

INDIGENOUS & LOW INPUT TECHNOLOGY CHICKEN

Class -Used to designate a group of birds - developed in certain regions or geographical areas. They are American, Asiatic, Mediterranean and English.

Breed - refers to an established group of birds within a species related by breeding, possessing a distinctive shape, conformation, plumage colour, comb type, general body weight and breeds true. Ex. Aseel, Rhode Island Red, Leghorn, Cornish, etc.

Variety- used to sub-classify breeds. There may be many varieties within a breed differentiated by plumage colour, pattern and comb type Ex. White Leghorn, Black Leghorn, Brown Leghorn, Barred Plymouth Rock etc.

Strain - Sub classifications of a breed. Normally a strain is named after the person who has evolved them or it can also be named after the institution where it is developed. They are developed duly giving importance to certain specific traits like egg production, early maturity, better feed efficiency, egg weight etc. Ex. Meyer strain of White Leghorn, Forsgate strain of White Leghorn, Sterling strain of Rhode Island Red.

Lines - Sub classes of a strain developed such that the gene(s) responsible for a particular trait is fixed so as to be utilized for production of commercial hybrids.

CHARACTERISTICS OF INDIGENOUS CHICKEN

- Acceptability of the coloured desi bird by the landless labourers or marginal farmers.
- Use of broodiness for hatching the chicks.
- Capability of self-defense from predators due to its alertness, light body weight longer shank length, camouflagic characters and aggressiveness.
- Can thrive well under adverse environments like poor housing, poor management and poor feeding.
- Indigenous birds are comparatively disease resistant to protozoon and ecto-parasites.
- Have better adaptability to extreme climatic conditions prevailing in the country.
- They are comparatively hardier and need less health care than exotic birds.
- The meat from native fowl has significantly higher amino acid contents (arginine and lysine) than meat from exotic birds and is widely preferred especially because of their pigmentation, taste, leanness and suitability for special dishes and often fetches higher prices.
- The brown-shelled eggs of native fowl are rich in threonine and valine than farm eggs, have good flavour and fetch premium price.
- These birds are suitable for backyard farming .

1.Unique characteristics of indigenous breed

a.Hardiness

b.High resistance to common diseases

c.Heat tolerance

-Frizzled feathers

- naked neck

-dwarf

d. Fibriomelanosis

2. Low input-feed cost, shelter, management

Why to go for backyard poultry farming?

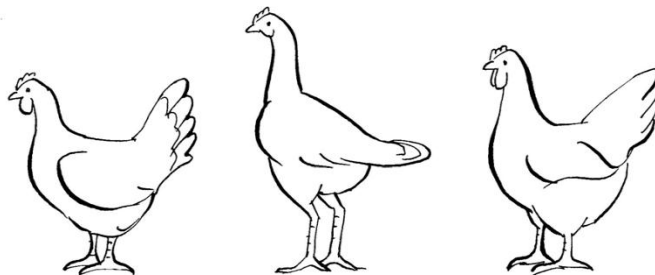
1. Low initial investment but higher economic return.
2. A unit can be started with as low as two chickens to a large flock.

3. Feed cost is negligible due to better utilization of agricultural by-products and leftover feed and grains.
4. Egg and birds can be sold in local market with high price, because there is a growing demand for local chicken.
5. The consumers are willing to pay higher prices for high quality desi chicken meat or egg.
6. Boost up in family income for better utilization of family labourers who are not able to perform other agricultural works like old family member or women.
7. Backyard poultry farming acts as an 'ATM', because as per family need the birds and eggs can be sold at anytime anywhere with cash in hand.
8. Quality of chicken and egg is better in terms of organic farming as the birds are raised in stress less environment with natural input.

UTILITY OF INDIGENOUS CHICKEN AS RURAL POULTRY

- *Most indigenous genotypes show broodiness, can hatch their own eggs.
- *Most indigenous breed hens have strong mothering instincts, they can fend their young under a scavenging management system.
- *The meat and eggs from indigenous genotypes are generally preferred to those of commercial layer and broiler not only in rural areas but also in urban areas.
- *Indigenous birds are more heat tolerant and resistant to bacterial and protozoan diseases and parasitic infestation than commercial broilers and layers
- *A generally higher hatching rate of approximately 80 percent.
- *High chick mortality 80-70 % in the first six weeks of age
- *Commercial broilers and layers perform far less under scavenging system.
- *Initial investment and operating cost in commercial poultry farming are prohibitive for most poor rural families.
- *Average egg production 40-60 eggs /hen/year
- *The preference in most communities for hatching the eggs produce the chicks, rather than eating the eggs.

Important institutions in India for poultry development
Directorate of Poultry Research (DPR), Hyderabad
Central Avian Research Institute (CARI), Izatnagar,



EGG TYPE MEAT TYPE DUAL PURPOSE

Breed name	Origin of name	utility	Plumage colour	Plumage pattern	Comb type	Skin colour	Shank colour	Egg shell colour	Egg weight	Age at first laying (month)
Ankaleshwar	Ankaleshwar district of Gujrat	Egg and meat	Yellow with black strips and white with black spots		Single and Rose	yellow	yellow	Light brown	34	6
Aseel		Game, fight and meat	Red, Black		Pea	yellow	yellow	Brown	41	6.7
Busra	Busrawal village (Gujrat or Busra tree (Maharashtra))	Meat and eggs	White mixed with black or brown	spotted	single	Pinkish	yellow	Light brown	31.5	6
Danki		Game, fight or meat	Brown	patchy	pea	Pinkish white	yellow	Brown	46	7.4
Daothigir	Thigir- plant in Assam	Meat and eggs	Black with white	spotted	single	Creamy and sometimes pinkish	yellow	Brown	44	6
Ghagus		Meat, eggs	brown	patchy	Pea/ single	white	yellow	Light brown	40	5.7
Hansli	Hans means swan	Game, meat	black	solid	pea	pink	yellow	Creamy or light brown	46.25	7.2
Harringhata Black	Harringhata block (WB)	Meat and eggs	black	Self black	single	white	grey	Light brown	36.5	5.6
kadaknath	Tribal origin	Meat, religious ceremony	Silver to gold			Dark grey	grey	Light brown	40	
Kalasthi	Sri Kalahasti Area (AP)	Meat, eggs	Bluish black	patchy	Pea/ single	White/pink	grey	Brown	43	7.1
Kashmir Favorolla		Meat, eggs	Black, green, red	Solid/patchy/ Barred/ spotted	single	white	yellow	Light brown	45.76	6.9
Kaunayen	Kauna-fight Yen-bird	Game, fight	black	Patchy in male and solid in females	pea	white	yellow	brown	42.4	
Mewari	Mewari region (Rajasthan)	Meat, eggs	brown	stripped	single	yellow	yellow	brown	52.8	6.8
Miri	Miri tribe (Assam)	Meat, eggs	White, Brown	solid	single	white	white	Light brown	42	6.9
Nicobari	Nicobar region	Meat, eggs	Brown	solid	single	yellow	white	White/ creamy	44	6.6
Punjab Brown	Punjab	Meat, eggs	Brown	Solid	single	white	yellow	brown	46	
Tellichery	Tellichery Place in Kerala	Meat, eggs	Black with bluish tinge	solid	Single	Grey	Blackish grey	Light brown	40	6

Low-Input Birds

Indian Council of Agriculture Research and Government of India have been working on birds which look like native chickens and suit the rural production systems. The birds are multi-coloured and are camouflaged from predators. The female parent is not broody and lays good number of eggs. The cost of the chick is low. They grow faster than the native chicken and attain 1kg weight in 40 to 45 days, depending on the feed given. If given good feed, they can grow faster. They also sustain low-quality feed and can survive under scavenging also. They can be reared under intensive poultry rearing system for four weeks until all vaccines are given. They can be shifted to semi-intensive or scavenging system later.

Comparison	Native chicken	Low input birds
Availability	Poor	Good
Genetic status	Variable	Standard
Mass rearing	Not done	Possible
Organic production	Possible	Possible
Taste	Good	Good
Meat quality	Tough	Medium
Risk of losses in production	Low	Low
Chick mortality	High	Low
Egg laying	60	140-160
Initial growth	Poor	Good
Chick cost	High	Low
Weight 4 weeks (gms)	<200 Gms	400
Weight 7 weeks(gms)	550	1450
Feed conversion efficiency	>3.0	2.0-2.2
No of days to get 1200 gms weight	Not Known	44

The germplasm developed for backyard farming has the following features :

- The colour pattern of the germplasm is more attractive than Desi hen. Because of coloured plumage these birds have camouflagic characters to protect themselves from predators.
- They can thrive well under adverse environmental conditions like poor housing, poor management and poor feeding.
- Broodiness is absent in the hens.
- Nutritional value, aroma and taste of eggs and meat from these birds are similar to Desi hen.
- Less fat content in meat of these birds makes it acceptable to even aged peoples.
- These birds can thrive well and perform better even in adverse environmental conditions.

- These birds are sturdy and resistant for most of the common poultry diseases because of its high immune competence.
- These birds can perform well with diets high in crude fiber. It has better feed efficiency even with diets containing low energy and protein diets based on common feed ingredients available in rural / tribal areas like rice bran, broken rice, small millets (like foxtain millet, finger millet, pearl millet etc.).
- Mortality is less than 2.0 % up to eight weeks of age.
- The eggs are heavier (55 to 63 g) and color of the eggs is brown or tinted, attractive and resembles that of Desi hen.
- Fertility and hatchability of their eggs are 87 and 80 %, respectively, and the farmer can get more number of chicks from a these birds compared to a Desi hen by using broody hen.
- It can perform better in backyard conditions by eating green grass and insects available in the fields.
- The performance of Desi hens can also be improved by crossing them with males of germplasm developed for backyard farming.

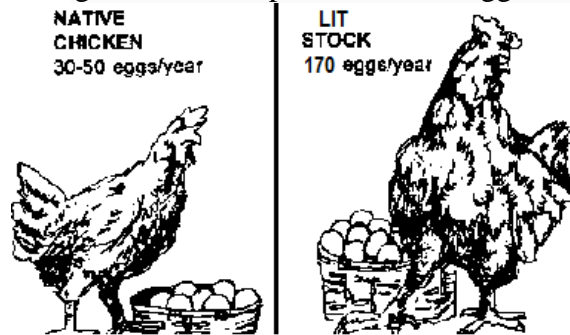
Coloured Chicken varieties-Backyard farming

- Nandanam Chicken-1 & Nandanam-Broiler II (TANUVAS, Chennai)
 - Giriraja (UAS, Bangalore),
 - Indian Broiler developed at Bangalore under AICRP on Poultry (IBB-83)
 - Swarnadhara (KVAFSU),
 - Coloured broilers-Raja II under AICRP on Poultry, Bangalore
 - B2 – Broiler developed by IPPM, TANUVAS
 - Vanaraja, Gramapriya and Krishi-bro (PDP, Hyderabad)
 - Krishna-J (Jabalpur farm varsity)
 - Grama Laxmi (Kerala Agricultural University) and Kalinga Brown (Bhubaneswar-based poultry organisation -- CPDO)
- Development of scavenging chicken at CARI, Izatnagar with native fowl base
- CARI NIRBHEEK
 - CARI SHYAMA
 - UPCARI
 - HITCARI
 - *Nandanam Chicken - I*
 - This strain was developed from the Sterling strain of Rhode Island Red breed. Nandanam chicken – I is a purebred having dark red plumage with medium sized body and is a dual-purpose breed
 - *Nandanam Broiler - II*
 - This is a coloured broiler chicken developed through sustained selection and breeding for 10 years in the synthetic broiler scheme.
 - Multi coloured feather pattern with good survivability under the backyard system are the advantages of this breed

Vanaraja

Vanaraja is a multi-coloured dual-purpose chicken variety developed at Project Directorate on Poultry, Hyderabad, for free range and rural backyard rearing. The

plumage colour and disease resistance of Vanaraja is similar to native chicken. Vanaraja grows fast and produces more eggs than native chicken



Gramapriya

Gramapriya is a multi-coloured egg purpose chicken variety developed for free range and rural backyard rearing. This bird lays more number of eggs than native chickens and eggs are tinted brown in colour and heavier than native chicken eggs. This bird has better adaptability to adverse conditions and better immunocompetence.

Cari Nirbheek

It is cross of Indian native breed Aseel with CARI Red. Birds are active, larger in built, pugnacious in nature with high stamina and majestic gait. They are able to save themselves from their predators due to its fighting characters and activeness and are adapted to all climatic zones of the country.

Cari Shyama

It is cross of Kadakanath breed of Indian native chicken with CARI Red. Birds have plumage of various colours dominated by black. The skin, beak, shank, toes and soles are dark gray colour. Most of the internal organs show the characteristics black pigmentation. Varying degree of blackish colouration is also found in skeletal muscles, tendons, nerves, meninges, brain and bone marrow.

Up cari

Indian native chicken with Frizzle plumage has been crossed with CARI Red for development of UPCARI birds. These multicoloured birds have single comb and medium body size. Presence of Frizzle plumage helps in fast heat dissipation due to which birds are better adapted to tropical climate especially for arid zones.

Hitcari

Indian native chicken with Naked neck plumage has been crossed with CARI Red for development of HITCARI birds which are adapted to tropical climate specially for hot and humid coastal region of the country.

List of Low-Input Technology birds eligible under National Livestock Mission implemented by the Department of Animal, Husbandry, Dairying & Fisheries, Government of India

S.#	Name of the organization	Type of stock
PUBLIC SECTOR ORGANIZATIONS		
1.	Central Poultry Development Organization and Training Institute (SR), Bangalore.	a) Chabro b) Kalinga brown c) Kaveri
2.	Central Poultry Development Organization(ER), Bhubaneswar.	Kalinga brown
3.	Central Poultry Development Organization(NR), Chandigarh	Chabro
4.	Central Poultry Development Organization(WR), Mumbai.	a) Kalinga brown (Kadakhnath stocks are also available)
5.	Project Directorate on Poultry, ICAR, Hyderabad	a) Gramapriya b) Vanaraja
6.	Central Avian Research Institute, Izatnagar	a) CARI GOLD b) Nirbheek c) Hitcari d) Cari-Debendra e) Upcari
7.	Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, Karnataka	a) Giriraja b) Girirani c) Swarnadhara
8.	Poultry Research Station, Nandanam, Chennai Tamil Nadu	Nandanam 99
9.	Kerala Veterinary University, Mannuthy	a) Gramalakshmi b) Gramashree c) Krishipriya
10.	Sri Venkateshwara Veterinary University, Rajendernagar, Hyderabad	Rajasri
PRIVATE SECTOR ORGANIZATIONS		
1.	Dr. Yashvant Agritech Pvt. Ltd, Jalgaon, Maharashtra	Satpuda-desi
2.	Indbro Research and Breeding Farm Pvt. Ltd., Hyderabad	Rainbow rooster
3.	Kegg Farms, New Delhi	Kuroiler
4.	Shipra Hatcheries, Patna, Bihar	Shipra

*This list may be updated by this Department as and when required and updated list will also be put up on the website of the Department <http://dahd.nic.in>

ECONOMIC TRAITS OF VARIOUS STRAINS DEVELOPED FOR RURAL POULTRY FARMING

Name	Type	Purpose	Institutions
<u>Giriraja</u>	Breed cross	Dual	Dept. of Poultry U.A.S., Bangalore
Swarnadhara	Breed cross	Egg	Dept. of Poultry, Bangalore KVAFSU ((B)
Vanaraja	Breed cross	Dual	P.D.P. Hyderabad
A.V.M	Breed cross	Meat	A.V.M.Coimbatore
Krishna.J	Synthetic	Egg	Jabalpur
Krishnapriya	Breed cross	Dual	Kerala
CARI-Gold	Breed cross	Dual	CARI, Izat Nagar
Croiler	Synthetic	Meat	KECG Delhi
B2	Synthetic	Meat	IPPM,TANUVAS
Nandanam IBB 83 RAJA II	Synthetic Synthetic Synthetic	Dual Dual Dual	IPPM,TANUVAS AICRP,Bangalore AICRP,Bangalore
SATPUDA-DESI	Synthetic	Dual	Yaswant Agritech Pvt Ltd.
SATPUDA-SPK	Synthetic		

Jharsim: A location specific rural poultry variety for Jharkhand

Jharsim is a dual purpose location specific poultry variety suitable for Jharkhand state. The variety is developed under All India Co-ordinated Research Project on Poultry Breeding, Birsa Agricultural University, Ranchi Centre.

Kamrupa: A dual purpose variety for free range farming in Assam

Kamrupa is a multi-coloured bird for rural poultry production developed under All India Coordinated Research Project on Poultry Breeding at Assam Agriculture University, Khanapara, Guwahati, Assam. It is three way cross developed using Assam local ecotype (25%), Coloured Broiler (25%) and Durham Red (50%) population.

Pratapdhan: Dual purpose coloured bird for Rajasthan

Pratapdhan is a dual purpose chicken variety to cater to the needs of rural poultry keepers of Rajasthan. It was developed as part of AICRP on Poultry Breeding by MPUAT, Udaipur. It resembles local birds of Rajasthan.

Krishibro :

The intensive commercial broiler production depends mostly on white plumage bird. Though the performance of these birds are extremely good , the acceptability of birds having multicoloured feather pattern better in rural areas due to aesthetic aspects, native look cultural and religious reasons.They are generally sold at a premium rate compared to commercial white broilers. Krishibro(**Directorate of Poultry Research, ICAR**) is a coloured chicken for commercial broiler production. Coloured plumage, high livability and better immunocompetence are positive characteristics that made the success of this bird.

LIT CHICKEN VARIETIES:

Central Poultry Breeding Farm ,Hesserghatta,Bengaluru

CHABRO -Rural Meat Type bird,Multi coloured Plumage,60 days body weight: 1.6 – 1.7 kg.
Fit for backyard farming

KAVERI -Egg type rural bird,Multi coloured plumage ,180 egg production,1.6 kg body weight
Good scavenging bird

ASEEL CROSS - Rural Dual type 110 days body weight: 1.2 kg 120 – 140 egg production
Good Scavenging, dominating bird Two colours – Kala (black) and Peela (red)

KALINGA BROWN-Cross of White leghorn and RIR Lays more than 200 brown eggs
Suitable for both backyard & intensive farming More chicken varieties from CARI

Comparative performance of Vanaraja, Gramapriya and Local chicken under backyard system of rearing

<i>Parameter</i>	<i>Performance</i>		
	Vanaraja	Gramapriya	Local chicken
Mortality up to 10 weeks	Less than 5%	Less than 5%	Less than 4%
Mortality up to 20 weeks	Less than 10%	Less than 12%	Less than 8%
Mortality during laying stage	Less than 12%	Less than 15%	Less than 10%
Average age at first lay (days)	152	145	184
Average body weight at first lay (g)	2.30	2.18	1.25
Average annual egg production (nos.)	171	178	60
Colour of egg	Tinted	Tinted	Tinted
Average Egg weight at 40th weeks (g)	51	49	41

Suggested LIT Birds for different states

Taken from National Action Plan for Egg & Poultry-2022, Govt. of India

Illustrative list of Low-Input Technology breed/ strains suitable for States/ UTs

S.N.	States	Birds suitable for rearing in the backyard
1	2	3
1	Andaman & N Is	Nicobari, Gramapriya, Vanaraja,
2	Andhra Pradesh	Gramapriya, Vanaraja, Srinidhi (new), Rajashri, Indbro(pvt), Kuroiler (pvt)
3	Arunachal Pradesh	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
4	Assam	Kamarupa (new), Kalinga Brown, Chabro, Nirbheek, Kuroiler (pvt),
5	Bihar	Jharsim (new), Shipra (pvt), Kuroiler (pvt)
6	Chandigarh	Chabro, Nirbheek, Kuroiler (pvt)
7	Chhatisgarh	Narmadanidhi (new), Satpuda Desi (pvt), Chhabro
8	Dadra&N Haveli	Satpuda Desi (pvt), Chhabro
9	Daman& Diu	Satpuda Desi (pvt), Chhabro
10	Goa	Satpuda Desi (pvt), Chhabro
11	Gujarat	Pratapdhan(new), Chhabro
12	Haryana	Chabro, Nirbheek, Kuroiler (pvt)
13	Himachal Pradesh	Chabro, Nirbheek, Kuroiler (pvt)
14	Jammu & Kashmir	Chabro, Nirbheek, Kuroiler (pvt)
15	Jharkhand	Jharsim(new), Shipra (pvt)
16	Karnataka	Giriraja, Girirani, Swarnadhara
17	Kerala	Nandanam 99, Giriraja, Girirani, Swarnadhara
18	Lakshadweep	Nandanam 99, Giriraja, Girirani, Swarnadhara
19	Madhya Pradesh	Narmadanidhi (new), Satpuda Desi (pvt), Chhabro
20	Maharashtra	Satpuda Desi (pvt), Chhabro
21	Manipur	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
22	Meghalaya	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
23	Mizoram	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
24	Nagaland	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
25	NCT of Delhi	Chabro, Kuroiler (pvt)
26	Odisha	Kalinga Brown
27	Paduchery	Nandanam 99, Giriraja, Girirani, Swarnadhara
28	Punjab	Chabro, Nirbheek, Kuroiler (pvt)
29	Rajasthan	Pratapdhan(new), Chhabro
30	Sikkim	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
31	Tamil Nadu	Nandanam 99
32	Telangana	Gramapriya, Vanaraja, Srinidhi (new), Rajashri
33	Tripura	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
34	Uttar Pradesh	Chabro, Nirbheek,
35	Uttarakhand	Chabro, Nirbheek,
36	West Bengal	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown

Specimen Questions

1. Discuss suitability of indigenous chicken as backyard poultry .
2. Discuss in brief the utility of LIT chicken as an important tool for development of commercial poultry in rural areas.
3. In which way LIT birds are better for rural poultry farming?
4. Name some LIT chicken to be used in West Bengal.
5. Discuss the indigenous chicken breed found in West Bengal.