



## RESIDENTIAL WORKSHOP & TRAINING PROGRAMME

# *Giri Gram Takniki Park: an integrated backyard poultry farming model*



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Senior Scientist,  
ICAR-Central Avian Research institute,  
Bareilly.



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**Introduction**

**Need of innovative farming, Welfare challenge ??**

**Breeds**

**Cage free housing systems**

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**Policy support & success stories**

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**Questions**

## Major Highlights of Poultry Sector in India

India ranks 2<sup>nd</sup> globally in egg production, with 142.77 billion eggs produced in 2023–24, a 3.17% rise from the previous year. Poultry meat production grew by 0.47% in 2024 over 2023.



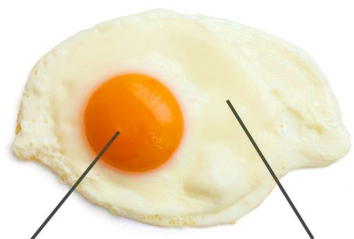
Poultry specifically accounts for about 1% of the national GDP and 12.5% of the livestock GDP.



Over 6 million people



### Egg Nutrition



#### Yolk

Fat	4.5 g
Sat. Fat	1.6 g
Cholesterol	184 mg
Carbohydrates	0.5 g
Protein	2.5 g

#### White

Fat	0 g
Sat. Fat	0 g
Cholesterol	0 mg
Carbohydrates	0 g
Protein	4 g

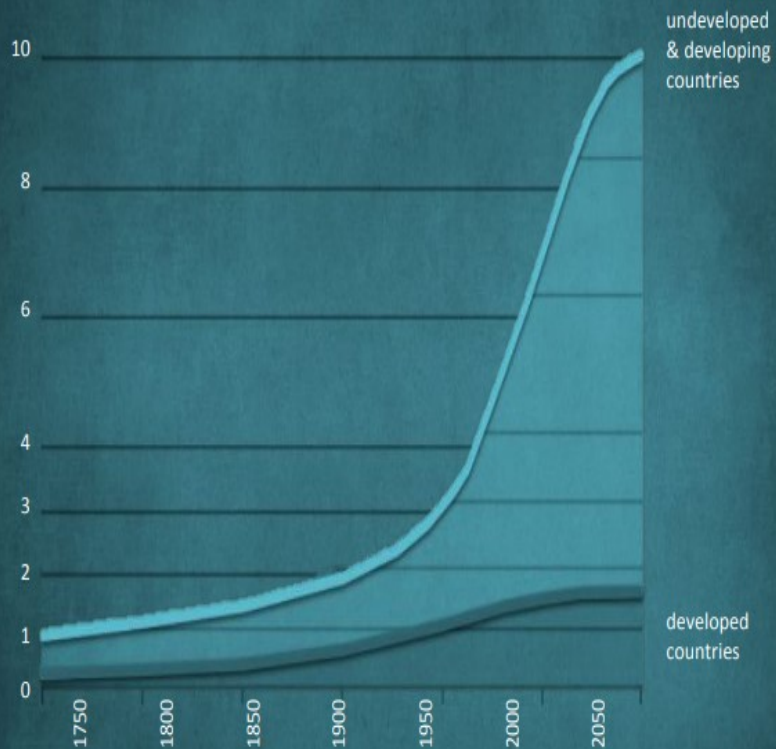
Poultry population is 851.81 million, showing a 16.8% increase since the 2012 Livestock Census.



Function food, Low processing levels (6%), rising feed costs (60-70% of production cost) etc.



## Global population growth



Source: UNEP/GRID-Arendal, 2005

## A planet under pressure: food

Over the next 40 years, we'll need to produce as much food as we have in the last 8,000 years of agriculture.



Source: Living Planet Report 2014. WWF in collaboration with Global Footprint Network, Water Footprint Network and ZSL Living Conservation

Mr. Pankaj Jain with Ms. Inderjeet  
Sidhu and Mr. Saksham Bhayana,  
Advs. for Intervener, NECC.

**CORAM:**  
**HON'BLE THE CHIEF JUSTICE**  
**HON'BLE MR. JUSTICE V. KAMESWAR RAO**

**ORDER**  
**05.09.2018**

%

In compliance with the order passed on 29.08.2018  
representing the Union of India prays for six months  
draft rules after holding consultation with all the stakeholders, we are  
considered view that the Union of India has been granted sufficient time to  
finalize the rules. More than a year has passed and till date the rule has not  
been finalized. We grant them six weeks' time to take steps for discussion  
with the stakeholders and come back to us with the developments that have  
taken place in the matter of formulation of the statutory rule.

List on 31.10.2018.

In the meanwhile, we request the learned counsel representing the  
petitioners to suggest to us alternate means that can be employed for caging

In the meanwhile, we request the learned counsel representing the  
petitioners to suggest to us alternate means that can be employed for caging  
of the birds in question in case the Union of India does not come out with  
the statutory regulation within a reasonable period of time. The petitioners  
are granted time till the next date to give alternate suggestions, ways and  
means to prevent caging of the birds in the battery operated cages as is being  
done as on date. That apart, we direct the Union of India to ensure that  
henceforth no new poultry farms or organizations indulge in using the

W.P.(C) 9056/2016 & connected matters

Page 3 of 4

**Welfare**

cages. In case we find after six weeks that even now  
battery cages are being permitted use, we may consider passing a  
prohibitory order on the next date with regard to preventing any battery  
operated cages for use in the future.

**CHIEF JUSTICE**

**V. KAMESWAR RAO, J**

**SEPTEMBER 05, 2018**  
kks

- In recent years, the global agricultural landscape has witnessed a paradigm *shift towards more sustainable and ethical practices*
- Notable transformation in egg production industry- Humane alternatives Vs Traditional system
- Growth of Country - More Purchase Power – More Empathy
- Cage-free farming has emerged as a promising path, both in favour of egg production and enhancing animal welfare (Dawkins, M. S., 2017)
- Poultry population is 851.81 (20<sup>th</sup> census) , 81% from commercial and 19% from backyard farming

# The Five Freedoms

(Farm Animal Welfare Council 1979)

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1. Freedom from hunger and thirst
2. Freedom from discomfort
3. Freedom from pain
4. Freedom to express normal behaviour
5. Freedom from fear and distress



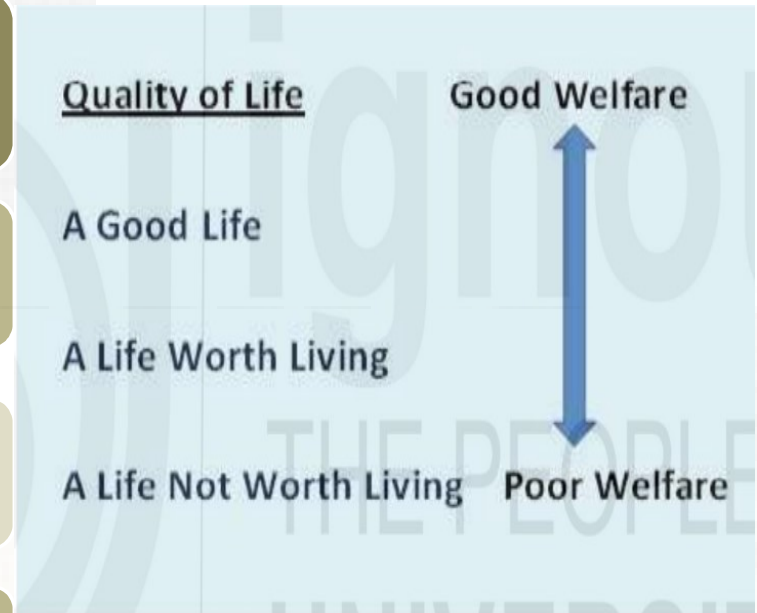
## Why should we concerned about animal welfare ?

Ethical / moral concerns about the lives of animals: animals are sentient.

Human health and animal products quality

Environmental and biodiversity concerns???

Trading and marketing of animal products.



(Doutor et, al 2016) 'Animal Welfare Concepts and Strategy for Poultry Production: A Review'



SCHOOL OF SUSTAINABLE  
FOOD SYSTEMS

**AAETI**



In Europe Leading corporations, including **Unilever, Nestle and Marriott**, are committed to sourcing only **cage-free eggs by 2025**,

## Global Food Partners and India's CFFRPPA announce partnership to support transition to cage-free egg production

Global Food Partners & India's Cage-free and Free-range Poultry Producers Association sign exclusive partnership agreement

16 February 2023 2 minute read By: Global Food Partners Asia



Global food partners (GFP) –India's Cage-free and Free-range Poultry Producers Association (CFFRPPA) -

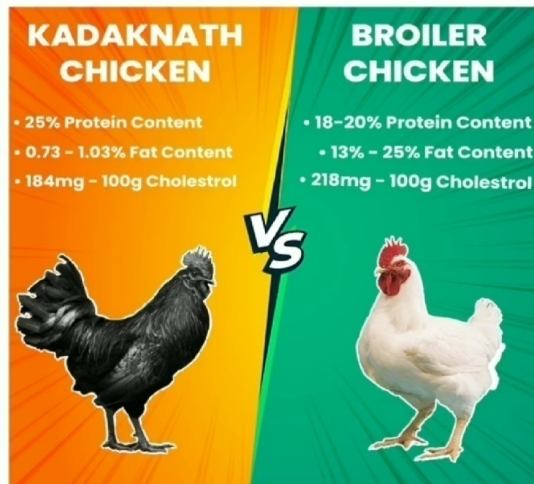
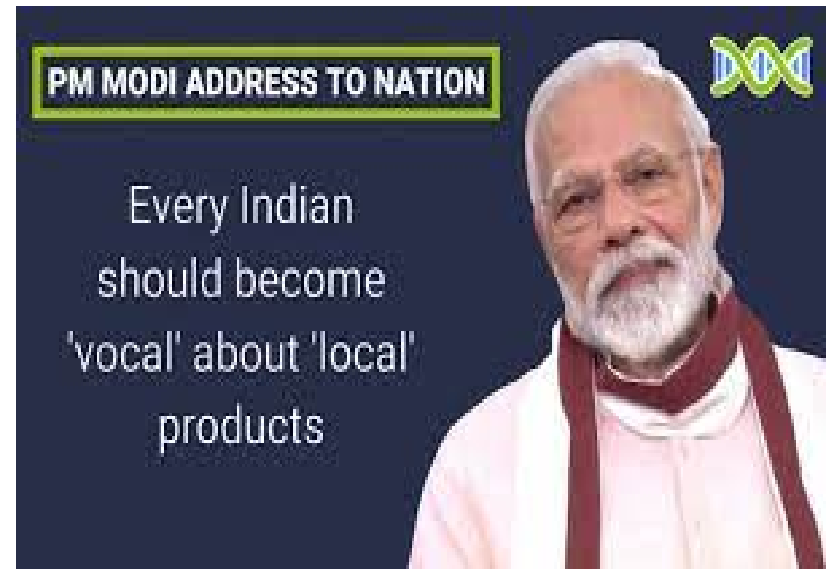
# GLOBAL FOOD PARTNERS

## India's first brand of free range eggs ensures humane treatment of the birds

Mullipatti-based Happy Hens sells the country's first brand of free range eggs that ensure the birds are treated more humanely and minus the antibiotics

March 15, 2018 05:02 pm | Updated March 16, 2018 03:29 pm IST





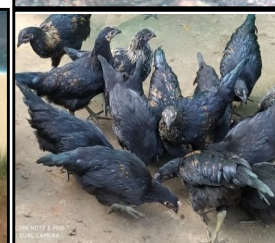
## Development of Backyard poultry based integrated farming system

- ✓ Farming model integrating improved Kadaknath and Aseel, moringa, insects/vermi-culture, fodder legumes and vegetables etc. under low input regime developed.
- ✓ **Green Eggs** can fetch better price. **Benefit cost ratio: 2.2:1**. Being adopted by farmers



- **Housing** : 6 huts (20ft x 15 ft) f
- **Birds** : 3958 birds (Kadaknath, Asheel Peela, CARI-Shyama, Saloni & CARI-Nirbheek)
- **Moringa plants** : (PKM-1 variety), planted : 200 (approx.)
- **Vermi-composting pits** : 05 (LBH: 10m x 0.9m x 0.3m)
- **Maggot Production Unit** : 04 (Bins) + 04 ground pits
- **Fodder production area** : 0.4 acre (Berseem and cowpea planted)
- **Production:** : Daily egg production: 2256 (approx.)

## Giri Gram Technology Park)



**Commercial hybrids/varieties - Dual purpose****CARI NIRBHEEK**

**20-wk Body wt-**  
**Males: 1850 g**  
**Females: 1350 g**  
**AEP: 198 egg**

**CARI SHYAMA**

**20-wk Body wt-**  
**Males: 1460 g**  
**Females: 1120 g**  
**AEP: 210 egg**

**CARI GRACY  
(N X CR)**

**20-Week body wt-1415 g**  
**Egg Prod. - 220-230**

**CARIBRO  
SAMRUDHI**

**1324.66±27.51 in 12 weeks**  
**with & FCR 2.73±0.04.**

## Commercial hybrids/varieties available in Indian Market for dual purpose

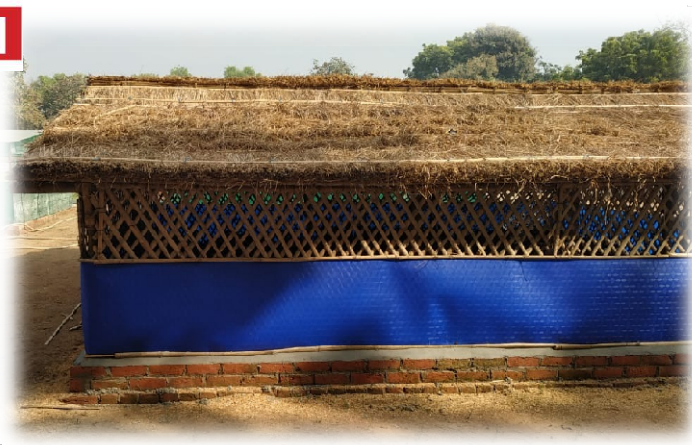
Breed developed	Developed at	Remarks
<b>SATPUDA DESAI</b>	Yashwant Argo Technologies, Jalgaon	Synthetic hybrid cross with multi-colour plumage and dull blue shank
<b>KUROILER</b>	Kegg farms, Delhi	Breeder crosses involving colour feathered broiler line and Broiler and Rohde Island Red/ New Hampshire. Became more popular.
<b>KALYANI DK</b>	Kalyani, Mumbai	Pioneered rural poultry breeding in private firms. Developed by Ananth A. Samanth with incorporation of desi germplasm
<b>RAINBOW ROOSTER</b>	Indbro Research and breeding farms, Pvt. Ltd. Hyderabad	Rainbow Rooster is a dual purpose, multi-coloured, low input bird. FCR- 2.23 with 1.3 kg of avg. body weight at 9 weeks and produces around 180 eggs/annum.

<b>ICAR-directorate Of Poultry Research</b>	<b>Vanaraja, Gramapriya, Srinidhi, Krishibro</b>
<b>Central Poultry Development Organisations</b>	<b>Kalinga Brown, Chabro, Kaveri</b>
<b>JNKVV, Jabalpur</b>	<b>Krishna-j, Narmada Nidhi</b>
<b>KVAFSU (AICRP), Mannuthy</b>	<b>Athulya, Gramasree, Gramalaxmi, Krishnapriya,</b>
<b>Bangalore (AICRP)</b>	<b>GIRIRAJA, Girirani</b>
<b>Poultry Research Station (PRS), TANUVAS,</b>	<b>Nandanam Broiler,, Nandanam, Chicke</b>



SCHOOL OF SUSTAINABLE  
FOOD SYSTEMS

**AAETI**



## Housing



REDMI NOTE 6 PRO  
MI DUAL CAMERA



*Poultry Welfare*





*Energy source- Greens, legumes & cereals*





SCHOOL OF SUSTAINABLE  
FOOD SYSTEMS

**AAETI**

## Protein Source



### *Showing Various Steps in Vermicomposting*

Collection of vegetable fruit, animal & agro-wastes



Segregation of non-biodegradable materials



Shredding of vegetables, fruit and agro-waste



Addition of microbial culture & cow dung



Prepare windrows in 90cm width and in 40 cm height



Watering & turning after one week (Summer)



Repeat watering and turning after two week (Summer)



Loading in vermitanks / bed / windrows



### ***Earthworm***

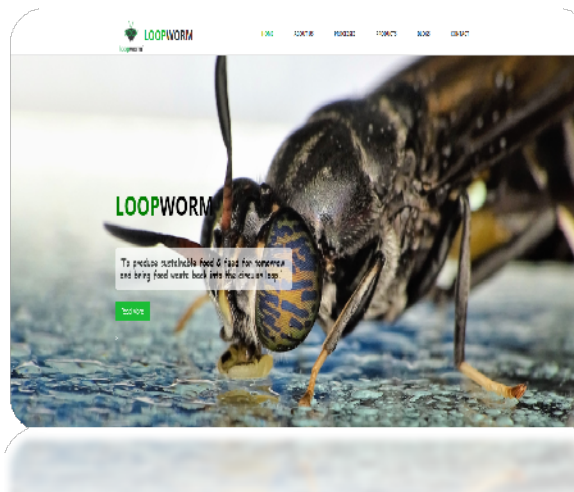
*On dry matter basis, 60-70%  
protein, 6-11% fat, 5-21%  
carbohydrates, and 2-3% minerals  
and vitamins like Niacin*



### Nutritional value and functional Properties of insects

- Dry matter: Insect Sps – 40% DM (black soldier fly – 26.8%)
- Insects contain between 30% and 70% protein on a dry matter basis.
- Crude fat- 11-35% depend upon species
- Crude fiber: Ranged from 0-86% on DMB (
- Total ash: Ranged from 3.5-14% |
- Minerals: Good source of trace minerals (Fe, Zn, Cu, Mn and Se)
- Black soldier fly --- highest Ca: P ratio (8.4)
- Rich source of AMPs (Anti microbial peptides)
- Insect AMPs are small, cationic proteins which exhibit activity against bacteria and/o fungi, as well as certain parasites and viruses.

## Black soldier fly



Sr No	Ingredients	Quantity (Kg)
1	Pre soaked maize mesh	10
2	Poultry Excreta	100
3	Molasses	5
4	Rotten potato	200
5	Water	15

### **Extra Feed management**

**Young Chicks: 0-8 weeks on starter ration.  
Grower and adult chicken: 40-50g/day during  
evening.**

**Scavenging during day time**

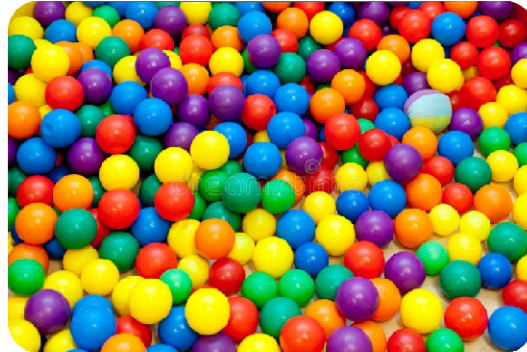
### **Home made ration: cheaper**

#### **1/3rd each from**

- Maize/rice/wheat/jowar/bajra
- Oil cake
- Wheat bran / rice polish
- 2.0% min. mix.
- 0.5% salt



## Intensive Native Bird Farm



### Environmental enrichment

- ✓ When hens can perform normal behaviours, this can reduce stress, improve immunity, and reduce injurious pecking and disease
- ✓ Examples of effective enrichment: hay bales, dry litter, scattered grains, pecking blocks
- ✓ Anything that is safe and interesting!





# Low Intensive





कृषि और प्रसंस्कृत खाद्य उत्पाद निर्यात विकास प्राधिकरण  
(वाणिज्य एवं उद्योग मंत्रालय, भारत सरकार)  
**Agricultural & Processed Food Products Export Development Authority**  
(Ministry of Commerce & Industry, Government of India)

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## APEDA PRODUCTS

- > [FLORICULTURE & SEEDS](#)
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- > [PROCESSED FOODS AND VEGETABLES](#)
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## ONLINE SERVICES

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## ORGANIC PRODUCTS



### NATIONAL PROGRAMME FOR ORGANIC PRODUCTION (NPOP)

[MORE](#)

Organic products are grown under a system of agriculture without the use of chemical fertilizers and pesticides with an environmentally and socially responsible approach. This is a method of farming that works at grass root level preserving the reproductive and regenerative capacity of the soil, good plant nutrition, and sound soil management, produces nutritious food rich in vitality which has resistance to diseases.

India is bestowed with lot of potential to produce all varieties of organic products due to its various agro climatic conditions. In several parts of the country, the inherited tradition of organic farming is an added advantage. This holds promise for the organic producers to tap the market which is growing steadily in the domestic and export sector.

As per the available statistics, India's rank 8th in terms of World's Organic Agricultural land and 1st in terms of total number of producers as per 2020 data (Source: FIBL & IFOAM Year Book, 2020).

The APEDA, Ministry of Commerce & Industries, Government of India is implementing the National Programme for Organic Production (NPOP). The programme involves the accreditation of Certification Bodies, standards for organic production, promotion of organic farming and marketing etc. The NPOP standards for production and accreditation system have been recognized by European Commission and Switzerland for unprocessed plant products as equivalent to their country standards. Similarly, USDA has recognized NPOP conformity assessment procedures of accreditation as equivalent to that of NOP of US. With these recognitions, Indian organic products duly certified by the accredited certification bodies of India

1 new

## Certification

## d. Value Addition : Innovative Products Technologies

### CARI Chicken Meat Baddi\*

- Replacement of soy protein.
- Nutririch, ready to cook
- >4 months shelf life.



### CARI Egg Peda\*

Sweet, delicious and nutritious produce with 28% protein



### Sweet Egg Sausages\*

For the first time, the Institute developed sweet-egg-dish



### Egg Kulfi\*

- Extended product of egg rasamalai, sweetened milk yet proteinaceous (12%)
- 60 days at -20 °C



### CARI Low Sugar Egg Biscuit\*

- Extended product of egg rasamalai, sweetened milk yet proteinaceous (12%)
- 60 days at -20 °C



\*

## d. Value Addition : Innovative Products Technologies

### Turkey Meat Breast Fillets\*

- Replacement of soy protein.



### CARI Multigrain Egg Biscuits\*

Sweet, delicious and nutritious produce with 28% protein



### Chicken Meat Seekh Kabab\*

For the first ti

### CARI Oats Egg Biscuits\*

Sweet, delicious and nutritious produce with 28% protein



### Bone in Chicken Pickle

- Extended product of egg rasamalai, sweetened milk yet proteinaceous (12%)
- 60 days at -20 °C



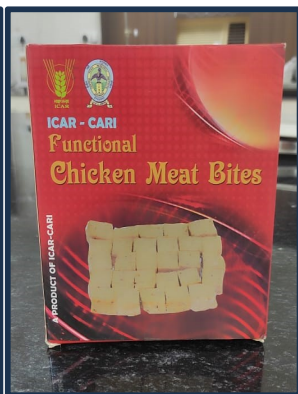
### CARI Egg Rasmalai\*

- Extended product of egg rasamalai, sweetened milk yet proteinaceous (12%)
- 60 days at -20 °C

\*



## CARI Initiative



उत्पादनांतर प्रौद्योगिकी प्रभाग  
उत्पाद मूल्य सूची

ऐग पेड़ा रु. 390 प्रति किग्रा	चिकिन मीट बडी रु. 350 प्रति किग्रा	ऐग सॉसेजेज रु. 250 प्रति किग्रा
ऐग सब्जी मलाई रु. 500 प्रति किग्रा	ऐग रसमलाई रु. 500 प्रति किग्रा	बटेर के अण्डे का अचार रु. 40 प्रति 10 नग
मल्टीग्रेन ऐग बिस्कुट रु. 40 प्रति 10 नग	चिकिन मीट बाइस्कुट्स रु. 130 प्रति 200 ग्राम	चिकिन मीट सॉसेजेज रु. 150 प्रति 200 ग्राम

भा.क.अ.प. - केन्द्रीय पक्षी अनुसंधान संस्थान  
इण्डियन नगर - 243122, बरेली (उ.प्र.)  
श्री राकेश जैसवाल: 6370248632 / श्री प्रवेन्द्र कुमार: 8923554412 / carisupply01@gmail.com  
ISO 9001:2008

## *Mr. Manjunath, Happy Hens, Bengaluru (2010)*



*What*  
IS FREE RANGE FARMS?



We know how important it is to keep our girls happy, because the happier the hen the healthier the eggs it lays. Our girls live in organically maintained pastures which is a good source for nutritious plants, seeds, legumes etc. We also provide our girls with a well-balanced diet, including rich flax seed cakes & 100% organic herbs. Happy Hens eggs is rich in **Protein, Omega 3 and Carotenoids**.



Our eggs are quality tested in machines. Bright orangish and upright yolk around a firm albumin is guaranteed. The shells are strong and free from exterior damage. We have three variants: Grade AA, Grade A and Grade B. They are graded based on weight only. At happy Hens farm we place a lot of importance on delivering fresh eggs. They are packed on the third day from date of laying. So you can be assured of fresh eggs through the week.



***Integration of Free range***  
***1000-2000 capacity farms***  
***(marginal farmers only)***  
***Cost of production- 6.50 rupees***  
***Market cost- from 12 to 25***  
***rupees per egg***



**High level of  
back ward  
integration**

## National Small Poultry Development Trust

Head Quarter: Bhopal, Madhya Pradesh

Ownership: Public Charitable Trust for spearheading smallholder poultry farming model

Year of Registration: 2009 with Registered office located in the State of Delhi

Over 11,000 women poultry producers work under aegis of the Trust

25 producers organisations (registered as Cooperative society/Producer Company)

3 state level federations (in MP, Jharkhand and Assam)

A Team of 50 dedicated professionals from Veterinary and Management backgrounds

In FY 2016-17:

27,646.29 metric ton live birds sold

Producers income: over 50 Crs

Sales turnover: 359.53 Crs

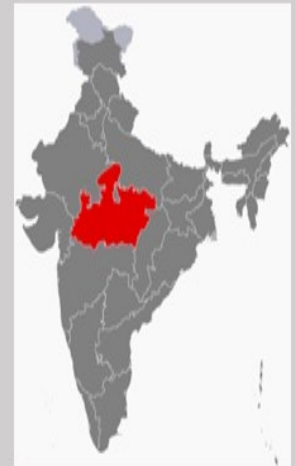
Market leaders in live birds segment: Madhya Pradesh, Jharkhand

High level of back ward integration:-

- 3 well-equipped hatcheries producing 11.0 lacs DOCs per month, another 3 under construction.
- 80,000 birds modern Parent Farm at Itarsi (MP), another 30,000 capacity farm is under construction in Jharkhand.
- Over 7,000 MT of poultry feed produced monthly for in-house consumption
- Modern Feed Mills at State Level Federation producing Concentrate Feed for Cooperatives
- Single window procurement system

## National Small Poultry Development trust

- 11000 women work under trust.
- 25 producer societies or organizations.
- 3 state level federations.
- 28000 Mt live bird sold during 2016-17.
- 8 million € income for trust.
- 45 million € turnover during 2016-17.
- Operated in tribal areas of Madhya Pradesh in India





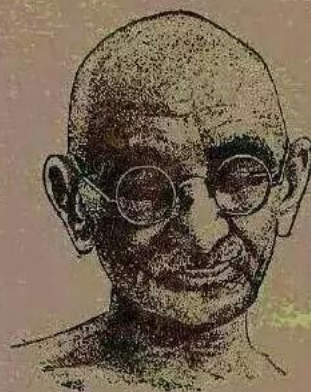
**Kunti Dhurve** one of our proud poultry producer & the president of kesla poultry society is presenting the Small holder poultry model of NSPDT in front of PM Narendra Modi in Krishi unnati Mela, New Delhi

## Summary

- ✓ Animal welfare science has evolved to acknowledge the importance of positive states – **not just the absence or 'freedom' from negative**
- ✓ Cage-free systems have potential for success in Asia - if **designed and managed well**
- ✓ **Mortality declines** with increasing experience
- ✓ **Support is needed** particularly in training to improve farm operations & sales, and particularly from the government
- ✓ **Need to build the capacity of the region** to ensure the successful adoption and maintenance of cage-free systems



*Thank you.*  
*TSE*



#### THE EGG - A VEGETARIAN FOOD

"Milk is an animal product and cannot by any means be included in a strict vegetarian diet. It serves the purpose of meat to a very large extent. In medical language it is classified as animal food. A layman does not consider milk to be animal food. On the other hand, eggs are regarded by the layman as a flesh food. In reality, they are not. Nowadays sterile eggs are also produced. The hen is not allowed to see the cock and yet it lays eggs. A sterile egg never develops into a chick. Therefore, he who can take milk should have no objection to taking sterile eggs."

— MAHATMA GANDHI

HOPE