804

[6]Training and Extension of Women in Agriculture (TEWA), Government of Orissa; Women, Youth Training and Extension Project (WYTEP), Government of Karnataka; Madhya Pradesh Women in Agriculture Programme (MAPWA), Government of Madhya Pradesh and the Tamil Nadu Women in Agriculture Programme, Government of Tamil Nadu.

4. Stakeholders and Their Roles

The promotion of rural household poultry is managed by village institutions, with support from the state departments and its officials. The major players in this practice are the SHGs, model farmers, VFs, Block Extension Teams (BETs) and Project Management Units. (Figure 3)

Figure 3: Stakeholders and Their Roles



Self Help Groups

SHGs are village-based, autonomous institutions, the formation of which is facilitated by BETs, to provide extension services. Initially, project village committees were formed of about 50 households from a village. However, a large group was difficult to manage. Thereafter, smaller groups were organised in the form of SHGs, which replaced the large project village committees. These SHGs form the entry point for various low–cost, pro-

poor interventions of the project and comprise 10–20 group members, preferably women, who come together for credit and thrift activities. They meet 2–3 times every month and start monthly savings of Rs 10 or 20 per member. After 6 to 8 months, these groups are registered by the project and can access credit. These groups also serve as a platform to articulate the needs of poultry farmers, as also a forum to disseminate information related to poultry rearing. When the needs of poultry farmers are met through the efforts of the BET, rapport and trust form among members.

Box 4: Sutam Baghel—A Self-employed Village Facilitator

Sutam Baghel is a Village Facilitator (VF) from Manjhiguda village. In 2000, he was unemployed; he had studied till Class VII and agriculture was his main source of livelihood. After being selected as a VF, he underwent training; for the past four years he has had refresher training and participated in various exposure visits. He has trained in low–cost, pro-poor techniques for animal rearing, agriculture and fodder development. Along with the extension work, he was given basic animal health care training that taught him first-aid, de-worming, disease-prevention vaccination and practices conducive to agriculture.

Sutam now trains other villagers and is the main contact person in the village for all livestock-related health problems. Every day, he visits 4–5 villages with his kit and provides animal health care services to the villagers. This earns him Rs 1,200 per month; at the same time, it has contributed to an increase in backyard poultry population in the villages under his purview. Being a part of this project has enabled him to develop his own capacity as well as that of the rearers. Today, he is self employed and a confident individual.

Model Farmers

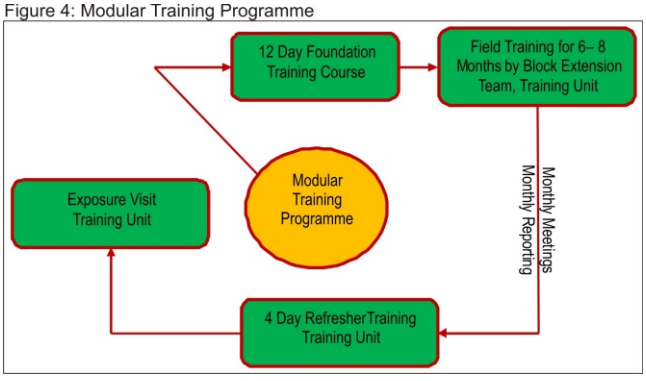
Model farmers are select fe/male farmers, who successfully exhibit low–cost, pro-poor livestock rearing technologies. The project has developed a network of 3,700 model farmers in 435 villages. Each village has 5–10 model farmers, who serve as an example for others to emulate.

Village Facilitators

VFs are self employed para-vets. Usually, local youth, who have passed class 8 or 10, are selected by the Gram Panchayat (village general assembly). These **VFs are the backbone of the project** because they impart affordable and regular animal health services at the doorstep of farmers. Within six months of providing services, VFs are able to earn Rs 1,000 to 2,000 on an average per month. They charge Rs 1 for vaccinating poultry and Rs 5 for vaccinating small ruminants. For large ruminants, the charges go up to Rs 10. At times, they are also paid in kind, for instance, a hen, a bottle of honey or locally brewed wine. Although they do not get monetary benefits for extension work, the status they enjoy in the eyes of the villagers motivates them to undertake this work.

Vfs are initially given a 12-day foundation training at the AVFO Training Centre at the Jagdalpur district headquarters (See Annexure 1) followed by 6–8 months of field training, under the supervision of the BET. The VFs learn the basics of service provision on-the-job and under the guidance of the Veterinary Officer and Assistant Veterinary Field Officers (VFOs) of the BET. They are encouraged to practice their skills while undergoing field training, to gain experience and build self-confidence. Many of the VFs, especially men, are *Go Sevaks*[7] as well whereas women VFs do best as animal health

Figure 4: Modular Training Programme



[7] *Go Sevaks* are para-vets, who have passed Class XII and are trained to provide animal health services (first aid, vaccination and artificial insemination) in areas not covered by regular AHD staff. Their emphasis is on large ruminants and the provision of artificial insemination services.

workers for poultry and small ruminants.

After completion of the foundation course, a starter kit[8] is provided to VFs, to be used during field training under the direction of the BET. This on-ground training enables the VFs to work on their own in their villages, but they have the BET to fall back on for referrals and input supplies. After every 3–4 months, refresher trainings, along with exposure visits to state government farms—related to both livestock and agriculture—are conducted to further strengthen skills.

This modular approach for training (Figure 4) helps to nurture the interest of the facilitators over a sustained period of time. An approximate expenditure of Rs 2,600 is incurred for the training of and the starter kit for each VF. Providing door-to-door health services, the VFs spread awareness on first aid and backyard poultry through village-level training, veterinary camps and monthly meetings with the SHGs.

Block Extension Team

A BET comprises a Veterinary Assistant Surgeon and three Assistant VFOs (usually women). It acts as a monitoring body for VFs. A BET not only provides hands-on training to the VFs on extension services and provision of first aid but also maintains a stock of vaccines and medicines for the VFs. A number of women were recruited as VFOs in a special drive at the onset of the programme.

Training Unit and Project Management Unit

There exists a training unit at the state AHD, comprising experts on fodder development, animal husbandry, agriculture and horticulture, and sociologists, who impart para-vet training and livestock extension management training. All the service providers are supervised by the Project Management Unit, which monitors and coordinates activities. The budget allocated for the training of farmers and AHD officers to BILDP over the last five years provided in Table 2, indicates the state government's commitment to the initiative.

Table 2: Annual Training Budget

Financial Year	Budget Allocated (in lakhs)
2005 - 06	10.00
2006 - 07	12.15
2007 - 08	10.00
2008 - 09	10.00
2009 - 10	10.00

[8] A first-aid kit containing a thermos flask, needles, syringes, antibiotic cream and spray, a drenching pipe, a thermometer, forceps, a pair of scissors and *ayurvedic* powders/ medicines.

5. Outcomes

The project is being implemented for almost a decade, and has resulted in definite changes in the management practices related to small-scale poultry rearing as seen in Table 3.

Table 3: Management Practices in Small-scale Poultry Rearing Pre- and Post-intervention

Variable	Before Project	After Project
Housing pattern	Traditional free range	Semi-intensive with low cost housing
Feeding practices	Poor feeding	Protein supplementation
Predator problem	Predation by cats, jackals, mongoose, etc	Bamboo shelters have reduced predation
Health coverage	Poor health coverage	Village-based paravets (Village Facilitators)
Cold chain	Poor cold chain	Organised cold chain
Parasitic control	No de-worming practised	Ethno-veterinary de-worming practised
Mortality	Heavy mortality (≥75%)	Mortality between 20-30%
Poultry population	Stagnant population	Three-fold increase

The income from rural household poultry has increased remarkably (Table 4).

Table 4: Comparative Economics of a *Desi* bird under Rural Household Poultry Rearing[1]

Variable	Before Intervention		After Intervention	
	Numbers	%	Numbers	%
Hens	1	-	1	-
Average number of eggs laid in a year	35	-	35	-
Egg spoilage	10	29	2	6
Egg consumption	3	9	8	23
Eggs set for hatching	22	63	25	71
Chicks hatched	20	57	22	63
Chick mortality	12	60	5	23
Chick survival	8	40	17	77
Birds reaching adulthood	6	30	13	59
Average value per bird[2]	**Rs. 100**	-	**Rs. 200**	-

Table 4: continued....				
Variable	**Before Intervention**		**After Intervention**	
	Numbers	Value (Rs)	Numbers	Value (Rs)
Consumption of birds	2	200	4	800
Birds sold	2	200	5	1,000
Birds retained	2	200	4	800
Total Income	**-**	**600**	**-**	**2,600**
Cost price of mother hen	-	100	-	200
Feed (white ant feeding)	-	-	-	100
Health care expenses	-	-	-	10
Total Expenditure	**-**	**100**	**-**	**310**
Annual Net Income	**-**	***500***	**-**	***2,290***
[1]*Based on one time stock-taking and field observations*				
[2]*The average value of a bird has doubled. In addition to price increase (over a five year period), this has also resulted from increased weight of the bird as a result of improved management and rearing practices.*				

The direct and indirect impacts of the intervention are:

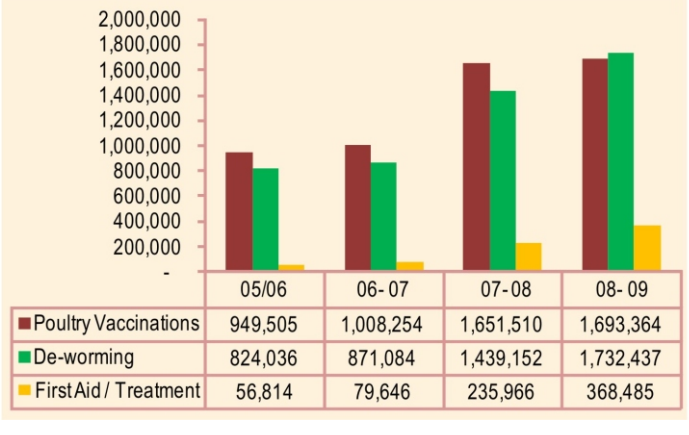
Health services

The VFs are trained individuals from within the community; this has resulted in better coverage and easier availability of health services. The project has helped to organise the cold chain by providing each VF with a steel thermos (one litre) to carry the vaccines. Each village cluster is provided with an ice box and block level offices are equipped with refrigerators and freezers. VFs ensure regular supply of vaccines and provision of first-aid services to livestock keepers in remote areas. This, in turn, has led to a reduction in the mortality rate from 80–90% to 20–30%, thereby contributing to improved productivity of the flock.

Increase in the number of animals vaccinated

The number of poultry birds vaccinated through sustained efforts such as the Pulse Ranikhet drive has almost doubled during the period from 2006 to 2009 (Figure 5).

Figure 5: Veterinary Services Provided

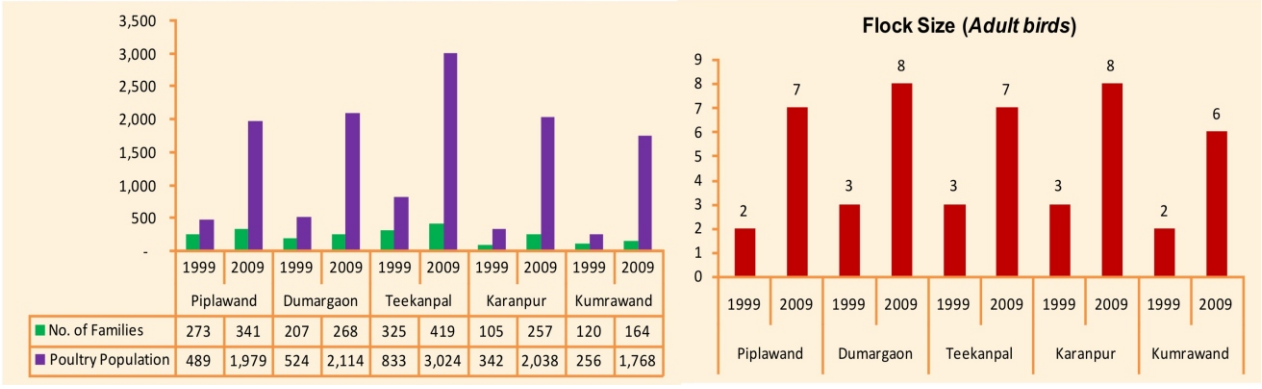


Increase in livestock wealth

With access to better health services and a lower mortality rate, there has been a quantitative improvement in livestock

wealth; for instance, there has been a three-fold increase in rural household poultry production involving *Desi* birds (Figure 6).

Figure 6: Situational Analysis of Impact of BILDP



Change in practices

This project has brought about a change from traditional scavenging practices to a semi-intensive scavenging system. Low-input, protein-rich feed formulation, using locally available material such as feeding ants and termites through the earthen pot method, has helped save the financial resources spent on feed. (Box 5)

Checking the fertility of eggs through the candling procedure is another practice that has enabled fe/male farmers to retain only the fertile eggs for hatching, thereby improving the hatchability rate as well as making infertile eggs available for household consumption (Box 6).

Box 5: Harvesting Termites by Earthen Pot Method

Household waste material such as old cotton rags, worn-out gunny bag pieces, fresh/dried cow dung, and vegetable leftovers are put in an earthen pot. Small pieces of ant-hill with termites are added to this pot along with some water to make it moist. This earthen pot is kept upside down in a cool dark place. The termites feed on the rags, food leftovers and multiply so that in 72 hours the pot is full of white ants. The pot is turned over and the birds are allowed to feed on these ants which are a rich source of protein. (Protein content approximately 30%)

Box 6: Candling of Eggs - A Simple Technique to Differentiate Fertile Eggs from Non-Fertile Eggs

A bulb-holder with a light bulb is fixed on one end of a tin box (a torch may be used in remote areas); on the other end, a small hole is formed to place the broad end of an egg. A fertilised egg will show a pin-head shaped black spot floating near the broad end whereas an unfertilized egg looks transparent. Through this technique, unfertilised eggs can be sorted out on the fourth or fifth day of the brooding process and can, thus, be sold or consumed by the farmer.

Poverty reduction

Better extension services and pro-poor technologies such as the candling of eggs, low-cost housing, using earthen pots, termite harvesting, etc., are easily affordable for poor communities because locally available materials are used. The use of these simple technologies built on traditional knowledge systems have contributed to improved income generation. The interventions are positively biased towards women poultry rearers because these can be easily adopted within the home and do not require a dependence on externally purchased inputs.

Employment opportunities for VFs

The project has also helped to generate self-employment opportunities for the VFs. Over

1,500 facilitators have been trained over a period of 8 years. Of these, 813 VFs are working currently. Of these 813, 64% are able to earn Rs 500 or more per month as supplementary income.

The SHGs have helped in reducing dependency on external financial resources and have promoted a regular saving attitude among the villagers, which, in turn, has contributed to easier access to credit.

Box 7: Case Study

Kalawati lives with her husband, Ratiram, and three children in Usari Panchayat, Tikanpal Block, Bastar, Chhattisgarh, They own less than an acre of land. Whereas Kalawati worked on a farm and reared a small flock of 5–6 Desi birds and 2 Desi pigs, Ratiram was a wage labourer and often migrated to other areas in search of work. The earnings from their livestock did not exceed Rs 1,000 per annum despite the negligible consumption at the household level. Kalawati recollected that a few years ago, mortality among the birds was almost 90–100% due to diseases such as Ranikhet, worms and bacterial infections, as well as predators and road accidents.

In 2002, the government organised the women in the village into Self Help Groups (SHGs). Kalawati joined one of the SHGs and was entitled to a loan of Rs 4,200 to expand and improve the infrastructure required to keep her poultry flock in a better manner. With the help of the Village Facilitator, Kalawati got a shelter built for her birds, employed better feeding practices together with regular vaccination and de-worming. Candling was also done to identify infertile eggs. These small changes resulted in her flock size increasing to 30–35 birds, and now she has four pigs of an improved variety. Owing to better management practices, the mortality rate has also come down to 20–25%.

Kalawati feels happy to be associated with this project because her family is financially secure now. The livestock activity alone accounts for an annual earnings of Rs 6,000 and she has managed to pay back the loan of Rs 3,000 she took from the SHG. She recently renovated her house and has also admitted her children to a primary school. Moreover, there are adequate livestock products available for household consumption.

Strengthening indigenous knowledge

A key feature of the project is to build upon indigenous knowledge systems. The use of ethno-veterinary practices to combat common health problems has contributed to strengthening these indigenous knowledge systems. Further, the practices promoted by the project have been built on traditional systems, making it easier for the community to accept and adapt these practices.

Nutrition and food security

Families usually consume the birds in the form of meat; the consumption of eggs is negligible because these are kept aside for hatching. The low mortality rate in poultry has resulted in availability of more birds for home consumption and the money from the sale of eggs and meat has also contributed to increased food purchase and higher food security. The simple practice of egg candling to identify fertile eggs has also made it possible for families to consume these infertile eggs or to sell them.

Gender empowerment

Forming SHGs as an entry-point has helped bring women poultry farmers on a common platform for knowledge exchange, leading to better implementation of the scheme. These SHGs have helped in establishing a network among the fe/male farmers and at the same time contributed to empowerment of women socially, economically as well as technically. Besides, the capacity of women VFs, who constitute 18% of the VFs, has also been strengthened.

6. Lessons Learnt

This project has been a successful effort in reaching out to marginal fe/male farmers in isolated regions to promote backyard poultry. The key lessons are:

1. The government has sustained a project, set up initially through donor support, and has developed it further for a much longer period of time, allowing the full integration of VFs, multi disciplinary extension teams and the optimal delivery of health services at the doorsteps of poor tribal farmers.

2. Compared to the more conventional government interventions of introducing improved birds, the approach of providing health and extension services to existing *Desi* flocks is much more cost-efficient as well as cost-effective. The provision of basic animal health services has enabled marginalised livestock keepers to improve the productivity of existing poultry, resulting in higher consumption of animal products within the home, increased livestock assets and income.

3. Animal health workers/VFs from within the community understand local problems and requirements of the farmers and are more committed to providing their services because they are accountable to the community.

4. For VFs to function on a sustainable basis, it is imperative that they be trained to provide services to poultry and small ruminants at the least, and to large ruminants at best. The modular training of VFs/animal health workers, namely, classroom training followed by field training and exposure visits, refresher training at regular intervals as well as being part of referral vet systems, help in sustaining their interest and increasing their knowledge base.

5. The linkages between VFs and the BETs and, hence, with the AHD has proved critical to ensuring the sustainability of VFs.

6. Focusing on preventive animal health measures such as poultry vaccination drives (Pulse Ranikhet) involving the entire community provides outstanding results in resource-poor areas. User payment is viable also in remote tribal villages because even marginal livestock keepers are ready to pay for services in cash or kind, if these are available when required. The model has demonstrated that there exists a market demand for the animal health services provided by VFs.

7. Marginal farmers are willing to innovate; however, because they are poor and risk-averse, they cannot afford to experiment with new husbandry practices. Strengthening traditional practices and building on existing ethno-veterinary knowledge, introducing simple low-cost technologies through model farms are essential to nurture positive changes in backyard poultry farming.

8. The group extension system through SHGs serves as a catalyst to promote backyard poultry activities and networking amongst farmers, in particular women farmers. However, a key lesson is not to have groups that are too large because coordination becomes difficult or too small because the saving capacity becomes meaningless and peer pressure ineffective.

9. In most cases, small farmers require extension specialists, not livestock experts, and an integrated approach to rural extension is essential. This encompasses convergence among

animal husbandry, agriculture, horticulture, fisheries, social aspects, etc. The AHD officers, good in clinical activities, should also be trained in livestock extension and management activities to perform better.

10. System changes such as the creation of a cadre of Assistant VFOs and establishment of a distinct Project Management Unit has contributed to the efficient delivery of the programme and has provided outreach to remote rural habitations.

7. Suitability and Replicability

This project has the potential for replication because it has promoted rural household poultry successfully in one of the most inhospitable terrains in the country. The project has now expanded to 16 blocks, covering 37,000 farmer families of four different districts of the Bastar region, and has created a network of village-level institutions in 435 villages of the region. Its strength lies in building on the traditional knowledge base and the existing farming systems, with minimal introduction of practices that advocate drastic changes. The project can be further developed and replicated in other districts of the state, and in the adjoining tribal regions of Madhya Pradesh.

Key factors to be kept in mind while replicating this practice to other areas, include the establishment of an institutional structure to facilitate knowledge sharing, extension and the provision of health services from a dedicated Project Management and Training Unit, to Block Extension Teams providing regular support and guidance to the network of Village Facilitators, Model Farmers, Self Help Groups and Poultry Rearers. This institutional structure has in particular facilitated and sustained regular vaccination, directly contributing to reduced poultry mortality. Supporting and strengthening existing poultry rearing systems, rather than the introduction of new breeds and practices, is another key factor that has contributed to the success of this initiative. Recognising, documenting and disseminating ethno-veterinary practices, works well in remote areas, where communities are often located at considerable distances away from markets. For Village Facilitators to earn a level of income that would sustain both their interest and continuation of their work, it is essential that the training provided include aspects of health provision and support services for both small and large ruminants. Under BILDP, Village Facilitators have been provided training on small and large ruminant rearing, in addition to poultry rearing, and in some cases, trained Village Facilitators have graduated to AI workers supporting the artificial insemination programme of the Animal Husbandry Department. The low-cost techniques promoted by the programme (for example egg-candling, protein-rich feeding) have contributed to small, but sustained improvements in income and nutrition security within households. The ease of adoption has contributed to a significant scaling up of these practices in the area.

Elements of this practice, as well as the lessons learnt, can help shape livestock policies in several Indian states, contribute to poverty reduction, food security and women's empowerment, and promote a more equitable and inclusive agriculture, as envisaged in the 11th Five Year Plan (2007–2012).

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Annexure 1: Curriculum of the 12-day foundation training for Village Facilitators

Each Village Facilitator is provided a twelve day foundation course on livestock rearing, with special reference to poultry.

The course commences with an introduction to the project, its objectives and implementation strategy, the role and responsibilities of village facilitators and village committees. This is followed by systems for data collection and livestock census and practical demonstration, including systems for record maintenance. Following this, village facilitators are taught how to identify sick animals and are given practical training on wound treatment, first-aid, and de-worming. The importance of vaccinations and preparation of vaccines for administration, including practical training is provided. In addition, training and demonstrations are provided on the importance of maintaining the cold chain, and how this can be ensured in rural areas, training on the various implements and medicines in the first aid kit, and the importance of regular sterilisation of equipment.

This is followed by sessions on the common diseases of poultry and small ruminants, and practical demonstration and training on vaccination and de-worming. The Foundation course includes sessions on agriculture, fodder cultivation, horticulture and practical training on composting techniques. In addition, training on communication and extension and working with rural communities also forms a part of the foundation course.

Annexure 2

Cough and Cold

1. Crush 3-4 garlic cloves or 10 grams of ginger rhizome or 5 chillies and mix with feed daily in the morning until the symptoms disappear. All doses are for 10 birds.
2. Chop ¼ onions per bird and feed it to chicken.
3. Pound 10gm of fresh ginger rhizome, squeeze out the juice and mix the juice with 250 ml of water and 10 gm of brown sugar. This mixture is sufficient for 10 birds and is given as drinking water.

Diarrhoea

1. Crush 7-10 garlic cloves and a fingernail sized piece of turmeric rhizome. Mix this amount in feed everyday (sufficient for 10 birds).
2. Boil 250 gm of brown sugar with 1 litre of water. Add 250 gm of powdered turmeric rhizome and boil until only half of the water remains. Allow to cool and store in dry bottle. Add 3 tsp of this mixture in drinking water each day (sufficient for 10 birds).
3. Give water left after cooking rice instead of drinking water, this binds the stomach.
4. Give refined wheat flour as feed as long as diarrhoea lasts.

New Castle (Ranikhet) Disease

1. Vaccination is a must. The disease occurs primarily during weather changes.

The following preventive measures will help keep poultry flocks away from Ranikhet disease:

*Mix 1 tsp of turmeric powder in 2 ltrs of water and feed this to the birds

*Grind and mix 6-7 garlic leaves in feed (sufficient for 10 birds)

Fowl Pox

1. Hanging a bouquet of Tulsi (*Ocimum Sanctum*) leaves / lemon grass keeps flies and mosquitoes away. Control mosquitoes by removing stagnant water or by pouring kerosene on stagnant water.
2. Pound black pepper and apply on blisters.
3. Ground black pepper seeds and force-feed the birds twice a day for 3 days. For adult birds use 5-10 seeds and 2-3 seeds for young birds.
4. Grind a handful of leaves of Indian Liquorice (*Abrus Precatorius*) with a handful of limestone and feed this to the birds.

Wound

1. Grind a clove of Garlic and an equal quantity of turmeric rhizome together with enough coconut oil to make a paste. Apply this paste twice a day until it heals.
2. Grind fresh turmeric rhizome and apply the juice to the wound twice a day.
3. Apply vegetable oil on the wound and apply wood ash.
4. Mix 1 tsp of fish oil and 1 tsp of charcoal powder. Apply on wound 1-2 times per day.

Fly repellents and Antibiotics

1. Crush a handful of fresh Neem (*Azadirachta Indica*) leaves, make a poultice and apply on the wound.
2. Grind fresh leaves of Nirgundi/Sephali (*Vitex Negundo*), make a poultice and apply on the wound.

Wounds with Maggots

1. Drip milky sap from the banyan tree into the wound. After a while the maggots will crawl out. Dress with any poultice[9]. Repeat for 2-3 days.

[9] A soft moist mass of bread, meal, clay, or other adhesive substance, usually heated, spread on cloth, and applied to warm, moisten, or stimulate an aching or inflamed part of the body. Also called *cataplasm.*

Annexure 2 Continued....

2. Crush unripe fruit and seeds of custard apple. Apply on wound once a day for 2-3 days. Dress with any antiseptic poultice.
3. Take a handful of fresh Neem (Azadirachta Indica) leaves and mix with enough coconut oil to make a paste. Apply on wound once a day until it heals.

Infected Wound
1. Pound a handful of Eucalyptus globulus leaves and squeeze out the juice. Pour the juice on the infected wound. Repeat twice a day until it heals.

Burns
1. Wash the burn with cold water and apply fresh latex / pulp of Aloe vera or honey.

Parasites and Ethno-Veterinary Practices

1. Papaya sap (*Carica Papaya*) – Un-ripened fruit or stem is pierced with a knife to get the sap. To get a good quantity of sap this is done in the early morning hours. 5 parts of sap is mixed with 1 part of liquid (10 – 15ml) and is given for 5 days. The amount is sufficient for 10 birds. The active principal is papain enzyme resembling pepsin, effective mainly on *Ascarids* (intestinal parasites) (Vallachers, 1998).

2. Betel nuts (*Areca Catechu*) are roasted, and pounded in pestle and mortar and mixed with the poultry feed. A pinch of powder is directly put in the mouth of each bird once a day for a week.

3. 250 grams of fresh turmeric (*Turmeric Rhizome*) are pounded and the juice is squeezed out. This is then used as drinking water. Give this medication once every month.

4. 6 cloves of garlic are ground and mixed into feed. This quantity is recommended for 10 chickens for 1-2 days. Repeat it once in a month.

5. Pomegranate fruit is boiled in water for 15-20 minutes and strained to get a clear solution. The measure comprises one portion of pomegranate fruit to two portions of water. This juice is administered as drinking water for 2-3 days.

6. Seeds of many plants like Quisqualis (*Quisqualis indica*), Sinduri (*Bixa orellana*), Duku (*Lansium domesticum*) – one cup of these seeds is boiled in water for 15 minutes, and strained to collect the juice. One – tablespoon juice is given per bird using a dropper.

7. Dried seeds of Kaleejeera (*Veronia anthelmintica*), common plants in waste places near villages all over India – used against Ascarids and Oxyuris[10]. Important ingredients are vernonine, resin and a fixed oil.

8. Dried fruits of Vidanga (*Embelia ribes* and *Embelia robusta*) used as Taeniacide[11]. It contains alkaloid christembine, embellic acid, resin and tannin. It is administered as a powder or infusion on an empty stomach. A saline purgative is required after 4 hours.

Ecto-Parasites
Ecto-parasites, like ticks and mites, affect the birds because of its scavenging habits and poor management practices. Ticks and mites are blood-sucking parasites, nocturnal in nature. They are very difficult to eradicate, as they do not stay on birds during the daytime. Lice spend all their lives on birds' skin and lay eggs on their feathers.

[10]A group of Intestinal worms
[11]An agent that kills tapeworms

Annexure 2 continued...

1. Fumigation of poultry shed - Dry leaves of Ebony (*Diospyros ebenum*) or tobacco is burnt under the poultry house so that smoke goes into the house. This practice will drive away lice and ticks. Birds are kept away from the smoke.

2. Similarly, powdered bark of lime (*Citrus acida*) is also burned to eradicate lice and ticks. Likewise dry leaves of many plants like mogra (*Jasminum sambaci*), Fragrant Premna (*Premna odorata*), and Nirgundi/Sephali (*Vitex negundo*) are used to fumigate poultry houses.

3. Bouquet of Nirgundi/Sephali (*Vitex negundo*), Tulsi (*Ocimum sanctum*) or lemon grass (*Cymbopogon citrates*) is hung in the poultry house: the smell of the plant drives ecto parasites away.

4. Rubbing of fresh and dry tobacco leaves on the skin of the bird is helpful in killing lice. Rubbing of following mixtures is also helpful to remove lice:

- *Two parts neem (leaves/oil) and one part salt to one part ash
- *One part salt and two parts mustard oil

5. The oil of Mahua (*Madhuca longifolia*)/ Tora or Karanji plant is also applied on the birds' skin to eradicate lice particularly in tribal areas.

6. Dipping in Neem water – Fresh leaves of neem are boiled for 15-20 minutes, the solution is kept overnight and the leaves taken out. The solution is used for dipping the birds, the separated leaves are ground properly to make the paste, which is then applied on the affected parts of the bird.

7. Bedding in brooding pen-one handful of lemon grass (*Cymbopogon citrates*) is put in the nest before the hen starts to lay eggs; it remains in the nest throughout the brooding period.

The NDDB-FAO **South Asia Pro-Poor Livestock Policy Programme** (SA-PPLPP) is a unique livestock development program that aims to 'to ensure that the interests of poor livestock keepers are reflected in national as well as international policies and programs affecting their livelihoods'. It endeavors to do so by a) creating spaces for and facilitating dialogue among the actors playing a direct and indirect role in the livestock sector of South Asia, and b) drawing from and using lessons from field experiences to influence livestock-related policies, programmatic and institutional changes towards the benefit of poor fe/male livestock keepers in the region.

To access SA PPLPP publications and other information resources, please visit our website at http://www.sapplpp.org

BILDP/Government of Chhattisgarh: The Indo-Danish Bilateral project was started in Bastar in 1999 on pilot basis with an objective to increase the farming and livestock management capabilities of farmers in selected tribal blocks through creating assets with adequate and appropriate extension support. With the phasing out of DANIDA in 2004, the Government of Chhattisgarh has upscaled and sustained it.

For more information on BILDP, kindly contact Dr. Prakash Shinde at prakashnshinde@yahoo.co.in

About this Good Practice

This Government initiated good practice showcases how simple cost effective interventions - low cost protein rich feeding, de-worming, vaccination, low cost housing, egg-candling, use of bamboos as feeders and waterers aimed to strengthen household poultry production with adequate extension and support systems through creation of village facilitators (paravets) at village/hamlet level to deliver regular, economically sustainable animal health service within the villages contributed to the improvement of poultry and farm management capabilities of tribal farmers in the Bastar region of Chhattisgarh in India.

These interventions facilitated increased health awareness in beneficiaries regarding poultry and have contributed to reducing mortality leading to three fold increase in flock size, with a resultant positive effect on the livelihoods of the rural population, many of whom comprise the poorest communities in these tribal regions.

SOUTH ASIA Pro Poor Livestock Policy Programme

A joint initiative of NDDB and FAO

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