

RESIDENTIAL WORKSHOP & TRAINING PROGRAMME

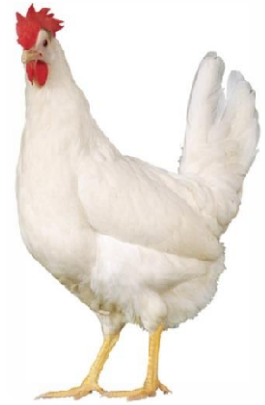
THE INDIAN POULTRY SECTOR

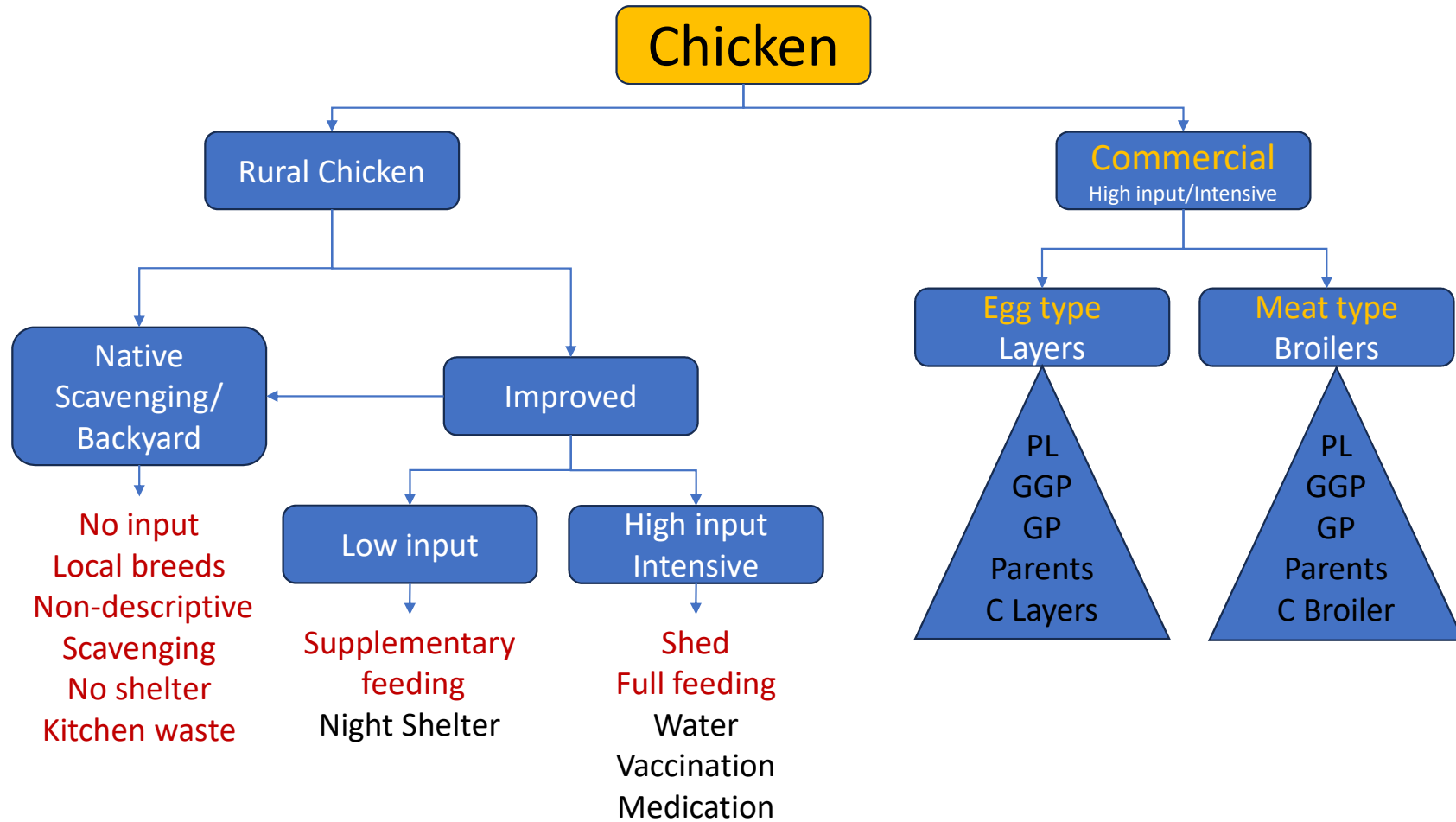
How to scale up preventive approaches to minimise antibiotic use



**Poultry breeds in India and
their role in reducing diseases:
current status, science
perspectives from AICRP on Poultry
Breeding**

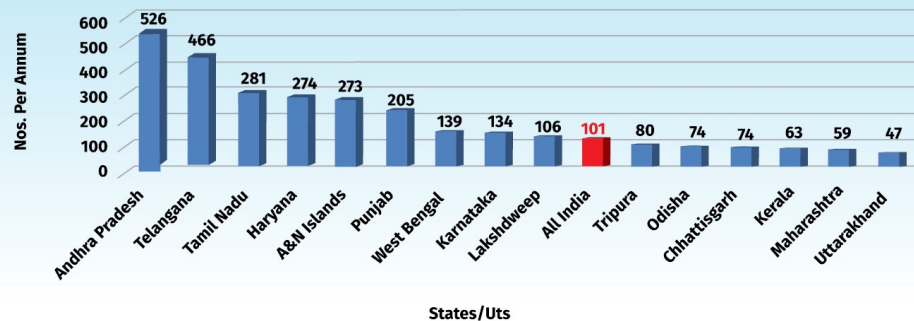
M R Reddy
**ICAR-Directorate of Poultry Research,
Hyderabad**





Egg and Chicken consumption

GRAPH 2.16: PER CAPITA AVAILABILITY* OF EGGS FOR THE YEAR 2022-23 OF STATES



*Based on Projected Human Population according to Population Census-2011

Egg production in India

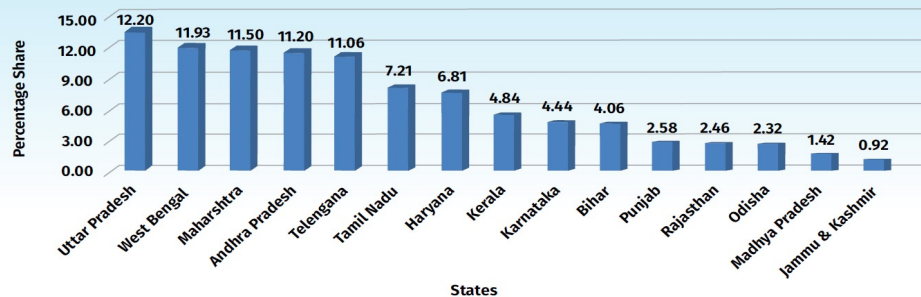
In 2022-23: 138.28 billion

Per capita availability: 105/year

Backyard egg production: 14.6%

2.3.4 STATE-WISE SHARE OF MEAT PRODUCTION DURING 2022-23

GRAPH 2.21: PERCENTAGE SHARE OF 15 MAJOR MEAT PRODUCING STATES IN 2022-23



Meat production in India

In 2022-23: 9.77 MT

Chicken meat: 5 MT

Per capita meat availability: 6.82/kg/year

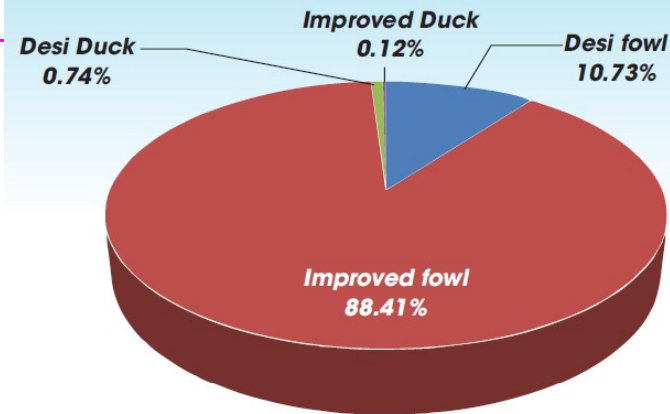
Per capita chicken meat: 3.5kg

ICMR recomm : Egg 180 & Meat – 10.8 kg in a year

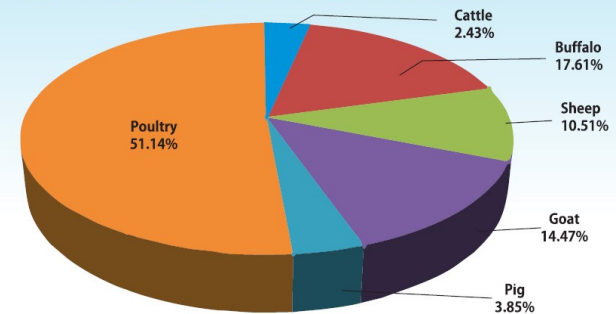
Present status of poultry production in India

- 2nd in World in egg production
(35.5 crore/day)
- 4th in Broiler production
(about 1 crore/day)
- Growth rate
 - Layers : 6-7%,
 - Broilers 5-6%
- Contribution to GDP –
 - Rs 2.3 lakh crore
- Employment: 30 million people

GRAPH 2.11 : SPECIES-WISE EGG CONTRIBUTION IN 2022-23

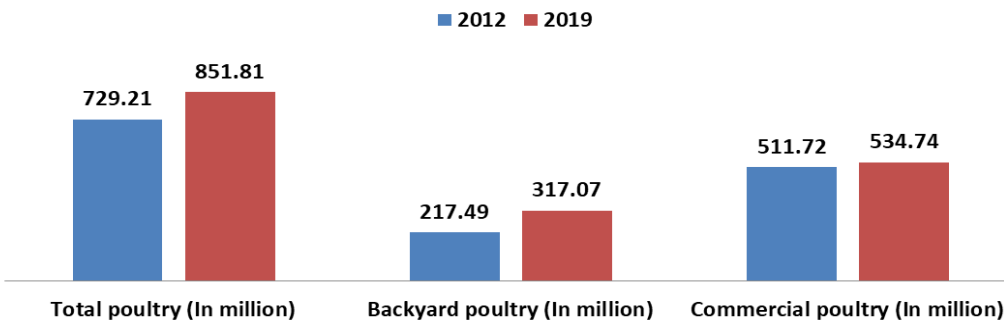


GRAPH 2.18 : SPECIES-WISE MEAT CONTRIBUTION IN 2022-23



Poultry Resources

Poultry population in India



	Population (In million) 2012	Population (In million) 2019	% growth
Total Poultry	729.21	851.81	16.81
Backyard poultry	217.49 (29.8%)	317.07 (37.22%)	45.78
Commercial Poultry	511.72 (70.2%)	534.74 (62.78%)	4.50

Poultry	2012	2019	
Fowls	692646	807894	16.6
Ducks	23539	33511	42.4
Turkeys & Others	13025	10405	-20.1
Total Poultry	729209	851810	16.8



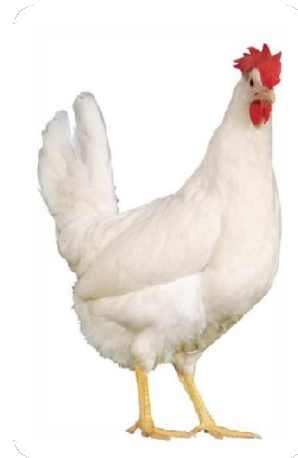
Commercial Chicken

LAYERS

Babcock
Bovans
Hy-Line

BROILER

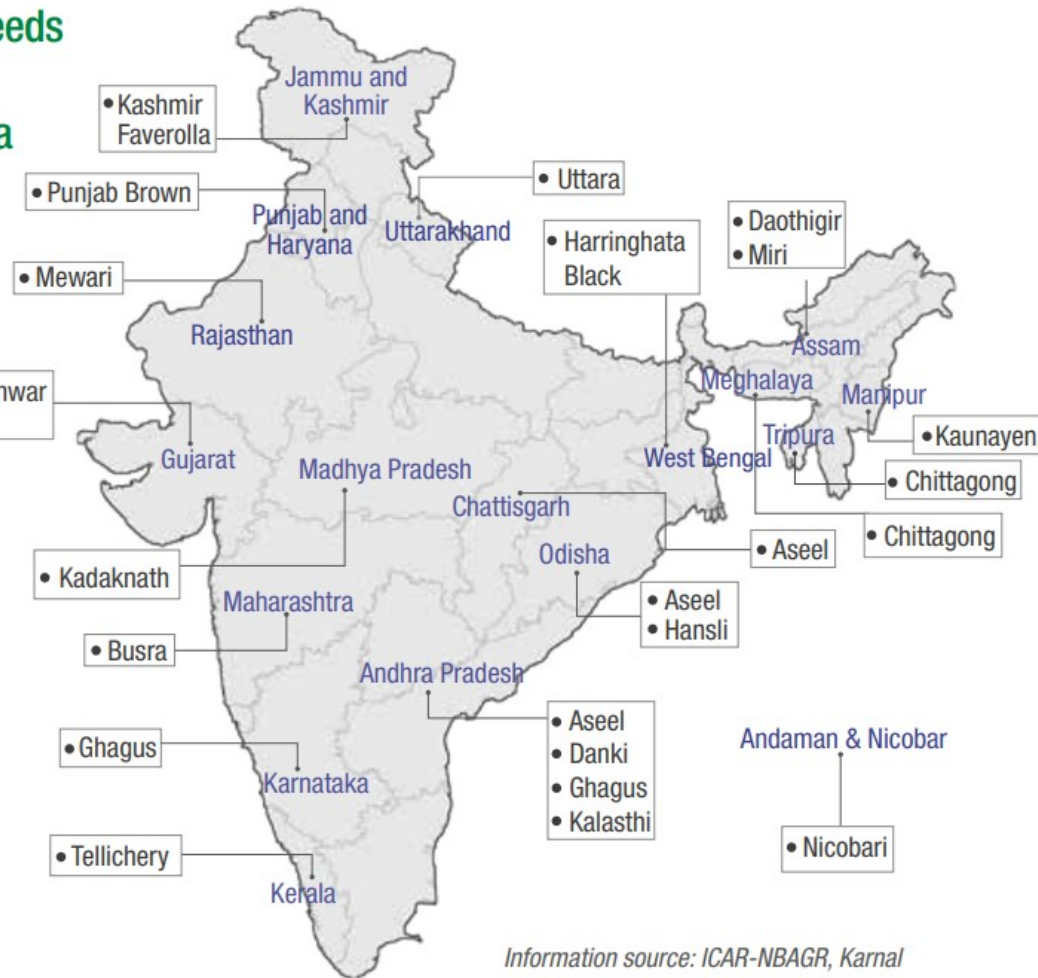
Cobb
Ross
Hubbard





Indigenous/native breeds that have evolved in different parts of India

In this system, flock size ranges from five to 50 birds raised under a traditional scavenging system **devoid of management practices**. Backyard chickens in India are generally the native/*desi* type (19 poultry breeds) with low egg and meat production potential. *Desi* chicken breeds grown under free range backyard conditions contribute about 10-12% of the total egg production in India.



1. Ankaleshwar
2. Aseel
3. Busra
4. Chittagong
5. Danki
6. Daothigir
7. Ghagus
8. Harringhata Black
9. Kadaknath
10. Kalasthi
11. Kashmir Favorolla
12. Miri
13. Nicobari
14. Punjab Brown
15. Tellichery
16. Mewari
17. Kaunayen
18. Hansli
19. Uttara
20. Aravali

Chicken BREEDS

1. Ankaleshwar
2. Aseel
3. Busra
4. Chittagong
5. Danki
6. Daothigir
7. Ghagus
8. Harringhata Black
9. Kadaknath
10. Kalasthi
11. Kashmir Favorolla
12. Miri
13. Nicobari
14. Punjab Brown
15. Tellichery
16. Mewari
17. Kaunayen
18. Hansli
19. Uttara
20. Non descriptive

Backyard Poultry

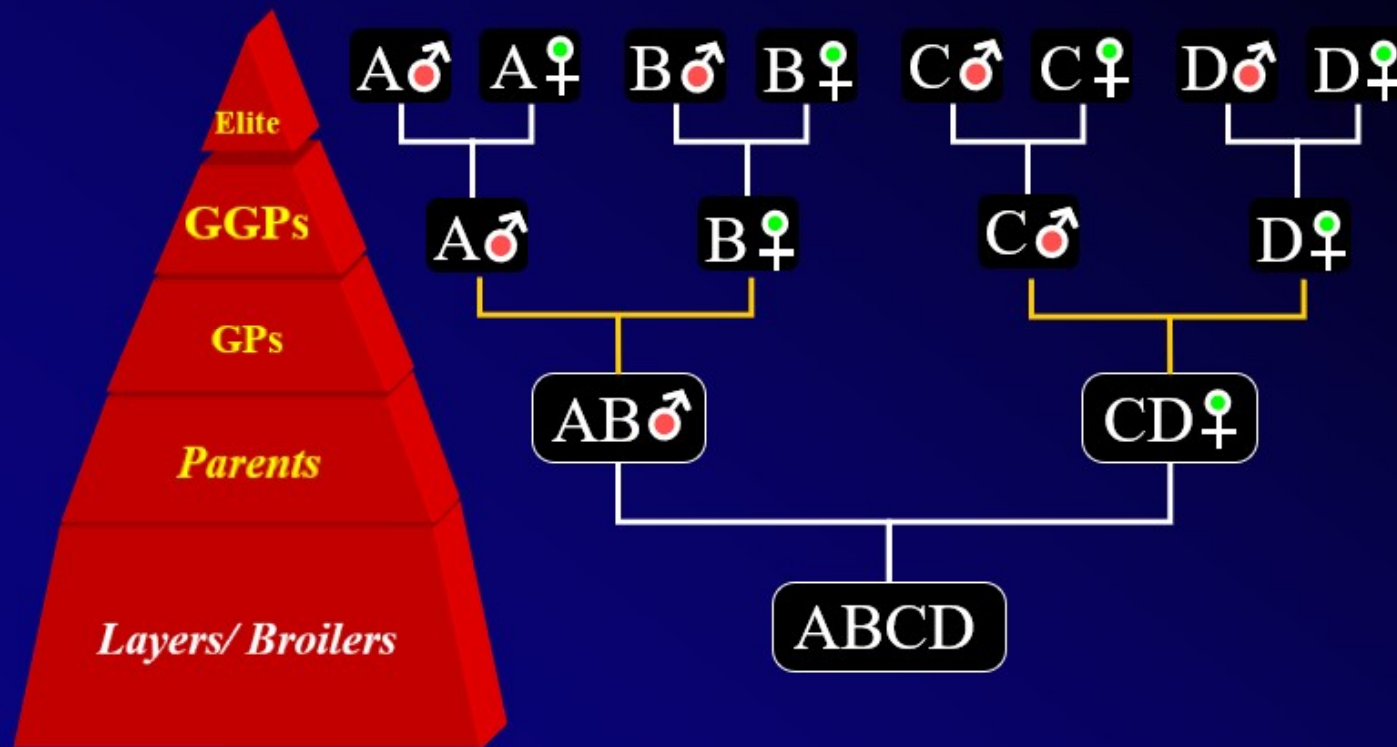


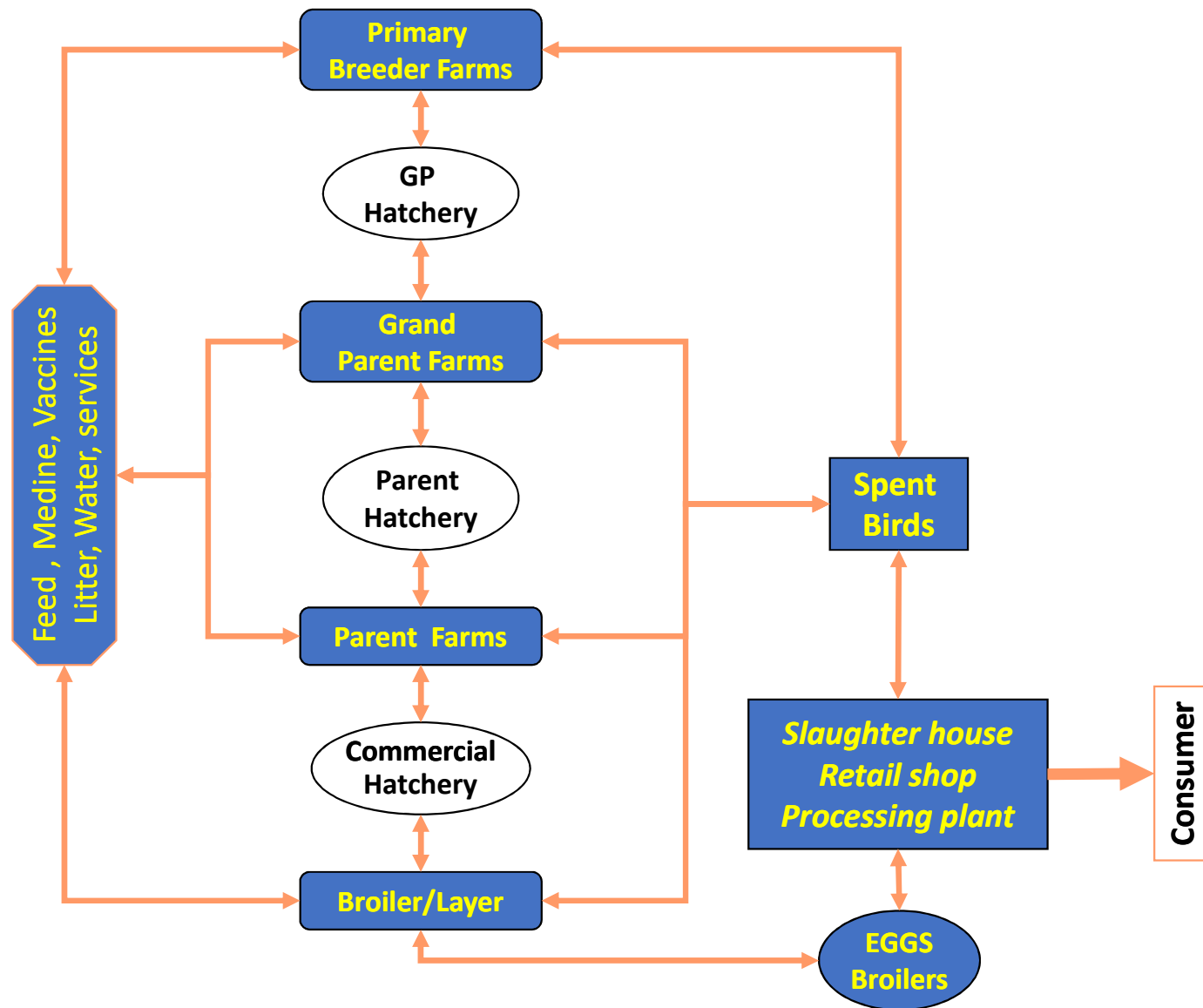
Scavenging
Free range
Confinement
Small scale

Improved Chicken VARIETIES

1. Giriraja
2. Vanaraja
3. Gramapriya
4. Srinidhi
5. Krishi-bro
6. Rajsri
7. Nandanam
8. Swarnadhara
9. Krishna-J
10. Jharsim
11. Kamrupa
12. Pratapdhan
13. Kroiler
14. Rainbow Rooster
15. Grama Laxmi
16. Kalinga Brown
17. CARI NIRBHEEK
18. CARI SHYAMA
19. UPCARI
20. HITCARI

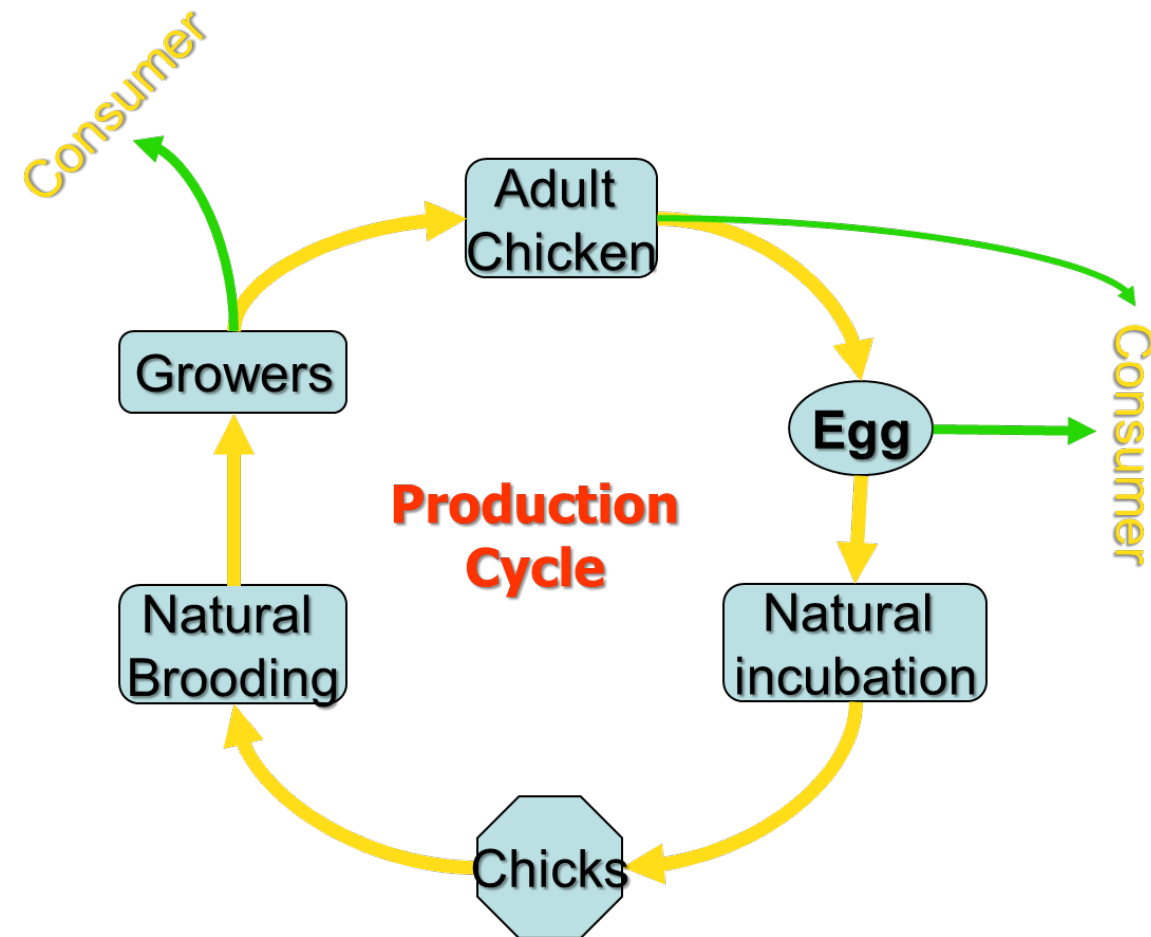
Structure of Poultry Industry

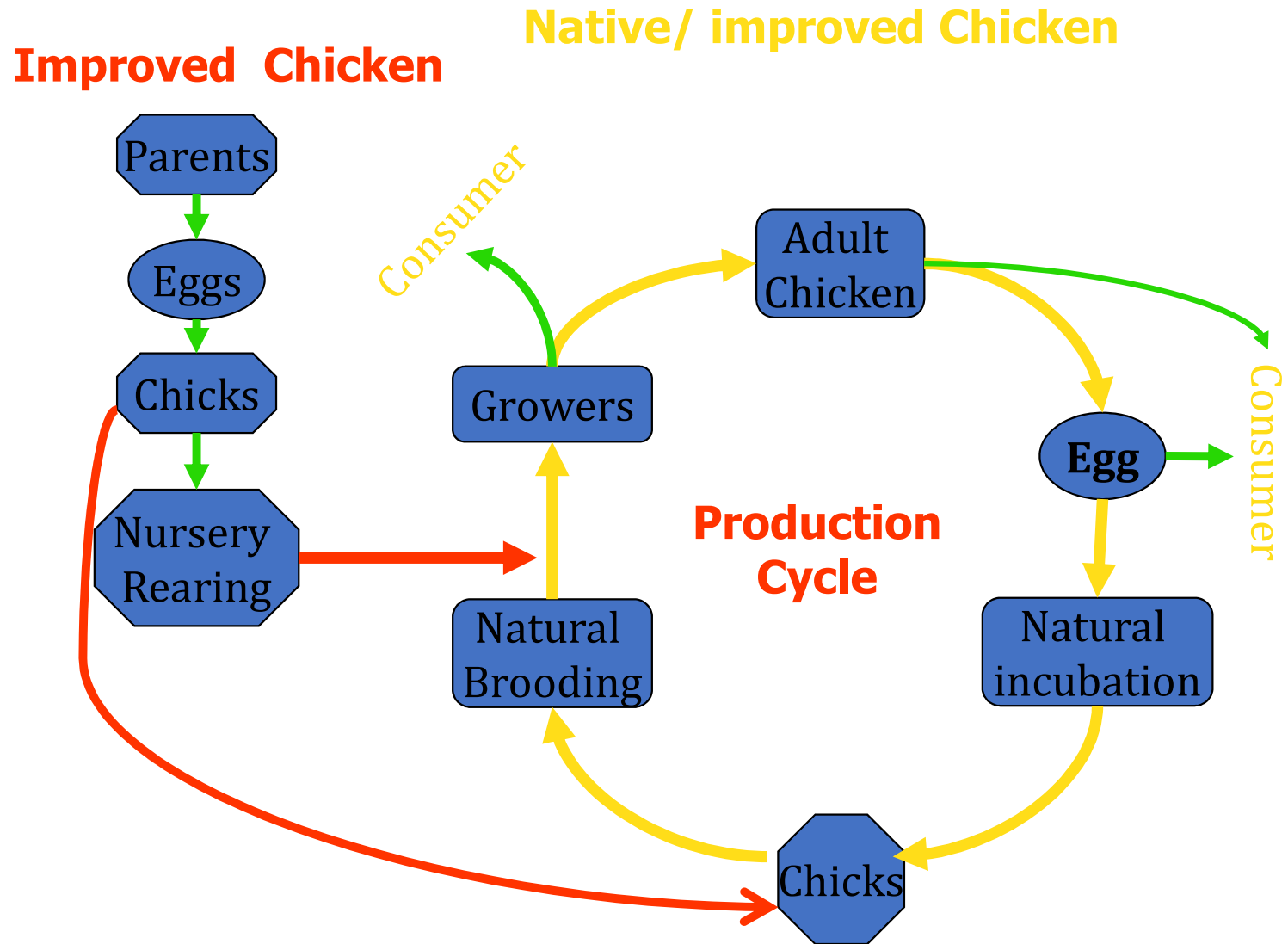




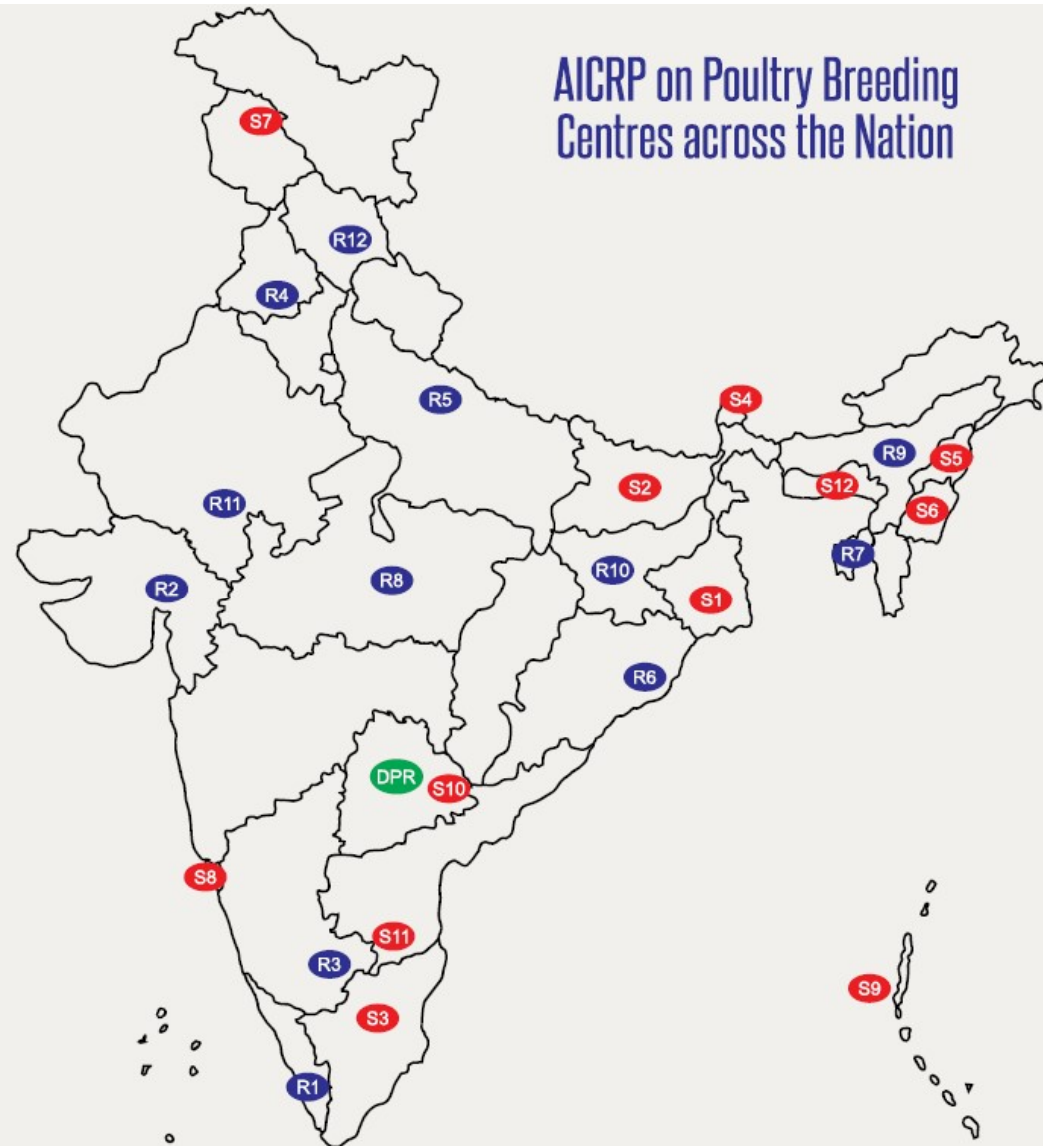
Back yard Poultry Production Cycle

(indigenous poultry, native poultry, scavenging poultry, village poultry, local poultry, traditional Poultry, free-range poultry)





AICRP on Poultry Breeding Centres across the Nation



AICRP on Poultry Breeding Poultry Seed project

24 centres

ICAR - DPR	
AICRP Centres (old)	AICRP Centres (2023 onwards) Former PSP Centres
R1 KVASU, Mannuthy	S1 WBUAFS, Kolkata
R2 AAU, Anand	S2 BASU, Patna
R3 KVAFSU, Bengaluru	S3 TANUVAS, Hosur
R4 GADVASU, Ludhiana	S4 ICAR-RCNEH, Gangtok
R5 ICAR-CARI, Izatnagar	S5 ICAR-RCNEH, Jharnapani
R6 OUAT, Bhubaneswar	S6 ICAR-RCNEH, Imphal
R7 ICAR-RCNEH, Agartala	S7 SKUAST, Srinagar
R8 NDVSU, Jabalpur	S8 ICAR-CCARI, Goa
R9 AAU, Guwahati	S9 ICAR-CIARI, Port Blair
R10 BAU, Ranchi	S10 PVNRTVU, Warangal
R11 MPUAT, Udaipur	S11 SVVU, Tirupati
R12 CSKHPKV, Palampur	S12 ICAR-RC for NEHR, Barapani

AICRP on Poultry Breeding

To develop location specific chicken varieties and their dissemination for village poultry

Conservation, improvement, characterization and application of indigenous and elite germplasm (layer and broiler)

Development of package of practices and entrepreneurships

Production and dissemination of quality poultry germplasm

Chicken germplasm at ICAR-DPR



Rural

PD-1

PD-2

PD-3

PD-4

PD-6

RC



Broiler

PB-1

PB-2

CB

NN

DW



Layer

IWH

IWI

IWK

IWD

IWF

LC



Native

Aseel

Kadaknath

Ghagus

Nicobari

17 pure line and 4 Native chicken

Significant Achievements

Commercial Varieties developed and released

Poultry for egg

- ILI-80 - CARI, Izatnagar
- ILM-90 (**Atulya**) - KVASU, Mannuthy
- ILR-90 - SVVU, Hyderabad

- Egg production IWP : 315 eggs/ y
- Egg weight - 53- 54g at 40 wk

Genetic improvement in pure lines



Trait	IWN		IWP	
	S1(1978-79)	S33 (2023-24)	S1(1978-79)	S33 (2023-24)
ASM, d	177±0.74	129±0.33	178±0.70	133±0.33
BW20, g	1162±5.30	960±2.50	1164±5.65	926±2.63
EP40, no	58±0.75	128±0.50	66±0.7	126±0.63
EP64, no	191±1.4 (S15)	262±1.28	202±0.75 (S15)	250±1.50
EP72 (HDEP), no		323		318

Significant Achievements

Poultry for Meat (Broiler)

Varieties

B-77 - CARI, Izatnagar
 IBL-80 - PAU, Ludhiana
 IBB-83 - UAS, Bangalore
 IBI-91 - CARI, Izatnagar

- Body weight at 6 wks- 1500-1700g
- FCR- 2-2.2
- Dressing% >72%

Trait	PB-1		PB-2	
	1977-78	2021-22	1977-78	2021-22
BW5, g	995	1241	1077	1152
FCR	2.7 (8 wks)	1.88 (5wks)	2.65 (8wks)	1.89 (5wks)
	CSML		CSFL	
	1977-78	2021-22	1977-78	2021-22
BW5, g	944	1243	928	1262

Significant Achievements

Pratapdhan, MPUAT, Udaipur
Kamrupa, AAU, Guwahati
Narmadahanidhi, NDVSU, Jabalpur
Jharsim, BAU, Ranchi
Himsamridhi, CSKHPKVV, Palampur
Tokbari, ICAR RC for NEH, Agartala

Mewari (Udaipur) and
Hansli (Bubhaneswar) Registered

Conservation and improvement
Kadaknath, Punjab Brown
Ghagus, Tellicherry, Ankleswar,
Daothigir



Popular Chicken varieties for Backyard/Rural Poultry Production

Vanaraja	Dual	DPR, Hyderabad
Gramapriya	Dual	DPR, Hyderabad
Srinidhi	Dual	DPR, Hyderabad
Vanashree	Dual	DPR, Hyderabad
Jharsim	Dual	AICRP, Ranchi
Kamrupa	Dual	AICRP, Assam
Pratapdhan	Dual	AICRP, Assam
Himsamridhi	Dual	AICRP, Palampur
Narmadanidhi	Dual	AICRP, Jabalpur
Giriraja	Dual	KVAFSU, Bangalore
Grirani	Dual	KVAFSU, Bangalore

Cari Nirbheek	Dual	CARI, Izatnagar
Cari Shyama	Dual	CARI, Izatnagar
Hitcari	Dual	CARI, Izatnagar
Up cari	Dual	CARI, Izatnagar
Caribro-91	Dual	CARI, Izatnagar
Cari-rainbro	Dual	CARI, Izatnagar
Cari Gold Dual	Dual	CARI, Izatnagar
Giriraja	Dual	KVAFSU, Bangalore
Grirani	Dual	KVAFSU, Bangalore
Krishipriya	Dual	KVASU, Kerala
Nandanam	Dual	PPM, TANUVAS

Kuroiler	Dual	Kegg Farms
Rainbow Rooster	Dual	Indbro
Sonali	Dual	Originated from Bangladesh
Rainbow Brown Layer	Egg	Indbro
BV380	Egg	Venkys



Popular Chicken varieties for Backyard/Rural Poultry Production

Krishilayer	egg	DPR, Hyderabad
Swarnadhara	Egg	KVAFSU, Bangalore
Kalinga Brown	Egg	CPDO, Bhubaneswar
Kaveri	Egg	CPDO Bangalore
Gramalakshmi	Egg	KAASU, Kerala
Rajasri	Egg	PVNRVU, Hyderabad
Krishna J	Egg	JNKVV, Jabalpur
Athulya	Egg	AICRP, Kerala
Nishibari	Egg	CARI, Portblair
Krishibro	Meat	DPR, Hyderabad
Charbo Meat	Meat	CPDO, Bangalore
AVM	Meat	AVM Coimbatore


Poultry Rearing Systems

COMMERCIAL FARMS (INTENSIVE)

1. Cage system – Chick, Growing, Laying

- Commercial Layers
 - Layer Breeders
 - Broiler Breeders
- 
- Open Sided housing
 - EC Housing

2. Deep litter system

- Commercial broilers (90% integration)
 - Chick, Growing of layers/breeders
- 
- Majority Open Sided housing
 - Few EC Housing

Poultry Rearing Systems

RURAL/BACKYARD FARMS (EXTENSIVE/SEMI-INTENSIVE)

1. Backyard/Scavanging

- Night shelter
- Supplementary feeding

2. Free range/Barns

- Sheds and free grazing area with fencing
- Litter, feed, water provided

3. Organic Farming

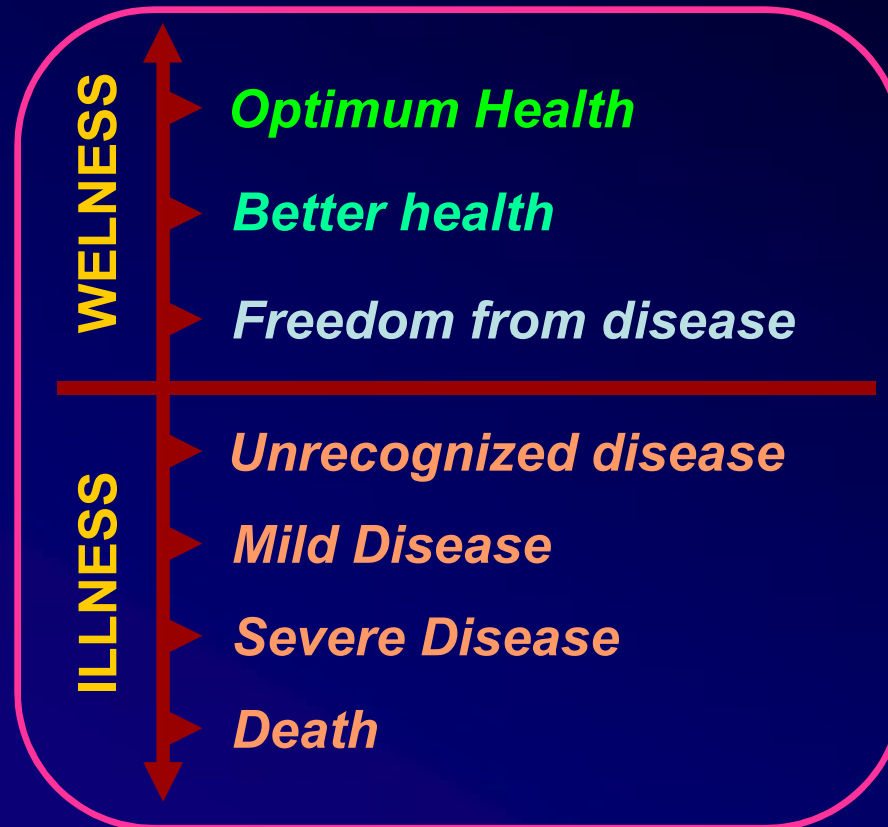
- Sheds with access to outdoors
- Antibiotic free organic feed
- Use of alternate medicine: homeopathy and ayurvedic, Probiotics etc



Health and Disease Spectrum

Health is a state of complete Physical, Mental and social wellbeing but not merely absence of disease

Disease is opposite of health: Any deviation from normal functioning or state of complete physical and mental wellbeing



Expression of highest Genetic Potential of bird

Measures to optimize Health mainly relate to:

Optimum health relate to

- Management
- Biosecurity
- Vaccination
- Nutrition
- Health monitoring

Categories of diseases

Persistent infections (Latent/ chronic infections)

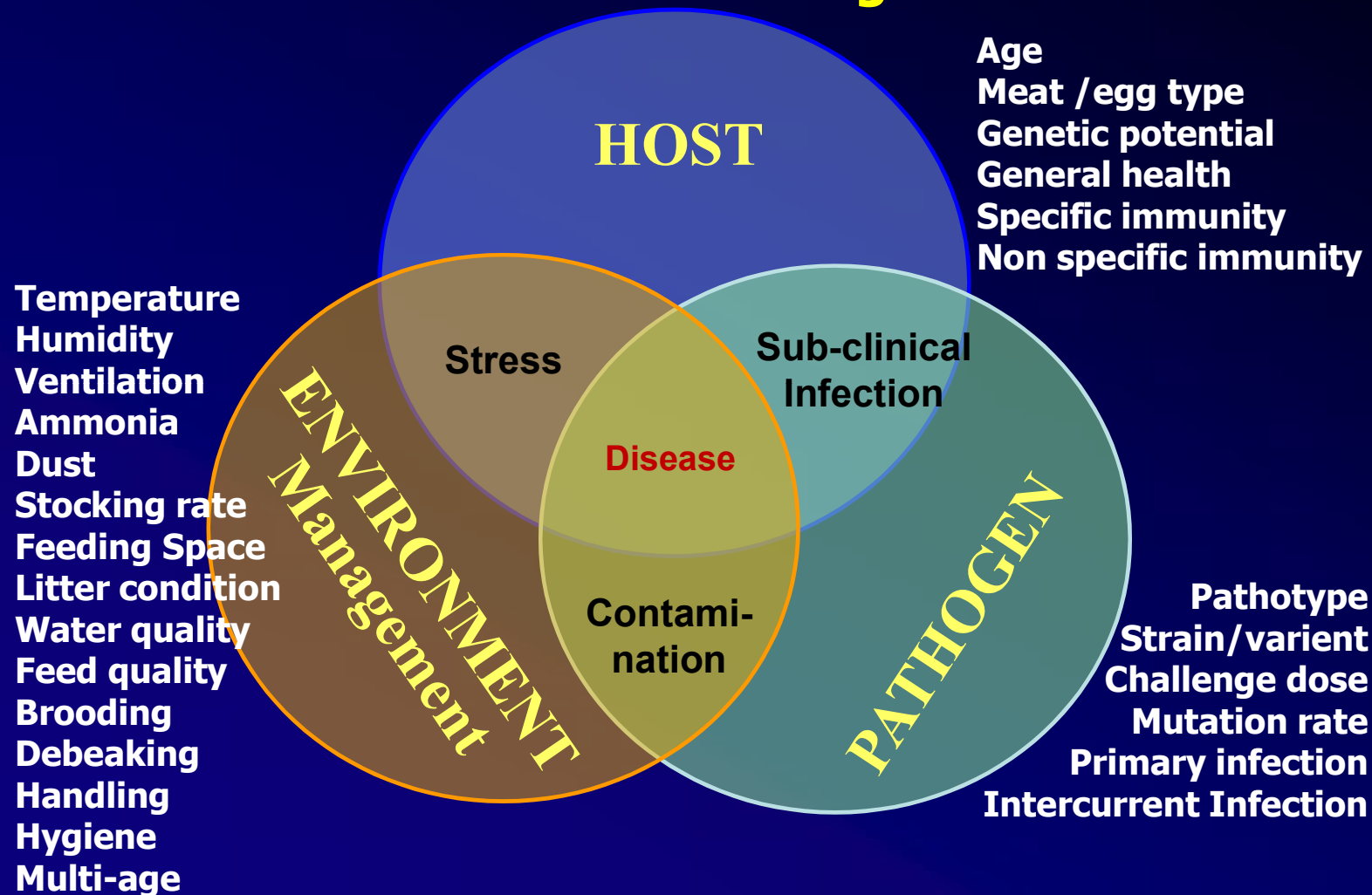
- Persists for life long
- Not cleared by immune system
- Reactivation & spread
 - Marek's disease
 - CRD (MG,MS)
 - **ILT**
 - **CAV**
 - Salmonella

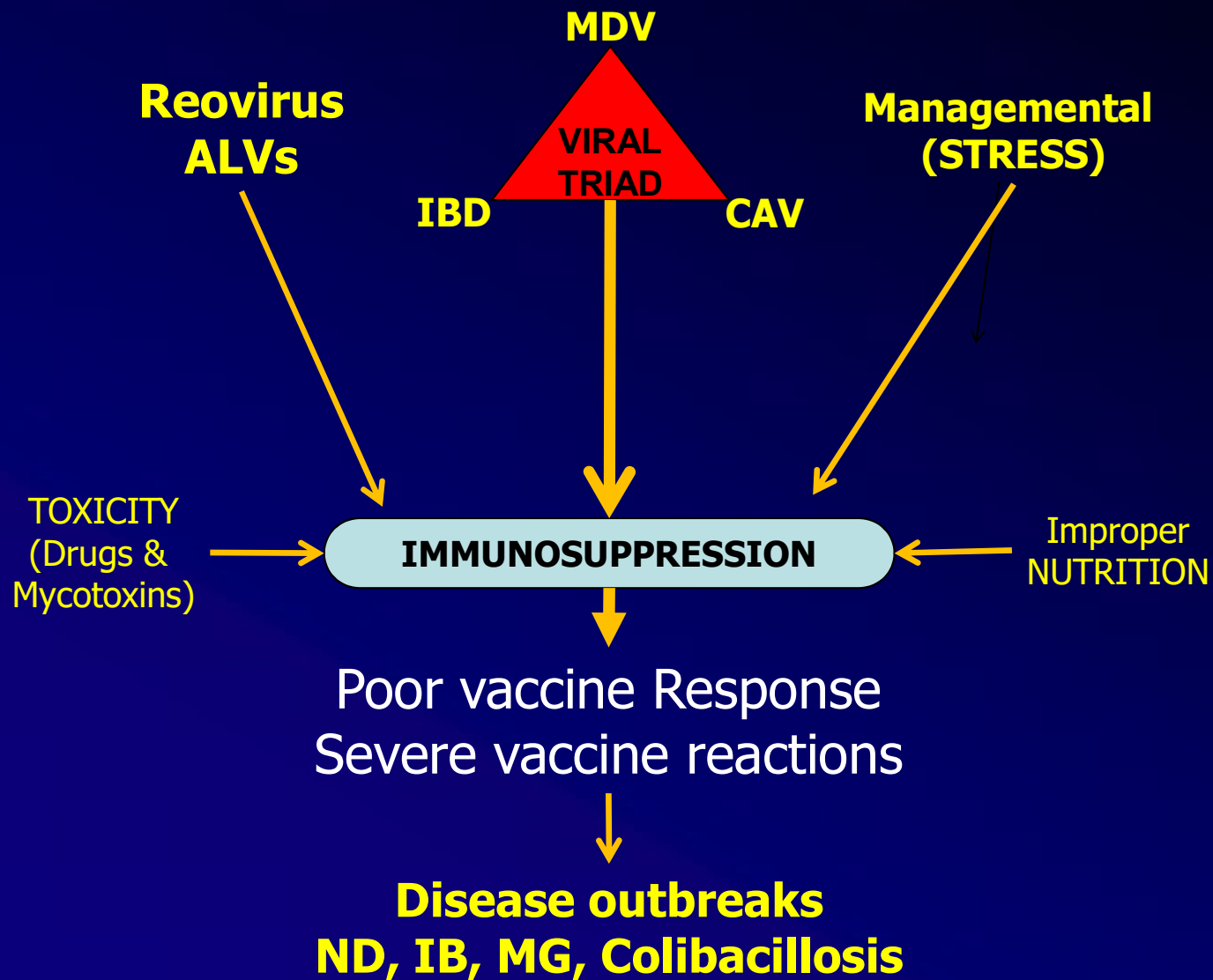
Acute Infections (Rapid & self limiting)

- Cleared by immune system
 - **Avian Influenza**
 - **Infectious bronchitis**
 - Newcastle disease
 - Infectious bursal disease
 - Infectious coryza
 - Fowl cholera

Disease

An Interaction of Host-Pathogen-Environment





Disease control in Backyard birds is a difficult task

- Free movement of birds
- Multiple species and Multiple age groups
- Introduction of new birds
- Constantly exposed to the extreme weather, adverse environment
- Contact with wild birds and animals
- Poor hygiene and husbandry practices
- No control over movement of animals, public, traders, vehicles etc
- Constantly Exposed to germs and parasites found in the soil, water, air
- Seasonal outbreaks of diseases



Current disease status and importance to flock health and profitability

Diseases	Status	Vaccine availability
HPAI	Sporadic	Not authorized
LPAI	Endemic	Killed
IB	Endemic	Live, Killed
ND	Endemic	Live, Killed, rHVT
ILT	Endemic	Live
MD	Endemic	Serotype 2&3, Chimeric Serotype-1
IBD	Endemic	Live, killed, IC, rHVT
Chicken Infectious Anemia	Endemic	Live, Killed
IBH	Endemic	Killed
AE	Endemic	Live, killed
Fowl Pox	Endemic	Live
EDS	Sporadic	Killed
APV	Prevalent	Killed
REO virus infection	Endemic	Live, Killed
Chicken Astrovirus	Endemic	Killed
Coccidiosis	Endemic	Live
Necrotic Enteritis	Endemic	None
Mycoplasmosis (MG/MS)	Endemic	Live, Killed, rFowl Pox
Infectious Coryza	Endemic	Killed
Fowl Cholera	Endemic	Killed
E coli infections	Endemic	Not authorized
Salmonellosis (SP,SG,SE,ST)	Endemic	Live, Killed (SG9R), SE+ST killed
ORT	Prevalent	Not authorized

Vaccination Schedule for Backyard Poultry

Age	Vaccine	Route
1 day	Marek's disease	S/C injection
5-7 day	Newcastle disease (Lasota)	Intraocular or drinking water
14th day	Infectious Bursal disease (Intermediate Strain)	Oral drop or Drinking water
24th day	Infectious Bursal disease (Intermediate Strain)	Oral drop or Drinking water
30th day	Newcastle disease (Lasota)	Eye drop or drinking water
6th week	Fowl Pox	IM or SC injection
9th week	Newcastle disease (R2B)	S/C injection

Repeat ND Lasota and Fowl pox every six months preferably before summer (Feb/March) and before winter (Sep/October)

Vaccination Schedule for Commercial Layer

Age	Vaccine	Route
1 day	Marek's disease	S/C injection
5-7 day	Newcastle disease (Lasota) Infectious bronchitis (H120/Ma5)	Intraocular or drinking water
14th day	Infectious Bursal disease	Oral drop or Drinking water
24th day	Infectious Bursal disease	Oral drop or Drinking water
28th day	Newcastle disease (Lasota) Infectious bronchitis (H120/MA5)	Intraocular or drinking water
6th week	Infectious Coryza Fowl Pox	IM or SC injection
9th week	Newcastle disease (R2B)	S/C injection
12th week	Infectious Coryza	IM or SC Injection
16 weeks	ND+IB (Inactivated)	IM or SC injection
From 35 weeks onwards repeat ND Lasota & IB (H120/MA5) at every 6-8 weeks interval through drinking water		

Vaccination Schedule for commercial broiler

Age	Vaccine	Route
In hatchery	IB (H120)	Intraocular or spray
5-7 day	Newcastle disease (Lasota)	Intraocular or drinking water
14th day	Infectious Bursal disease (Intermediate Strain)	Oral drop or Drinking water
21th day	Infectious Bursal disease (Intermediate Strain)	Oral drop or Drinking water
28th day	Newcastle Disease (Lasota)	Intraocular or Drinking water

Vaccination Schedule for Ducks

Age	Vaccine	Route
3-4 weeks	Duck Cholera (Inactivated)	SC injection
8-12 weeks	Duck Plague (Inactivated)*	SC injection

***Annual Vaccination is recommended**

List of poultry antimicrobials (feed grade) for Import into India

Antibiotic / Antibacterial (Feed Grade)	Chlortetracycline (CTC) 15% Clopidol 25% Dichhlozuril 1% Tylosyn Phosphate 10%
Medicated Feed Additive (Feed Grade)	Flavophospholipol 4% & 8% Tiamulin Hydrogen Fumerate – 10% Bamberomycin 4% and 8% Lincomycin 11% Tiamulin 10% Virginiamycin 50% Kitasamycin 8% Avilamycin 10% Spectinomycin 2.2% Lincomycin 2.2% and Spectinomycin Kitamycin 15% Enramycin 8% Tylvalosin (as tartrate) 10% Tylvalosin (as tartrate) 17%

List of poultry antimicrobial (feed grade) for Import into India

Anticoccidial (Feed Grade)

Monensin (8%) and Nicarbazine (8%)

Maduramycin 1%

Salinomycin 12%

Nicarbazine – upto 25%

Monensin Sodium 20%

Monensin Sodium 40%

Losolacid Sodium 15%

Decoquinate 6%

Dinitolmide 25% (DOT)

Clopidol 25%

Ethopabate 33%

Halofuginone 6 %

Narasin 10%

Robenidine 10%

1. Due to emergence of antimicrobial resistance in animal and human beings, henceforth, the following animal feed additives / feed supplements are not recommended for import into India:-

Category of Product	Name of the Product	Remarks
Antibiotic/ Antibacterial (Feed Grade)	Zinc Bacitracin	Earlier, these products were not recommended in the list issued on 13 th August, 2020.
	BMD – Bacitracin Methyl Disalicylate	
Anticoccidials (Feed Grade)	Any combination of Maduramycin and Nicarbazine	It has been reviewed in the meeting dated 17 th May, 2022 of subcommittee to 'assess and provide recommendations on submission of veterinary vaccines/biological/drugs for policy input' under the Expert Committee on Animal Health (ECAH).



Thanks

