

## Good Practice Note

# The Satpuda: Replicas of Native Chicken in Rural Poultry Production



**REGION** : South Asia  
**COUNTRY** : India  
**STATES** : Maharashtra  
**DISTRICT** : Jalgaon

**SOUTH ASIA**  
**Pro Poor Livestock Policy Programme**

A joint initiative of NDDB and FAO

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# The Satpuda - Champion Synthetic Improved Hybrids: *Replicas of Native Chicken in Poultry Production*

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# Acknowledgements

Identification of Good Practices (GPs) goes hand in hand with developing an understanding of pro-poor livestock development, building capacity in documentation and the use of simple tools to sensitize actors, build coalitions and influence policy formulation and implementation.

Through a fairly rigorous and iterative process, the SA PPLPP team developed a set of guidelines\* for identifying and preparing GP Notes. Step by step, teams in Bhutan, Bangladesh and India made considerable progress in identifying and capturing potential GPs on various themes – 'Smallholder Poultry', 'Small Ruminants' and 'Livestock and Common Property Resources' - related to poor livestock keepers.

This Good Practice came out through a chance meeting between Lucy Maarse and Prof A G Khan in one of the workshops where he informed her of his work in Backyard and small scale poultry production systems. Since SA PPLPP has interests in small holder poultry it was decided that Dr Mamta Dhawan (SA PPLPP) would visit Yashwant Agritech Pvt Ltd in Jalgaon to get first hand impression of the practice. She travelled extensively in Buldhana and met a number of small scale poultry farmers rearing Satpuda birds.

We are grateful to Dr Ravindra Patil and Bapu Suryavanshi for organizing the field visit and providing information regarding the operations of the hatchery and supply line. Soon after the visit, first draft of the Good Practice note was forwarded to SA PPLPP by Prof. Khan, chief geneticist responsible for breeding Satpuda birds. The draft GP note had sufficient information to invite Prof AH Khan and Dr R Patil for the Learning Event 1\*\*; organized to provide an opportunity for the GP owners and the GP champions from the three countries to come together and along with senior experts in the sector, interpret and analyse the potential GPs identified. Our gratitude to Dr P Shinde, Dr B R Patil, Bidhan Chandra Roy and Yonten Dorji for their feedback that helped the authors look at the GP critically and realize that like most other notes, this one too lacked in certain information. The two authors too were requested to provide more statistical and economic data, and concentrate on impact etc. Post learning event, based on the advice and comments received, Prof A G Khan and Dr R Patil forwarded second draft. This draft was then forwarded for peer review to Joachim Otte and Shankar Ghosh. Their comments were shared with the authors and based on the authors inputs, Dr. Mamta Dhawan and Dr B R Patil formulated the third and final draft. We would like to thank the staff of Yashwant Agritech and both Authors for always responding to our requests for more information, stories, pictures with alacrity and enthusiasm. Working with them was indeed a pleasure.

\* Concerned guidelines are available at: <http://saplpp.org/mainpage-information-hub>

\*\* Proceedings of the Learning Event "Small Scale Poultry Production", 7th - 9th May 2008 available at: [http://saplpp.org/informationhub/learning\\_event\\_small\\_scale-poultry-production-proceedings](http://saplpp.org/informationhub/learning_event_small_scale-poultry-production-proceedings)

# 1. Introduction

Poultry makes substantial contribution to household food security along with supplementing incomes worldwide (Jensen, H.A. and Dolberg, F. (2001). Emerging field examples across the world also strongly establish the fact that poultry can play an important role in poverty alleviation especially for rural women and the poorest of poor.

Worldwide poultry meat is the fastest growing component of global meat production, consumption, and trade, with developing and transition economies playing a leading role in its expansion. However, while poultry development in India has taken quantum leaps in the last three decades, the growth has mainly been restricted to commercial poultry and has bypassed the 360 million people living below poverty line and/or the 260 million (Khan 2004) living under extreme poverty who suffer food and financial deprivation as a causality of life.

Growth of the poultry sector took place with the seventies showing a spurt in egg production, the eighties in broiler production and the nineties in poultry integration, automation and feed production (Balakrishnan, V., 2002). As a result, while the large urban and peri-urban based commercial poultry companies developed a policy advantage and economies of scale, the rural areas which held potential for small scale poultry production and backyard poultry were largely kept out of this growth process. This happened despite the fact that rural backyard poultry is a major part of the activity portfolio of the majority of rural households. It contributes nearly 30% of the national egg production (GOI, 2007; Mehta et al., 2003) and improves household food security and income. For instance members of the Kesla Cooperative (SA PPLPP 2009) in Madhya Pradesh make an average annual income ranging between **Rs 9,000 and 15,000** through small scale broiler keeping while income from Kuroiler (Ahuja V. et al 2008) through backyard poultry keeping increased average net income per household (in four districts) by **Rs 2,280 - a 290 % rate of return** on investment with the poorest having highest net profit margins. The landless, marginal and small farmers tend to invest in backyard poultry (especially indigenous poultry) not only because of the direct benefits of increased consumption of eggs and meat but also due to the fact that small holder poultry complies to their limited risk taking, financial abilities and market acumen.

**This Good Practice Note is anchored in Vidarbha and showcases the endeavour of a private company to produce and sell to small holders a high-productive bird suitable for rearing in harsh agro-climatic rural areas.** It establishes that backyard and small-scale poultry keeping can be supported through private initiatives, including private hatcheries and small holders provided the appropriate policy and institutional conditions are in place.

## Background

Vidarbha with a population of over 20,000,000 is located in central India in eastern Maharashtra. It comprises of 11 districts - Amravati, Akola, Bhandara, Buldana, Chandrapur, Gadchiroli, Gondia, Nagpur, Wardha, Washim, Yavatmal. It occupies 31.6% of total area and holds 21.3% of total population of Maharashtra. It receives 690 mm annual rainfall. The temperature ranges from 10°C to 48°C. The region is famous for growing oranges which has earned it the nickname "the California of India". Some of its products are cotton, spices and rice. Vidarbha has its own rich cultural and historical background distinct from rest of Maharashtra. The Satpura Range lies to the north of Vidarbha region and hence the name – Satpuda for the poultry bird being propagated. Lately it is facing a major social problem of suicides by farmers. The major reason assigned for this is the lack of funds for the farming communities. The agricultural crisis has escalated due to lack of rainfall, crop loans with high interest rates varying between 30 and 120% per year, poor irrigation projects, pests that have become resistant to pesticides, experimentation of costly hybrid seeds in the hope of growing better crops, higher prices in fertilizers, etc.

## Improving *Desi* Poultry of India

India houses 20 recognized indigenous poultry breeds (Singh and Johari 2000; Sharma and Chatterjee 2006) and various non-descript varieties amounting to 238.21 million birds (Kornel D, 2008). Their smaller body size, coloured plumage, alertness and fighting abilities for survival are well appreciated in rural communities (Annexure1). However, their average egg laying capacity is about 30 - 60 eggs /annually and growth is slow (120 - 210 days to attain 1 kg live body weight). Further, citizen's reports on national bio-diversity (2005) have

declared that 18 of India's indigenous poultry breeds are threatened. This trend of depleting germ plasm coupled with the need to enhance the productivity features of *desi* birds has led to recent experiments through public initiatives aiming to make *Desi* chicken more remunerative by integrating germ plasm of Rhode Island Red, White Leg Horn, Black Australorp and New Hampshire with variable success. A few private companies have successfully invested in

research and development of hybrid poultry birds suitable for backyard and small scale poultry production. The Kuroiler (Ahuja V. et al 2008), Kalyani DK and Satpuda are examples of such synthetic birds. Their phenotypic characteristics have shown advantages under succulent foraging vegetative eco-system in rural setting (Table 1).

**Table 1: Percentage Mortality of Indigenous, Cross Bred and Synthetic Hybrids**

Particulars	Mortality			Reference
	Chick	Grower	Adult	
Indigenous (Backyard Scavenging)	70% Scavenging Conditions 63% Farm Conditions			Maphosa et al. (2002)
Vanaraja* (Cross Bred)	2.9	4.9	6.4	Singh (2002)
Kalyani* DK (Synthetic)	2.1	3.8	5.8	Khan (2003)
Satpuda <i>Desi</i> * (Synthetic)	1.8	4.1	3.8	Anonymous (2005)
*Under Small Scale Poultry Production System				

## 2. Key Elements of Good Practice

### The Origin

Satpuda chickens were first introduced about 9 years ago in the chicken market of Buldhana district. Initially few farmers who raised Satpudas were successful in capitalizing on the bird and soon the message of its cost- effectiveness and quick returns spread through word of mouth in neighbouring villages. The poultry farmers tapped the urban markets to sell their Satpudas as *Desi* chicken and found it a lucrative market for their produce.

Yashwant Agritech Pvt. Ltd has been producing day old chicks (DOC) without subsidy or grant from the Government. The growth of the company has been steady but for the setback suffered in 2006 on account of the Bird-flu outbreak that resulted in culling of all parent and Grand parent stock as well as burning of stored feed and litter material. During this period, years of research work on breeding was lost which was a major setback for the company. It rebuilt its stock by sourcing Grand parent stock from Nasik and painstakingly started work to rebuild the company's hatchery.

### The Strategy

This Good Practice showcases the development of a hybrid poultry bird Satpuda (Satpuda *Desi* for meat and Satpuda-SPK for eggs) which has been successfully adopted by both Backyard and Small Scale Poultry systems<sup>1</sup>. In this case, a chicken simulating phenotypically the native chicken with improved production profile was developed by Yashwant Agritech Private Ltd. The company bred Satpuda chicken having multi colour feathering, dull bluish shank, pink skin, single comb, indigenous fowl body conformation for meat and egg production.

The good practice worked because of the 3 key factors viz: 'technology', 'delivery mechanism' and its 'suitability to the context' which are herewith analysed.

### ► Technology

The technology behind the development of the Satpuda *desi* was to develop a bird that looked like *Desi/Desi* but gained weight in a shorter span of time and laid a larger number of tan coloured eggs. The 'Replica of Native Fowl' concept was inspired by the well known survivability and adaptability of native chicken in rural environments. It was hypothesized that if a bird could simulate the native fowl in physical appearance and genetically showed improved productivity, it would greatly benefit the livelihoods of backyard and small scale poultry farmers.

The Satpuda is thus an outcome of specific breeding approaches aiming to utilize maximum heterosis in the progeny that cause numerous dispersion of plumage feather patterns and colours variation. The Satpuda's Characteristics are enumerated below (also see Annexure 3)

<sup>1</sup>The backyard poultry keeping indicates few birds (3-15) roaming around in search of food, resting in natural/inside house or shelter, with basic health care and additional feed input except little kitchen waste and discarded grains. Contrary to above small scale poultry production envisages a close shelter, with waterer, feeder and brooders etc. where balanced feed and desirable health care are provided. In this system 500-2000 chicks are raised

- ☞ *Body conformation is like that of indigenous chicken.*
- ☞ *Multiple colour mosaic plumage within a batch is available with very little percentage of solid feather colour patterns.*
- ☞ *Hardy, dependable with low mortality.*
- ☞ *Pinkish skin, dull blue thinner shanks and single combed.*
- ☞ *Leaner and less watery carcass suitable for people of all ages with more edible meat than Desi chicken.*
- ☞ *At farms grow to 1.0 kg body weight in about 2.6 kg feed and a 200-250 gm grower takes 50-60 days to attain 1 kg body weight under scavenging system.*

The Satpuda-Desi exhibits 4-times faster growth rate than the *Desi/Desi*, during juvenile period, up to 8 week of age (Table 2). Under backyard system, growers<sup>2</sup> weighing 250 gms attain approximately 1 kg body weight in 50 - 60 days. The ratio of muscle to bone is higher in Satpuda-Desi as compared to *Desi* making it tastier. Furthermore, low fat content of carcass and less closely adhered muscles to bones makes it more acceptable in the meat market.

Table 2: Comparative Traits of <i>Desi</i> with Satpuda Varieties				
Variable		<i>Desi</i> (kg)	Satpuda - <i>Desi</i> (kg) (Farm)	Satpuda SPK (kg) (Farm)
Body Weight	60 days	0.35	0.9 - 1.1	0.6 - 0.7
	150 days	0.9 - 1.0	1.6 F, 2.0 M	1.1 F, 1.6, M
Egg Production	Farm	50 - 80	180 - 200	210 - 230
	Backyard Scavenging	30 - 60	100 - 120	120 - 135
Plumage Colour		Multi-coloured	Multi-coloured	Multi-coloured

The Satpuda-SPK has also inherited higher capacity to lay eggs. It lays 100 - 120 medium sized brownish shelled eggs under foraging conditions. Although it is slow growing than Satpuda-*Desi*, it is faster than *Desi* varieties found in the area. Satpuda SPK has close resemblance to local *Desi* and farmers tend to sell the eggs as pure *Desi* in the market. This variety has a small fraction of local genome; hence, broodiness is seen in few cases under scavenging system.

<sup>2</sup>Grower - Intermediate stage between chick and adult

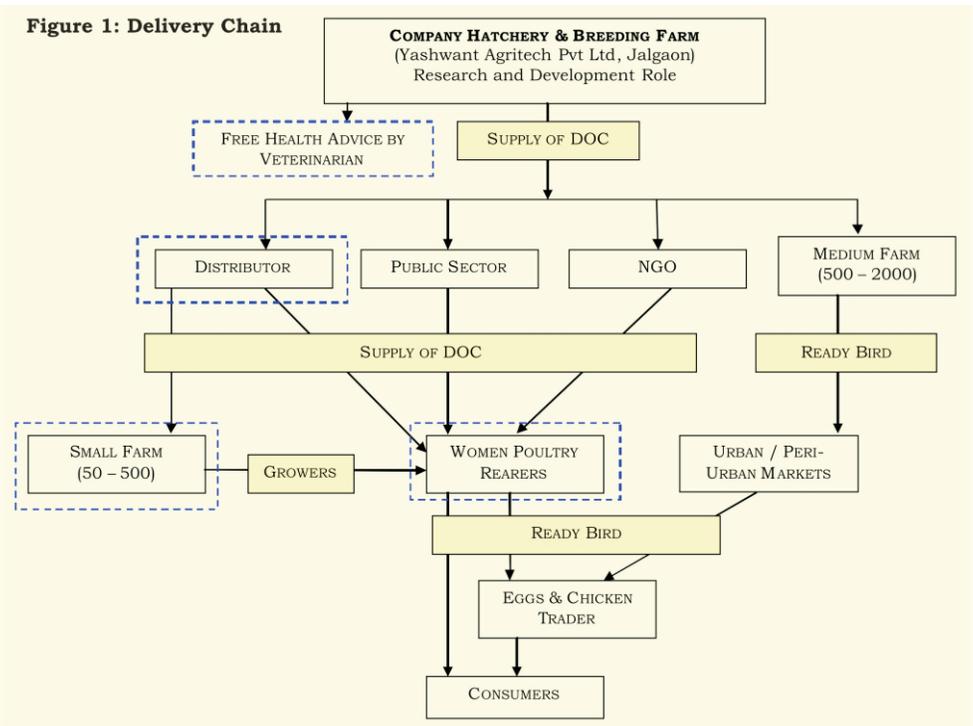
## ► Delivery Chain and the Actors Involved

The actors engaged within the delivery chain include hatchery personnel, distributors, veterinary doctor, small scale and backyard poultry farmers, retailers / traders, rural and urban consumers (Figure 1). The delivery chain originates from the Yashwant Agritech Hatchery and Breeding farm, Jalgaon and ends with consumers (Figure 2). In the initial period, awareness about Satpuda birds was built through meetings organized by Yashwant hatchery in village markets and through distribution of pamphlets in local language. Once the farmers become aware of the bird, they contact the hatchery / local distributor telephonically and their queries / orders were addressed. The supply chain has marketing personnel who are assisted by distributors to ensure chick supply to the doorsteps of the small scale farmers.

The DOCs are vaccinated against Marek's disease at the hatchery and then delivered to the

distributors who are often also farmers capable of housing 1,000 or more chicks. Smaller farms (up to 500 Birds) serve as a Mother Unit that brood the chicks for about 3 to 8 weeks. First vaccination against Newcastle disease is done on 7 - 8th day by the farmer at this unit. From here the chicks are sold to women poultry rearers who, in turn, raise them for eggs / meat. The women usually purchase 4 - 20 chicks but some households also purchase more than 50 pullets for producing eggs under semi-scavenging system with provision of night shelter, supplementary feed and health care. The remaining chicks are reared by the small scale farmer to be sold as ready birds. The small scale poultry units have direct access as well as indirect access (through retailers/traders) to semi-urban markets, road side *dhabas*<sup>3</sup> and consumers. The traders pick ready birds from the farm gate at Rs 5 less than the market rate. The backyard poultry keepers make sale of live birds and / or eggs from their doorstep or from village markets.

**Figure 1: Delivery Chain**



<sup>3</sup> Eating places by the highway roads that provide reasonably priced wholesome meals to truckers and travellers.

**Box 1****Small scale SATPUDA-DES/poultry rearing: A means of self employment and supportive business**

Shivaji R. Chinchole aged 31 years lives in Malgani village of Buldhana district, Vidarbha region in Maharashtra. This area is facing serious problems of suicides by farmers due to failed agriculture production. Shivaji's family's 3 acres of non irrigated land can barely support the family of 6 persons. In year 2000, Shivaji an educated unemployed youth decided to start broiler farming. He sold ancestral gold ornaments to raise Rs 15,000 required for initial investment. He suffered a loss of Rs 1,800 in his first batch of 200 broiler chicks due to 20% mortality and later crash in the selling price. He then decided to rear Desi birds as they fetched a good price locally. A visit to Agriculture University in Akola acquainted him with multi-coloured birds called SATPUDA *DES*. He got in touch with the company who guided him regarding management, vaccination and marketing. He placed an order for 250 DOC which the company supplied at his doorstep. Thereafter, Shivaji and his wife Lata were in constant communication with company's veterinary consultant and followed his instructions regarding vaccination feeding etc. He opines that birds are very sturdy and on an average weigh 980 gms in 62 days. The production cost was Rs 47/kg and out of 255 (250 + 2% extra chicks) chicks supplied only 9 birds died. Shivaji sold 246 birds within 6 days in the local market making a profit of Rs 4,300 in 70 days. He used the profit amount to construct another shed and increased his production capacity.

On advice of the company's marketing executives, Shivaji's wife Latabai visited nearby villages and informed the women about the availability of an improved *Desi* bird that could lay more number of eggs. She received orders from these village women for 10 to 30 female birds each. Cognizance of Shivaji's success was noticed by youths residing nearby and they approached him for guidance. He encouraged many interested youths to start Satpuda *Desi* birds rearing. Shivraj is of the opinion that cluster activity will improve the gains instead of competition within poultry keepers as it will be benefit both supplier as well as traders. Soon he was appointed as an agent for chicks in Buldhana, Akola district by the company. Within one year 37unit of 200-500 birds in the area were established. Today the capacity of his farm is 2500 birds per month while he also sells 10000 to 12000 chicks per month to other units. All the small farmers collectively decide on selling rates and Shivraj guide's them regarding marketing of birds. Traders from nearby towns also contact him to pick up birds.

Within 4 years Shivaji has constructed a concrete house for his family. He now wants to educate his 2 daughters. Poultry keeping has not only provided him with employment but has also made him an instrument that enabled youth in his neighbourhood with a steady source of livelihood especially in the region where employment avenues are few. Now he is a respected person in the area and people call him Shivajirao. His family is proud of his efforts and so is the community. Every year Shivaji arranges a get-together of all poultry farmers which is also attended by company's poultry consultant and marketing expert. In these meeting, farmer's problems, experiences are shared and guidance for growth is given in such meets.

Apart from DOC supply, free advisory services of qualified veterinary doctor is also offered to the poultry keepers through telephone or direct contact on poultry health issues such as diseases control and prevention, diagnosis, post mortem etc. Although advisory services are free, the costs of vaccination and medicines are met by the farmers while cost of transporting dead bird and post mortem is borne by the company. The company veterinarian also holds detailed discussions on poultry health and management issues with distributors so as to enable them to provide basic health services to the backyard and small scale poultry farmers. Farmers' meetings and gatherings are arranged on village market days thrice a year where management tips are given by a company agent or veterinarian on a regular basis. In case of bird mortality, first hand post-mortem information is also extended to the poultry farmers by the company veterinarian. As a result of this robust system, exchange of knowledge takes place amongst the farmers and sharing of experiences benefits all stakeholders.

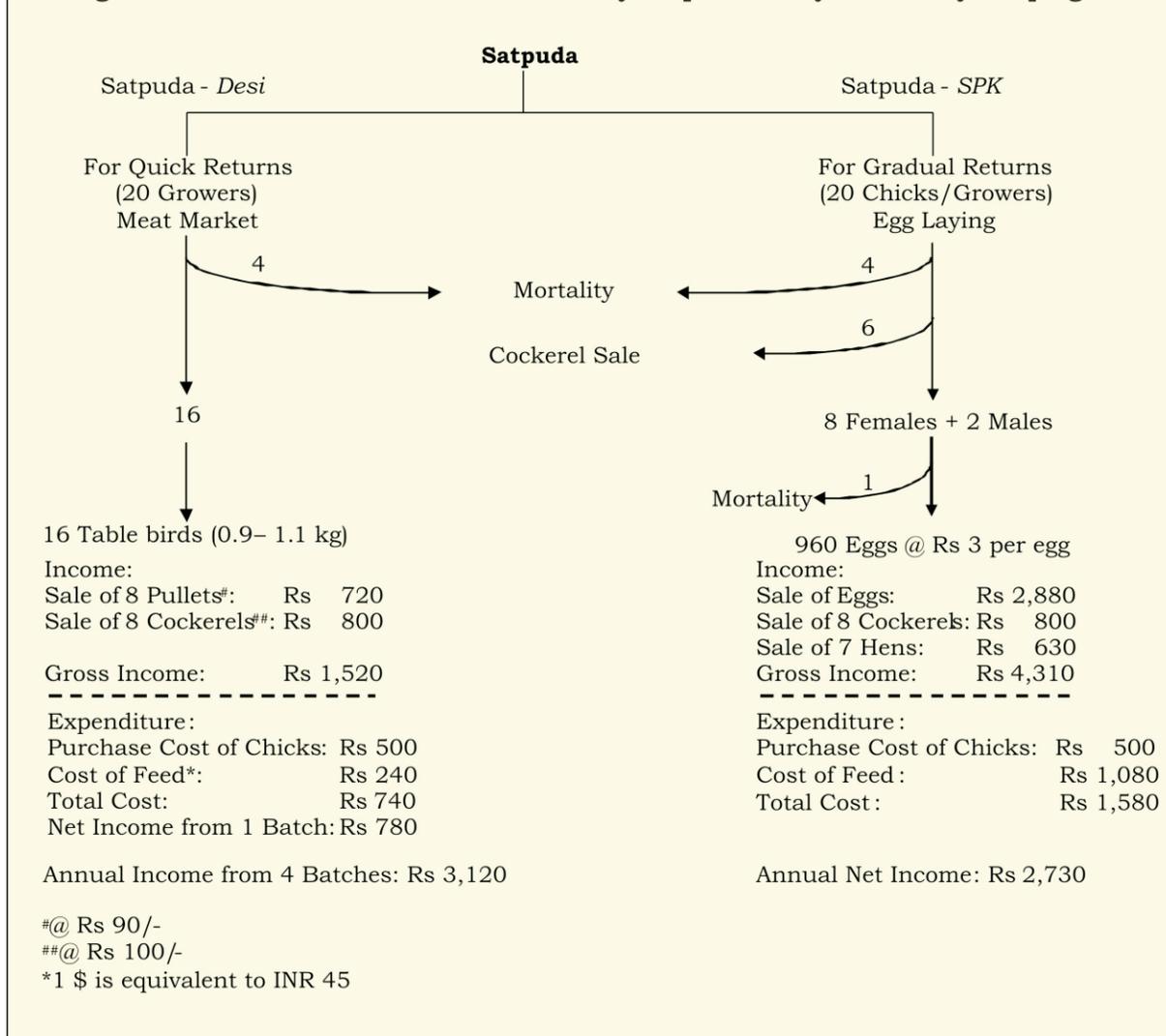
### 3. Why This Good Practice has Worked

Rearing poultry is an age old practice with poorest families of village. The replica synthetic hybrid is almost like raising indigenous chicken but with superior monetary gain. The concept of low input technology also suits resource poor women. Further, self investment into a livelihood practice leads to a feeling of ownership and thus the income earned not only contributes to nutritional and financial security but also decision making and voice amongst women. Superior resistance to adverse weather conditions and adaptability to harsh terrain with least managerial inputs makes the Satpuda the bird of choice for small poultry farmers. In the area where these birds are being raised, employment opportunities are few and this activity suits farmers with small land holdings as start up costs are minimal. Presently it has provided a source of supplementary income to small holder farmers who lose crops to various reasons mentioned earlier. The raising of synthetic hybrid replicas of indigenous chicken ensures more monetary return than the *Desi* fowl and reasonable livelihood is earned by small scale poultry farmers. The bird is acceptable to the local inhabitants since it suits their socio cultural beliefs. More and more farmers are being drawn to rearing Satpudas as many new entrants have taken up poultry farming.

#### Outcomes

The ultimate reason why this bird is such a success in rural areas is because of the enhancement of incomes of the poor, especially women. In the quick return system 200 - 300 gm grower grew to marketable weight of 0.9 to 1 kg in 50 - 60 days under semi scavenging system and sold at almost 100% more rates as compared to the broiler chicken. Satpuda-*Desi* produced a net income of Rs. 3,120 annually for a household selling four batches of poultry for meat purpose where as poultry kept for egg production gave a net minimum gain of Rs. 2,730 annually. Under the quick return system shown in the fig where 20 chicks are reared for meat purpose, the average earning per bird is Rs 39 in two months time which amounts to 150% returns. The small scale poultry farmer may generate more income depending upon the batch size and number of batches in a year. Similarly income from one bird in the gradual return system is Rs 137 annually. The 50 - 60 layer hens' semi scavenging units shall ensure about Rs 1,500 monthly net income. Distributors earn around Rs 1.25 per DOC and 2,000 DOC sold by a distributor will fetch a monthly income of Rs 2,500. The poultry farmer who sells growers to women backyard poultry keeper makes on an average a profit of around Rs 10 per bird. (See Figure 2)

**Figure 2: Economics of Streedhan earned by Satpuda Backyard Poultry Keeping**



**Table 3: Economics of Backyard & Small Scale Poultry Production**

Variables	Type of Bird	No. of Birds	Net Gain Per Batch
<b>Backyard Unit</b>			
Egg Production (gradual return)	Satpuda-SPK	20 growers*	Rs 2,730
Meat Production (quick return) (4 batches annually)	Satpuda-Desi	20 growers	Rs 3,120
<b>Small Scale Poultry Production - Semi Intensive</b>			
Raising Chicken for Meat	Satpuda-Desi 1 kg	200**	Rs 9,000
		1,000**	Rs 45,000
* cost of grower was taken at Rs 25 each ** Day old Chick cost Rs 12 each			

While the broiler in market sells at Rs 40 - 50 per kg and the *Desi/Desi* is sold at Rs 110 - 120 per kg, the Satpuda-*Desi* is sold @ Rs 80 - 100 per kg (Table 4).

Broiler / Kg	Satpuda- <i>Desi</i> / Kg	<i>Desi</i> / Kg
Rs 40 - 50	Rs 80 - 100	Rs 110 - 120

Furthermore, field studies have revealed that throughout the year the value of Satpuda-*Desi* is at least double that of the white feathered broilers. The eggs produced by Satpuda-SPK are sold for Rs 3 - 4 per egg in the local village market. The disposal of surplus cockerels, adult flock also fetches a premium price. The women poultry farmers benefit from this activity as it is largely owned and managed by them. Women can either rear units of 20 birds for egg production or for table purpose.

Apart from the financial returns, a number of other changes take place at the household level. Food insecure household rely more and more on eggs and meat to bridge the

dietary gap especially for children to combat protein deficiency malnutrition. Further for women, being self employed and running a successful enterprise helps in raising self esteem. Income from the enterprise in women's hands ensures greater spending on household rations and education of children. The presence of birds provides a sense of well being to the women. It also enhances their status in the family when they contribute steadily to household income.

**Box 2**  
**Satpura empowering poor woman through of nutritional and economical security**

Bebabai Sudhakar Waggmare is a 35 year old landless labourer who lives in Somthana village of Buldhana Dist. of Maharashtra. Her husband Sudhakar runs a part time tailoring business in the village. Bebabai has always kept 2-3 *Desi* birds in her hut but their low egg laying capacity were insufficient to generate a steady additional income. When she came to know about Satpuda birds from small scale poultry farmers in the nearby village, she decided to rear them. The initial investment of Rs 1,800/- for purchasing Satpuda growers and feed was provided by her husband. Bebabai also purchased 25 two month old pullets at the rate of Rs 70/kg from a small scale poultry farmer who also provided guidance regarding Ranikhet vaccination. She got the birds vaccinated at the Govt. veterinary dispensary.

The birds scavenged in the nearby fields throughout the day while shelter for night was provided in the same hut as the family. Of the 25 birds reared, two fell prey to cats. Approximately 1 Kg of coarsely grinded maize and jowar was fed to the birds daily as additional feed costing Rs15/kg. After 3 months of waiting eagerly, 23 birds started laying eggs at the age of 5-6 months.

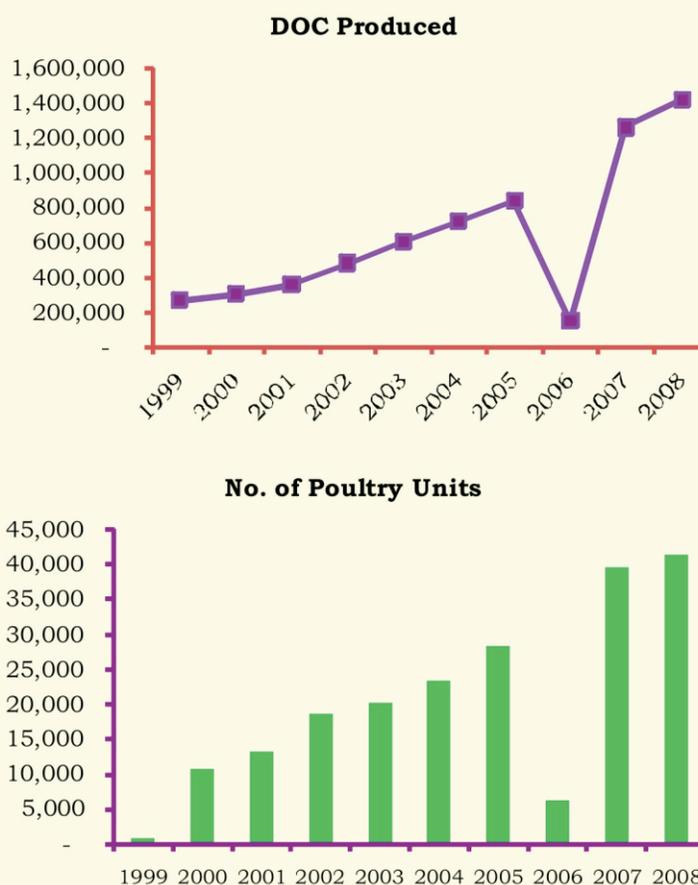
On an average Bebabai got 10 to13 eggs per day. Her son and daughter could now consume an egg every morning for breakfast. The remaining 10 - 11 eggs were sold @ 3.50/egg giving her a steady additional income of Rs 20 per day. This money was utilized for paying for her children's educational needs. She sold these birds after 8 months when their egg laying cycle was completed and managed to fetch a good price of Rs 120 to 130 per hen. In order to have a constant income and source of nutrition for her children, she now maintains a flock of 8 to 10 birds at all times. She is proud of the fact that she can provide nutritious food to her children and also have source of ready cash whenever the need arises. She recently mentioned proudly how well she managed to pay off the hospital bills when her son was admitted for typhoid fever in the hospital by selling 7 Satpuda birds.

With recurrent crop failures, an alternate income from rearing Satpuda is a boon to a number of marginal farmers as well. Moreover rearers learn through interactions with each other and through participation in meetings which increases their knowledge and management acumen. Over the years, more and more community people are increasingly participating in poultry keeping and a sense of comradeship has developed whereby decisions regarding sale price are jointly taken and marketing is also staggered to get the best price.

## 4. Sustainability & Replicability

In 2008 Yashwant Agritech Pvt sold more than 14 lakh (1.4 million) chicks and in the year 2009-10 it is expected to exceed the 15 lakh (1.5 million) mark (See Figure 3). Today, the company's areas of operation are in Central western parts of India comprising of the states of Maharashtra, Gujarat, Madhya Pradesh and some areas of Rajasthan. Presently more than 14 lakh chicks are placed with more than 150 small scale poultry farmers from where they reach thousands of women backyard poultry farmers. The model propagated by the company has sustained a bird flu outbreak and has remained viable because all actors in the chain are benefitted. There are close to 100 farmers across Maharashtra, Madhya Pradesh, Gujarat and Rajasthan states rearing birds in regular batches of 20 - 500 while more than 50 poultry farmers rear in batches ranging from 500 to 2,000. Rough estimates suggest that so far more than 40,000 households have benefitted from the practice. The steady growth in the number of DOC reaching farmers is reflected in Figure 3.

**Figure 3: Sale of DOC & Households Reached**



The practice has caught the attention of public sector as well as NGO's who have shown interest in the bird and the impact it has had on food security and income of poor rearers. The Madhya Pradesh Government through its MP rural livelihoods programme has forged tie-up with the company to provide Satpuda as a means of livelihoods to poor women through SHG schemes. BAIF, a Non Government Organization has also tied up with the company to supply chicks to resource poor households in their area of activity in Dhar, Barwani and Jhabua districts of Madhya Pradesh. 2,000 chicks were distributed to 36 households in Dhar / Jhabua districts in March 2009 while 3,000 chicks were supplied to 60 households in the month of April 2009 in MPRLP scheme.

## 5. Lessons Learnt

- ↻ A **well organized private sector initiative** that decentralises operations from hatcheries to farmers can promote the sustainable development of backward and small scale poultry farming in rural areas. However, a fundamental reason for success of this model is that the poultry hybrid propagated by the company meets the social, cultural and financial expectations of rearers belonging to different strata and geographical areas. The bird is suitable for the harsh agro-climatic areas and thrives with very basic inputs in form of shelter and health cover. It simulates Desi bird but produces more number of eggs, has better feed conversion ratio, meat is as palatable and fetches price almost that of Desi.
- ↻ **Cost effective for all:** The model is self sustaining implying that all actors make profit through it and in this lies the model's strength.
- ↻ **Effective delivery chain and niche market:** Delivery of DOC at small scale poultry farmers' doorstep and sale of growers at different ages to backyard poultry farmers ensures regular supply of birds in rural areas.
- ↻ While vaccination and medicines are paid for on a cost basis, **advisory services** on poultry health are provided by Veterinary doctor and animal health Assistant round the clock. This serves as a critical link to mitigate diseases.
- ↻ **Increase in knowledge base:** Holding meetings of poultry farmers in village markets results in farmer to farmer dissemination of information and subsequent increase in their knowledge base. Extension through interaction with the company representatives helps in clearing doubts on issues related to poultry keeping and equips the rearers for marketing.
- ↻ **Source of Alternate income:** Income from agriculture alone is not enough to sustain households and diversification into rearing Satpuda has become an alternate source of income for small scale poultry farmers.
- ↻ **Scope of convergence:** Linking the poultry chain to present government schemes like SGSY, NREGA could be a step in right direction to increase outreach to include more women poultry rearers to enhance their livelihood. Promoting hardy bird-Satpuda suitable to rural agro-climatic conditions for small scale and backyard poultry farming is low risk, low input intervention beneficial to rearers.

## Annexure 1: Classification of Major Indigenous Breeds of Poultry

The Table shows salient information, including average body weights and egg production of major indigenous breeds of poultry in India. It is interesting to observe that heavy and light types of breeds are available in rural/tribal habitats as a scavenging chicken. In light type the female body weight ranges from 1.0 - 1.5 kg and that of the heavier varieties 2.0 to 3.5 kg. (*Acharya & Bhatt ibid*)

Breed Type	Breed	Characteristics
Heavy Type	Aseel (Central India), Chittagong (Eastern India), Deothigiri (Assam), Danki (Andhra Pradesh); Ghagus (Karnataka), Tellichary (Kerala), Punjab Brown (Punjab)	Body weight : Female 2.0 kg. and above; Male 3.0 kg. and above Egg Production- 30-60
Light Type	Ankaleshwar (Gujarat), Bursa (Gujarat, Maharashtra), Haringhatta black (West Bengal), Kadaknath (Madhya Pradesh), Faverrolla (Kashmir), Miri (Assam), Naked neck (East Coast), Nicobari (Andaman Nicobar), Kalahasthi (Andhra Pradesh)	Body weight: Male 2.0, Female - 1.4 kg. Egg Production: 40 - 90
Non-Descript Type	Tani, Titri, Brown Desi (Uttar Pradesh) Black and Yellow mixed plumage (whole country)	Body weight : Male 1.6 - 1.7 kg. Female 0.9 kg. Egg Production 30-70

## Annexure 2: Commercial Hybrids for Family Poultry Raising

Name of Hybrid	Type of Hybrid	Body Wt. in Kg at 56 Days	Feather Pattern	Shank Colour	Place of Origin
<b>Dual</b>					
Vanraja	Broiler Strain Cross	1.4 - 1.6	Graded Brown	Yellow	PDP Hyderabad
Giriraja	Broiler Strain Cross	1.4 - 1.6	Graded Brown	Yellow	AU Bangalore
Kuroiler	Broiler x RIR	1.3 - 1.4	Mixed Brown	Yellow	Keggfarms
Nandnum	Broiler Breed Cross	1.3 - 1.5	Mixed Brown	Yellow	Veterinary University Chennai
M-Bro	Broiler Hybrid	1.8 - 2.0	Brownish White	Yellow	CPBF Mumbai
CHB	Broiler Hybrid	1.6 - 1.8	Brownish White	Yellow	CPBF Chandigarh
<b>Egg Type</b>					
Nirbheek	Aseel x Delhem Red	1.35 - 1.4	Brownish	Yellow	CARI Izatnagar
UP-CARI	Frizzle x Delhem Red	1.22 - 1.3	Multi Coloured	Yellow	CARI Izatnagar
Hit CARI	Naked Neck x Delhem Red	1.35 - 1.4	Brown	Yellow	CARI Izatnagar
CARI Shyam	Kadaknath x Delhem Red	1.1 - 1.2	Black	Blue	CARI Izatnagar
CARI Gold	WLH x RIR	0.6	Whitish Brown	Yellow	CARI Izatnagar
Grampriya	WLH x Broiler	1.2	Whitish Brown	Yellow	PDP Hyderabad
Gramsree	WLH x RIR	0.6	Whitish Brown	Yellow	A.U. Kerala
<b>Synthetic</b>					
Krishna-J	Synthetic	0.6	Mixed Colour	Dull Blue	A.U. Jabalpur
Kalyani DK	Synthetic Hybrid	1.1	Multi Coloured	Dull Blue	Kalyani Mumbai
Satpuda <i>Desi</i>	Synthetic Hybrid	0.9	Multi Coloured	Dull Blue	Yashwant Agrotech Jalgaon

Source: Khan, A.G. (2002). *Proceedings of 7th Asian Pacific Poultry Conference, Gold Coast, Australia: 413-417*. Khan, A.G. (2004). *Proceedings of 22nd World Poultry Congress, Istanbul, Turkey: 102*.

### Annexure 3: Synthesis of Sire & Dam Lines

Sire and dams lines were synthesized by pooling 3 breed/strains; each followed by initial random mating and than selection for Desirable traits in respective sire (growth, plumage pattern and viability) and dam (growth, egg number and reproductive efficiency) and egg-shell colour lines independently.

To produce sire lines; K2, New Hampshire and non-descript males (16:8:8) and females (96:48:48) in the ratio of 2:1:1 mated. The dam lines were generated by pooling Krishna-J, Austro-Red and the K1 populations. Artificial insemination using pooled semen was practiced within population groups to ensure proper representation from each variety in the pooled progenies. About 10,000 chicks were hatched in four batches in the initial population. KM sire line was selected for superior body weight and the Km line on the mean body weight of the population. The dam lines KG and KB were selected for egg number and on the same criteria as that of the KM and Km lines. Thus four lines were further maintained on mass selection basis. Individually multiple feather chromatism, dull bluish shanks, pink skin, single comb and indigenous fowl body conformation were given preference. Light brown feathered growers were discarded and solid black plumaged chicks were restricted to about ten percent. Intense mating within lines was carried out to produce 6000-8000 chicks from 30-34 sires and 300-360 dams in each generation.

The cross between KM X KG (Satpuda-Desi) was the commercial synthetic hybrid for indigenous chicken meat market. The cross Km x KB (Satpuda-SPK hybrid) was for the egg production under scavenging raising. Inclusion of the indigenous non-descript genome in the synthesis of sire lines imparted variable plumage colour patterns, dull shanks and single comb. Fourth generation onwards birds had multicoloured plumage.

Eight Generation Production Performance of Lines					
Bird		Sire		Dam	
Variable		KM	Km	KB	KG
Average Body Weight (kg)	50 days	1.18	0.98	0.89	0.77
	Adult Male	3.20	2.51	2.58	2.24
	Adult Female	2.59	2.01	1.98	1.80
Egg Production	68 weeks	161	184	214	232
	50 weeks	59.2	56.4	52.1	50.1
<i>Data Based on Sample Weighing and Group Recording</i>					

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**Yashwant Agritech PVT LTD** is a breeding farm and hatchery unit engaged, for the last eight years, in developing a breed useful for small farmers and backyard poultry units. The company has developed "Satpuda Desi" breed under expert guidance from Dr A.G. Khan (Phd, Retired Professor, Jabalpur)

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## About this Good Practice Note

More than 40,000 households have benefitted from rearing Satpuda birds bred by a Private Hatchery –Yashwant Agritech Pvt Ltd Jalgaon, in a span of 9 years. It has not only withstood the Bird flu outbreak in 2006, but has grown steadily to produce 14,00,000 DOC per annum. It has provided a means of complementary livelihood to marginal farmers and a source of supplementary income to women backyard poultry rearers in the states of Maharashtra, Madhya Pradesh, Gujarat and Rajasthan. Best practices like after sales services in form of free advisory services, knowledge exchange through informal meetings and marketing support has enhanced incomes of the rearers and led to community empowerment as well.

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