

Safe and Sustainable egg production

West Bengal Poultry Federation
and
Government of West Bengal

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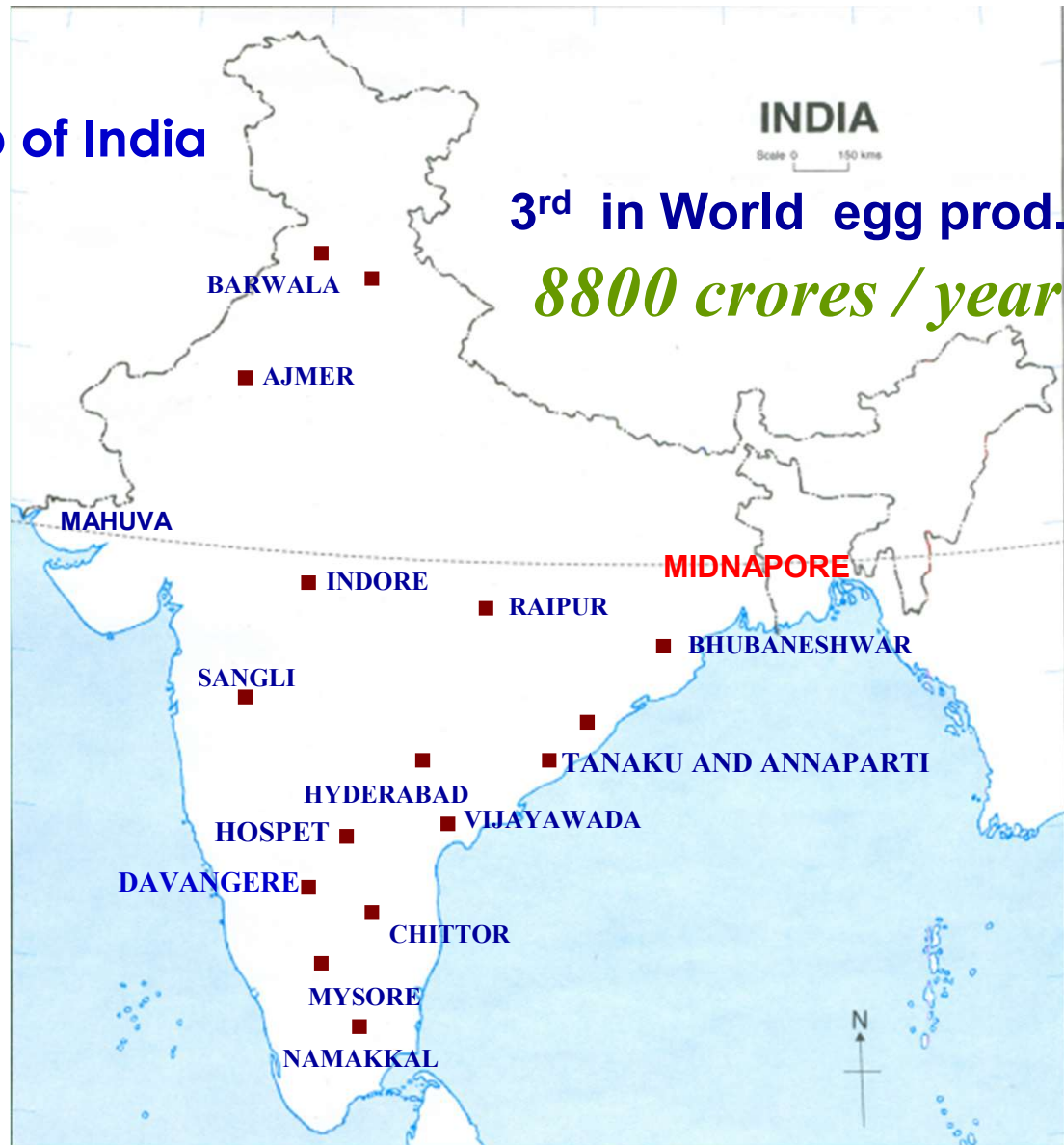


Egg Production



250 millions per day

Egg map of India



Food and Nutritional security: Using eggs in fight against malnutrition



Source : SKM egg products

Efficient use of natural resources - and reducing emissions



Layer farmers use less resources (*Land, water and feed*) and produce less waste **in 2018 as compared to 1980**

- Increased productivity: 25% more eggs
- Less feed : 30% less feed
- Less water: 40% less water
- Reduction in green house gas emissions



Compared with 1980 birds, 2018 birds have

- 25% lighter body weight at onset of lay
- 35% less feed during pullet rearing
- 50% less mortality during pullet rearing
- 40% less mortality during laying period



Using 1980 technology to produce today's production **of 8800 crore eggs** would have required:

- 2 million more acres of maize



- 1.6 million more acres of soybeans



Food Loss is a major food sustainability issue

By improving egg shell strength we can help to reduce food loss

- Good nutrition reduces broken eggs



Source: Vijay Makhija

Solar Energy system



Farm having 60 KW Solar power, Dependency on conventional power is almost ZERO



Solar Energy system



100% **Rain** water harvesting system



Reduce the amount of undigested feed...

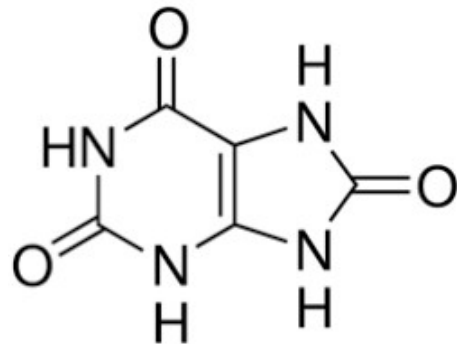
- 20 to 30% of feed is undigested

Big 3 in nutrition

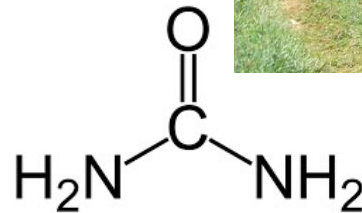


Reduce the amount of droppings... (reduces Nitrogen excretion)

- reduces ammonia, fly menace and odour
- reduces health problems:
CRD, Wet droppings...



Uric acid

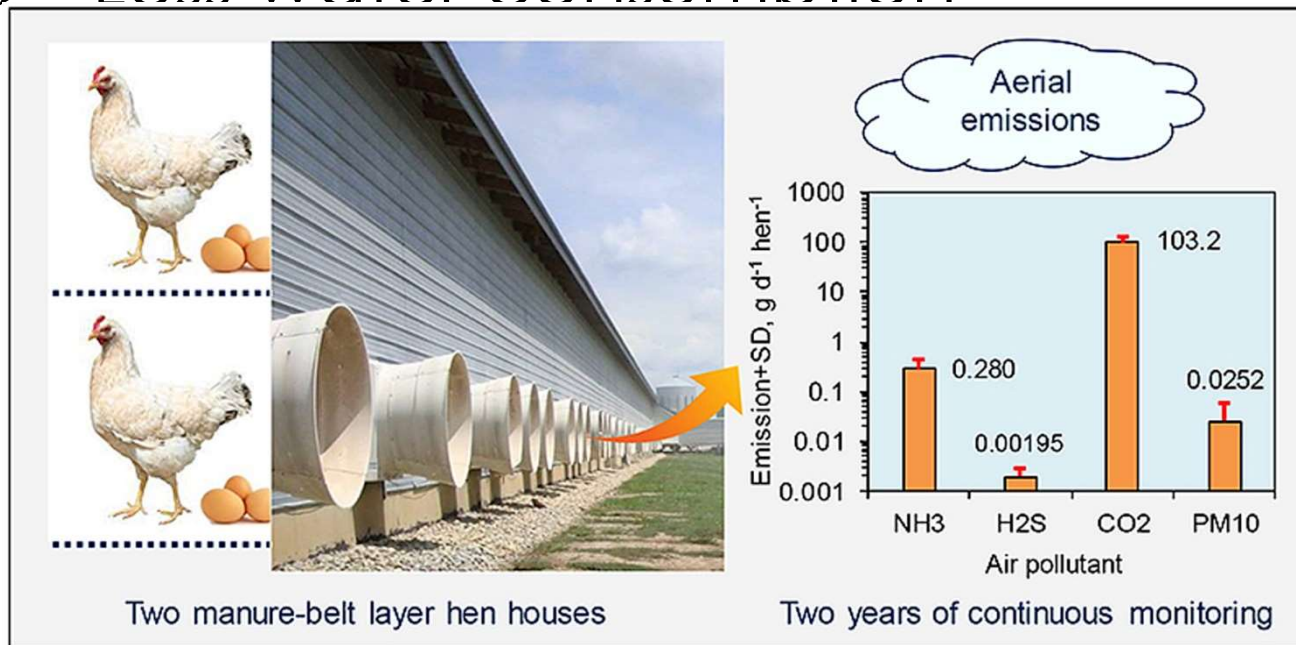


Urea



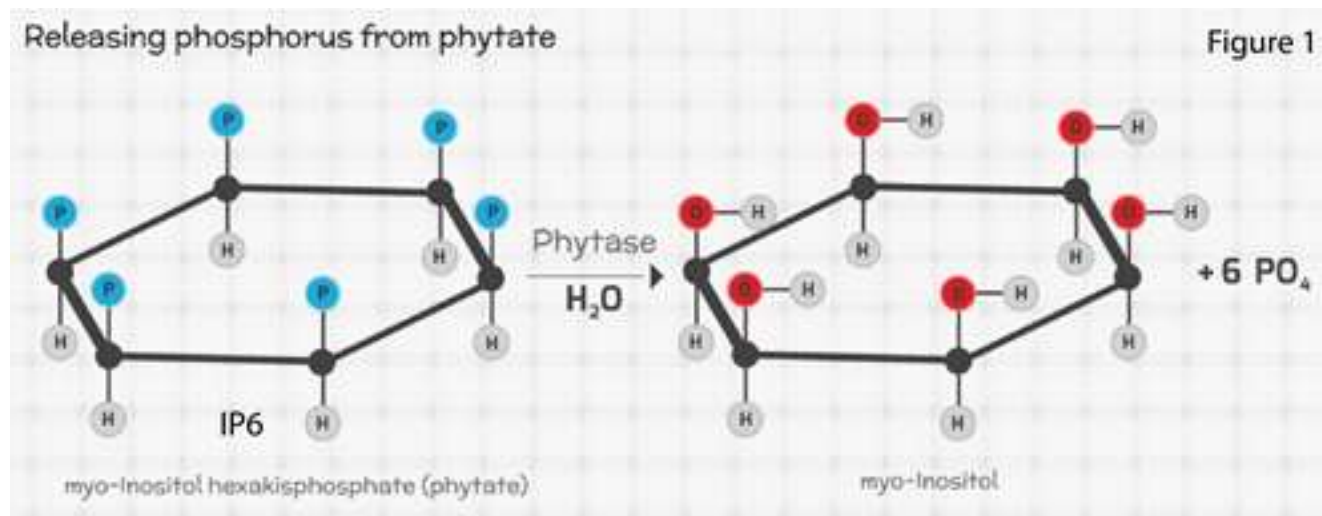
Minimizing the dietary protein

- Reduces the feed cost and more efficient
- Reduces ammonia emission
- Less water consumption



New generation E. Coli phytase

- Releases 0.15 to 0.17 available phosphorus
- **Reduces phosphate pollution**
- Releases amino acids up to 4% and ME 50 kcal



Challenges of the Layer Industry..

- ❖ Rising feed costs



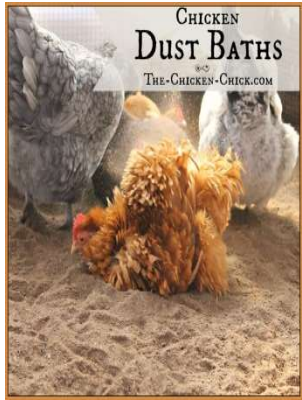
- ❖ Market (price) volatility



- ❖ Welfare issues?



Behavioral traits related to welfare of layer birds



Scratching



Nesting



Perching



Modern birds differ from Red-Jungle Fowl
Genes for higher production, so differ in natural behavior.



Human Health and food Safety

- Higher ammonia concentrations
 - More dust
- Poor safety of eggs - contamination with pathogens



Extended laying period



1.3 kg

**90
wks**



440 eggs

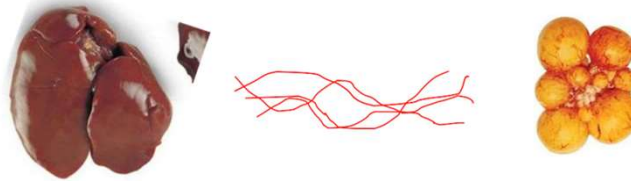
Challenges: extended laying period

- ❖ Controlling body and egg weight
- ❖ Liver health
- ❖ Shell quality and
- ❖ Good pullet nutrition

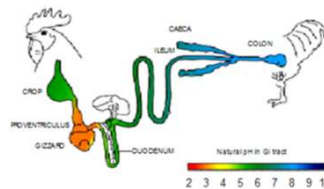


Feeding Laying hens to 90 weeks of age

❖ Liver health



❖ Gut health



❖ Controlling egg size in older flocks

❖ Keep the energy constant in laying period
and reduce protein and amino acids



Feeding Laying hens to 90 weeks of age

- ❖ Daily Calcium intake

1/3 in the morning and 2/3 in the afternoon

Top dressing of 1-2% coarse marble grit

- ❖ One kg of magnesium oxide/ton of feed

25 hydroxy D3



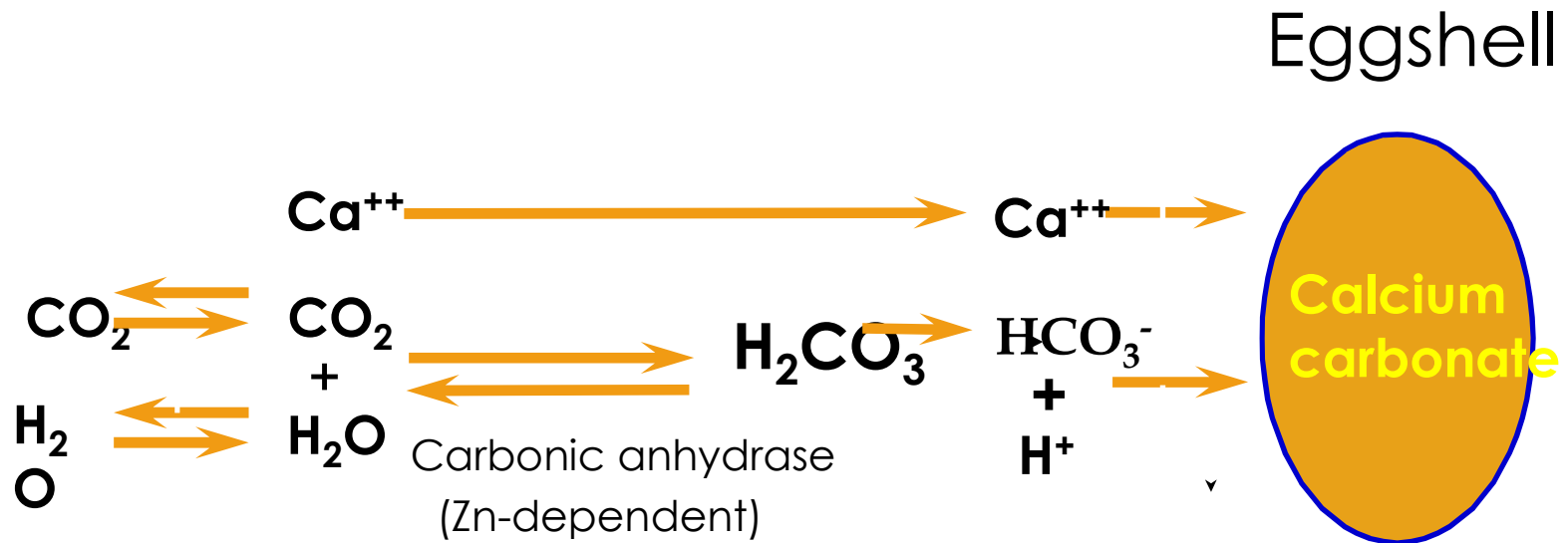
Ratio of fine and coarse marble grit

	Fine marble grit	Coarse marble grit
	<1.5 mm	1.5 – 3.5 mm
Layer phase 1	30%	70%
Layer phase 2	25%	75%
Layer phase 3	20%	80%

Organic trace minerals improve shell quality and egg production

Manganese
Shell membrane

Zinc
Carbonic anhydrase



The key is Pullet nutrition

- The major portion of genetic potential determined in the first 16-18 weeks
- Body weight and uniformity
- Consider high nutrient dense diet in hot climate



Source: U. C Patel



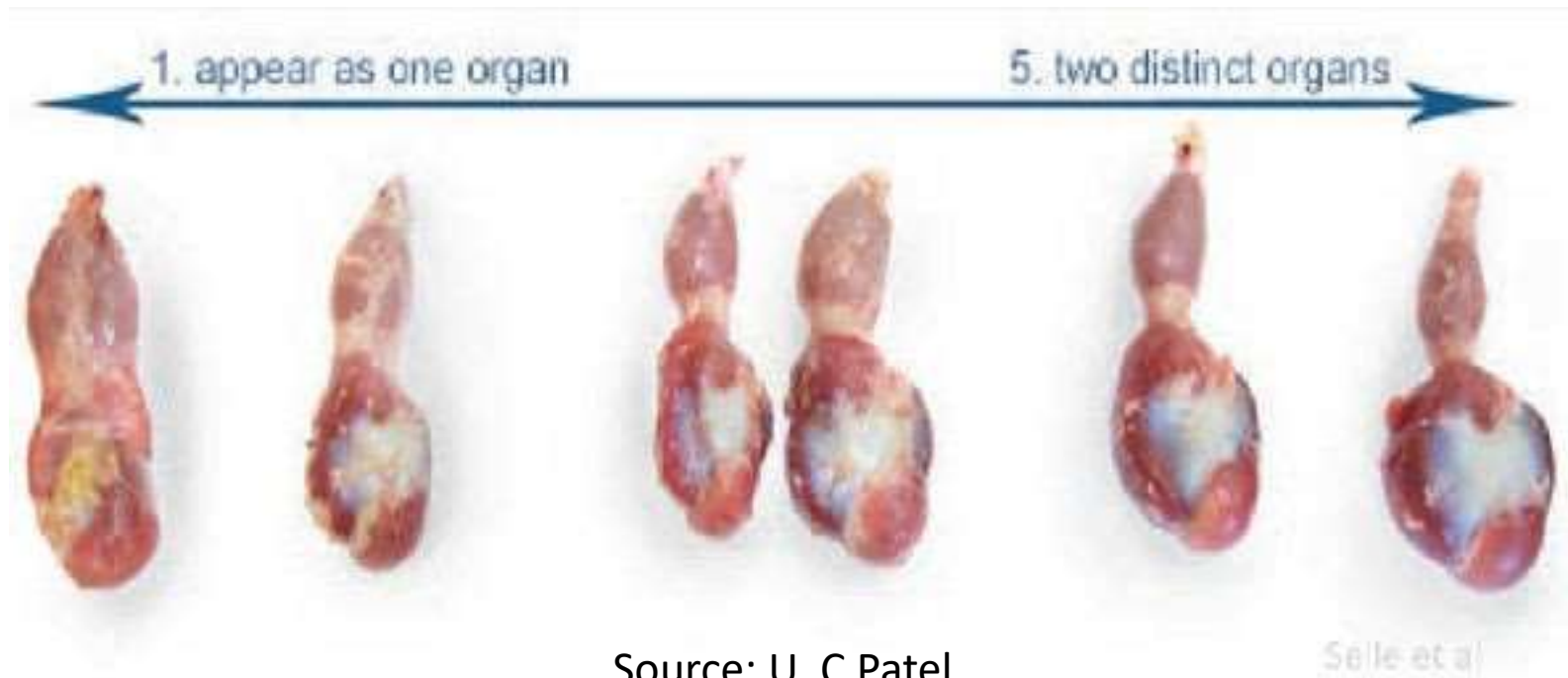
Layer nutrition

- All nutrient imp but energy is key limiting factor
- Energy intake controls egg production
- Amino acids/protein intake controls egg size

Source: U. C Patel

Gizzard development (coarse feed particle)

- Good feed digestibility
- Reduction in enteric pathogens





Feed intake and economics

- One gram increase in feed intake per bird per day
- Increases the feed cost by about
6 lakhs for one lakh bird per year



Be Prepared For Future

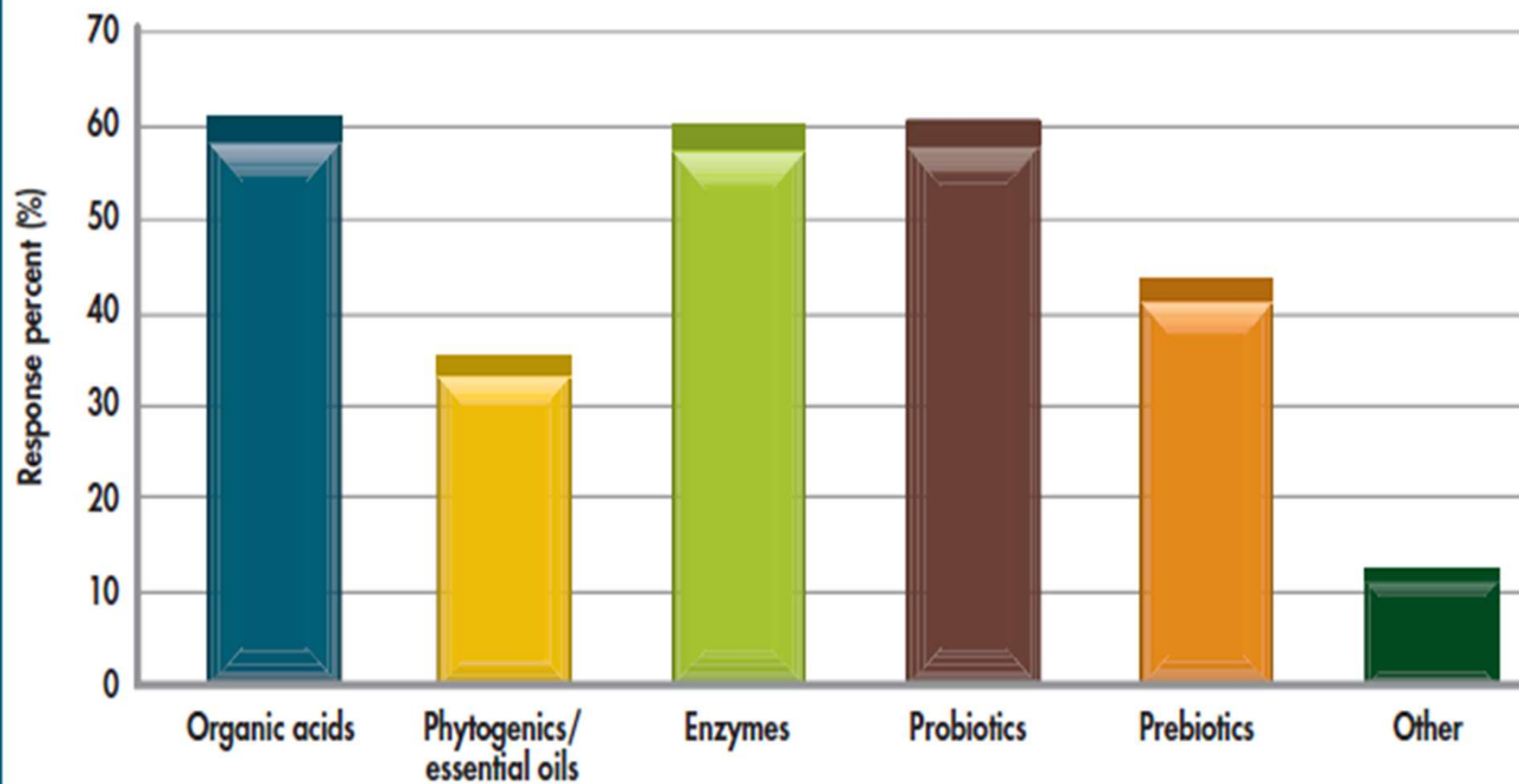
500 eggs in 100 Weeks

At present 478 eggs in 100 weeks (Bovans)



Source: K. S. Prajapati

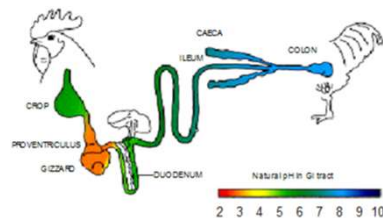
Sustainable Alternatives to Antibiotics



Jackie Roembke (2016) Watt Global Poultry Nutrition & Feed Survey

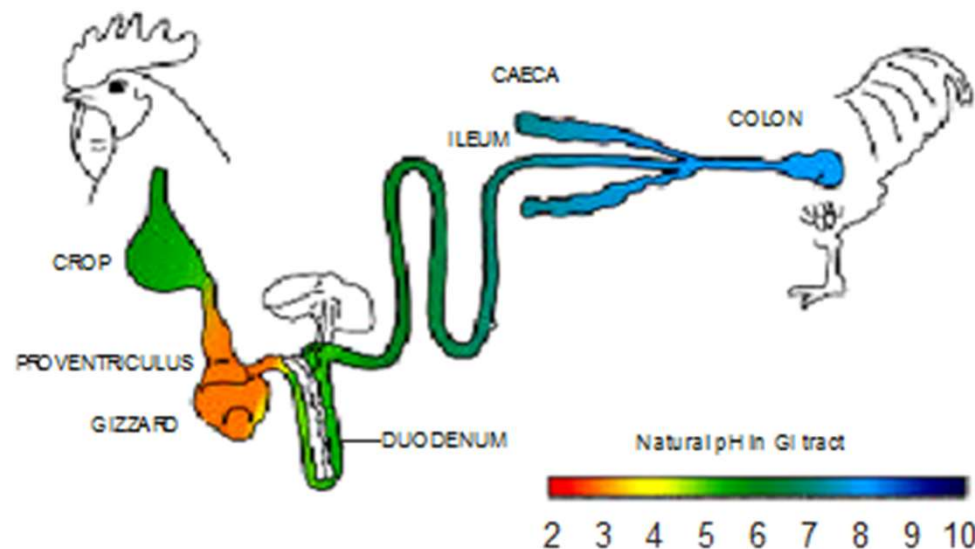
Organic acids

- Inhibition of pathogenic bacterial growth (Coliforms, Clostridia, Salmonella) in digestive tract and feeds
- **Encapsulated organic acids are effective at intestinal level**



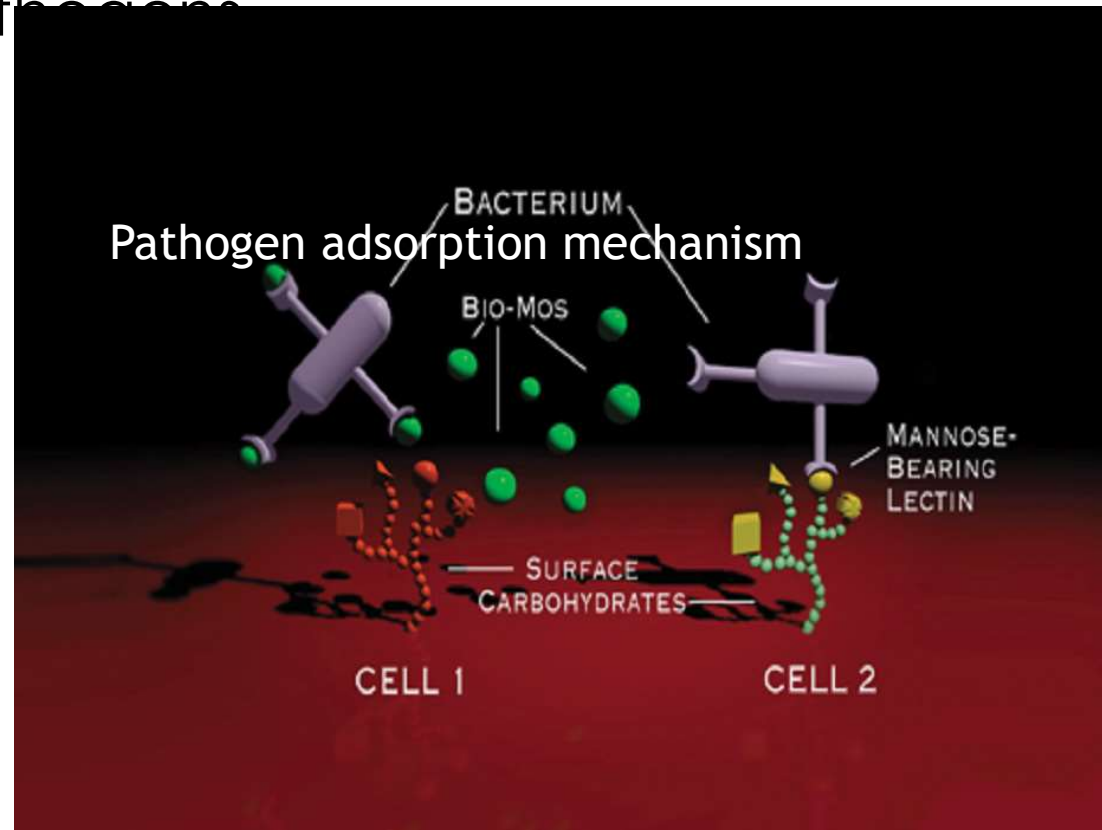
Probiotics

- Gut sterile, establish the beneficial good bacteria
Lactobacillus spp. Bacillus subtilis.....
- Prevent colonization of bad pathogen
- Administer at hatching *and at 1st week of age*
and during stress



Prebiotics (non digestible carbohydrates)

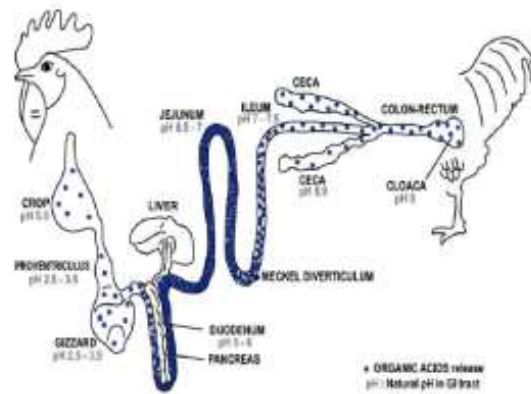
- Mannon oligosaccharide (MOS) bind pathogens



Data sources: Sharan and Lis (1993), Shashidhara and Devegowda (2003)

Mycotoxins: its impact on Shell quality and Gut health

- Shell quality
- Gizzard erosion
- Wet droppings





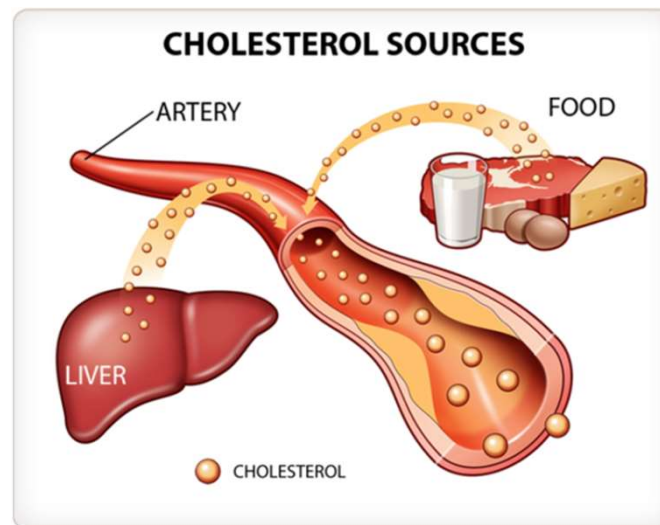
New maize (**high moisture maize**)

<https://en.wikipedia.org/wiki/maize>



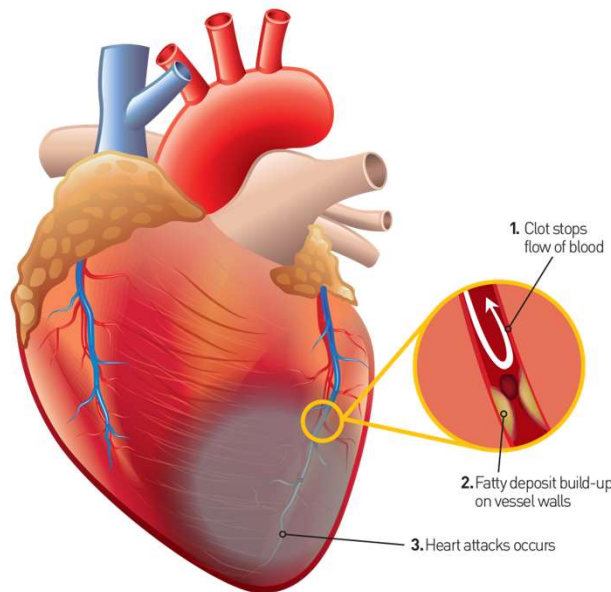
Myth: Eating eggs will increase blood cholesterol....

- Truth: Only 20% cholesterol comes from all foods
- Our body (Liver) produces 80% Cholesterol

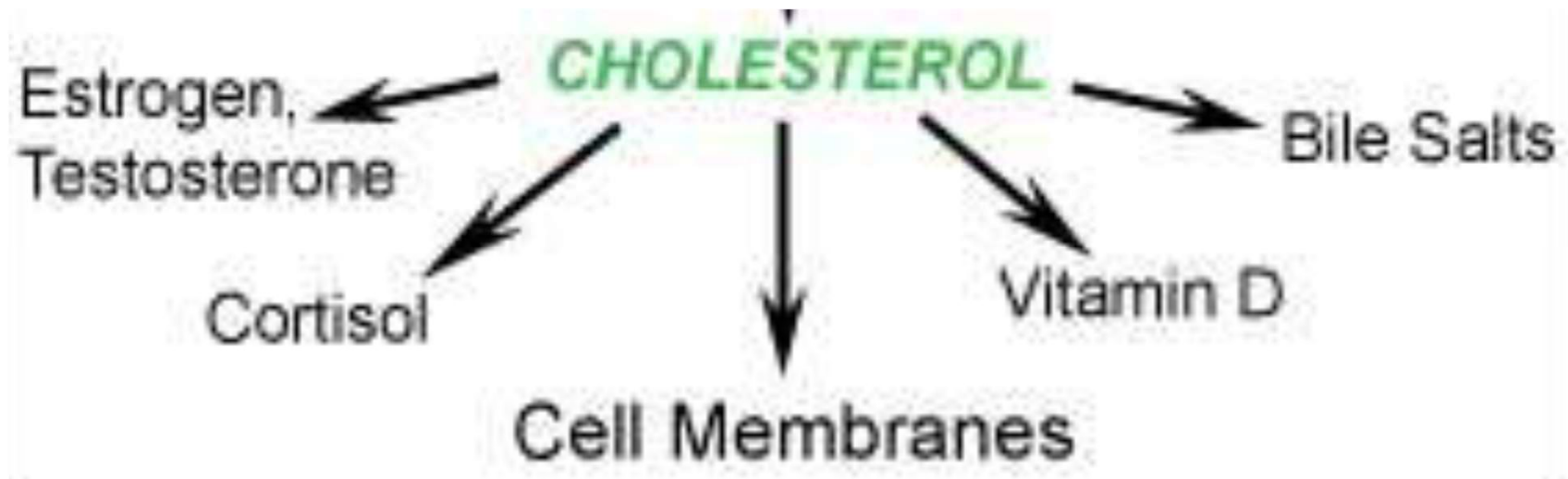


Cholesterol Limit was Removed from 2015 Dietary Guidelines

- The case against cholesterol, which was made nearly 40 years ago, was based on faulty evidence
- The true promoters of heart diseases are inflammation, oxidative damage, stress and sugar.
- (Cholesterol no longer a concern: US experts)

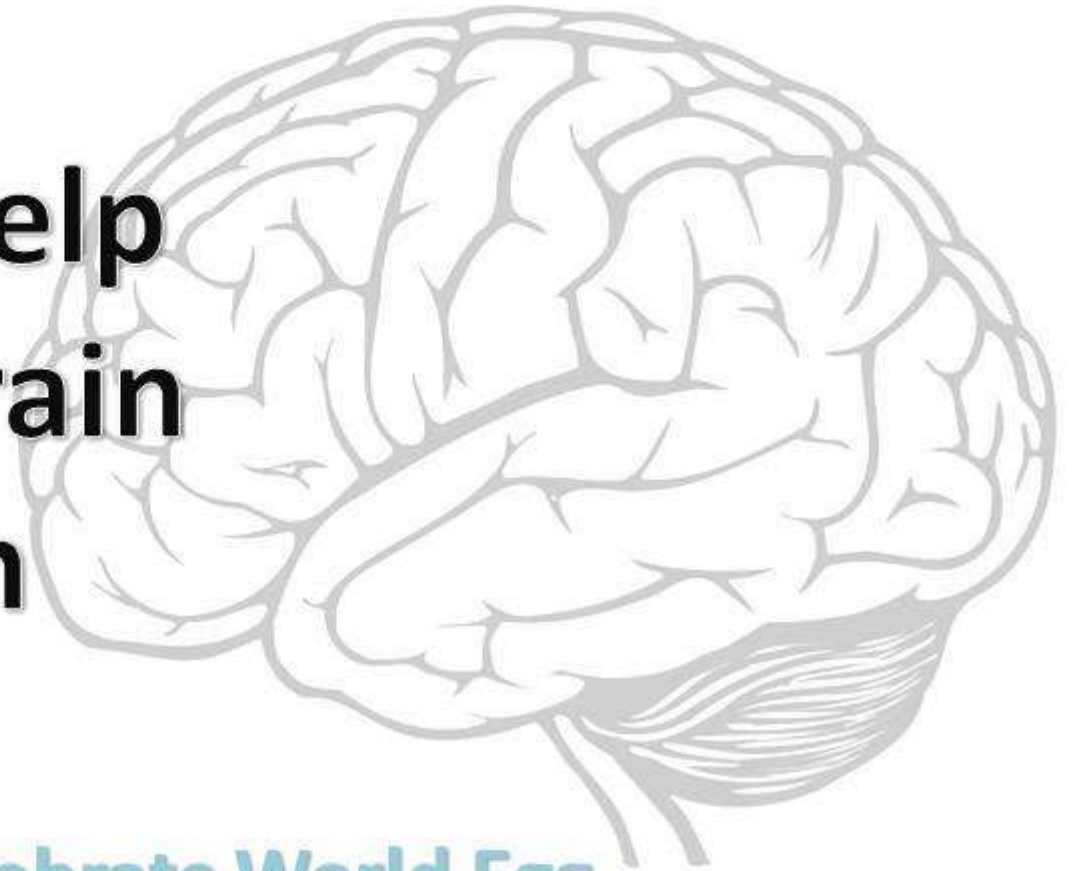


DO I NEED CHOLESTEROL?



Cholesterol is a powerful antioxidant !

Eggs can help improve Brain Function



**Celebrate World Egg
Day on 12th October
2018**

ified the conditions

lander and rover, CNSA said.

ter mechanism, said Beijing Aerospace Control Center.

Snack

respiration

study is of par-
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has been dis-
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or impact in an
posed to a labo-
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necessary for

FACT OF THE MATTER

An egg daily to avoid diabetes



SUNNY-SIDE UP

Eating an egg daily can have a beneficial effect on the blood metabolite profile that is related to a lower risk of Type-2 diabetes, a new study, published in *Molecular Nutrition and Food Research*, shows. The findings showed that the blood samples of men who ate more eggs included certain lipid molecules that positively correlated with the blood profile of men who remained free of Type-2 diabetes.

Botox effective for migraine?

The GM chickens that lay eggs with anti-cancer drugs: BBC News

"chickens lay eggs that contain drugs for arthritis and some cancers –

and it's 100 times cheaper than making them in a factory.





To increase rural consumption of eggs

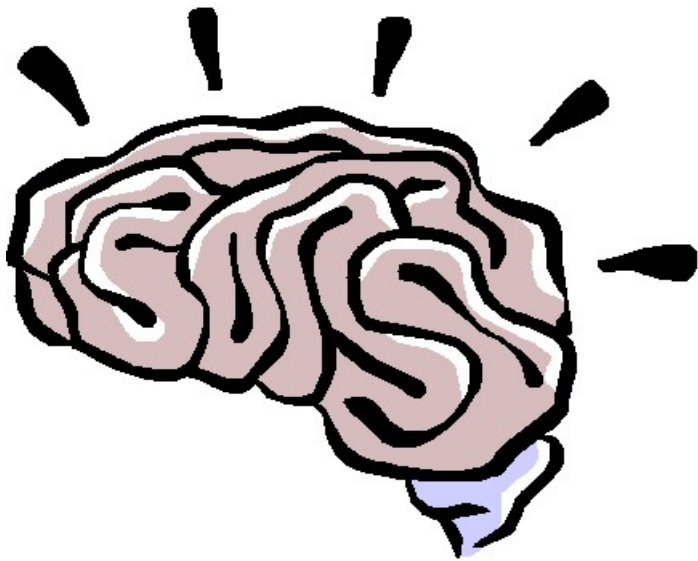
Food and Nutritional security



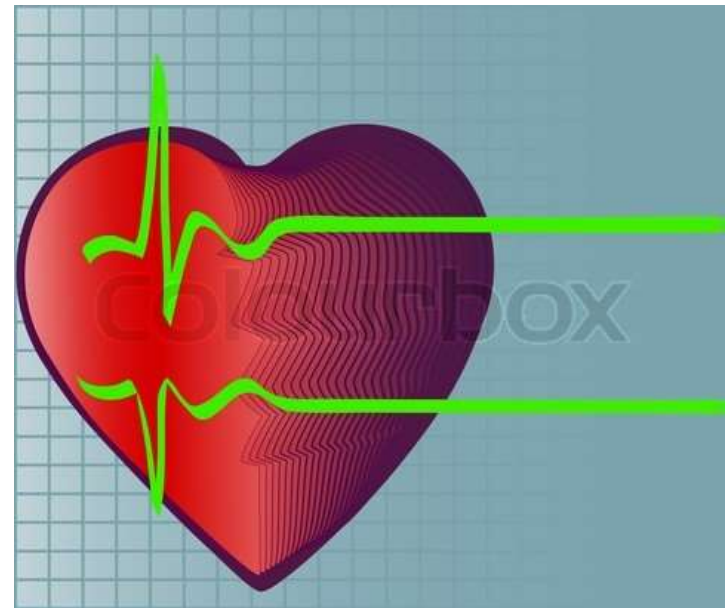
Be Intelligent & Healthy

Omega-3; DHA and EPA

IQ +6



-36%



Be Intelligent & Healthy Omega-3; DHA enriched eggs



What if **poultry** was the new fish?

Algae Omega-3



Enriched eggs



Nutritional value of eggs



Quality of eggs produced in the country...

- Produced by using Non-GMO feeds
- They are of global standards





One Health initiative



A

FARM



PROCESSOR

C

CONSUMERS

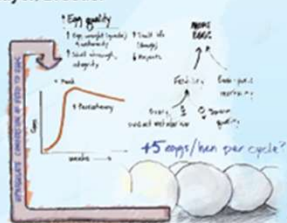


E

ENVIRONMENT

1. Crop management
 - a. Yield
2. Feeding management
 - a. Maximizing genetic potential
 - b. Chicken performance

3. Layer/Breeder



4. Broiler
 - a. Cost per unit gain



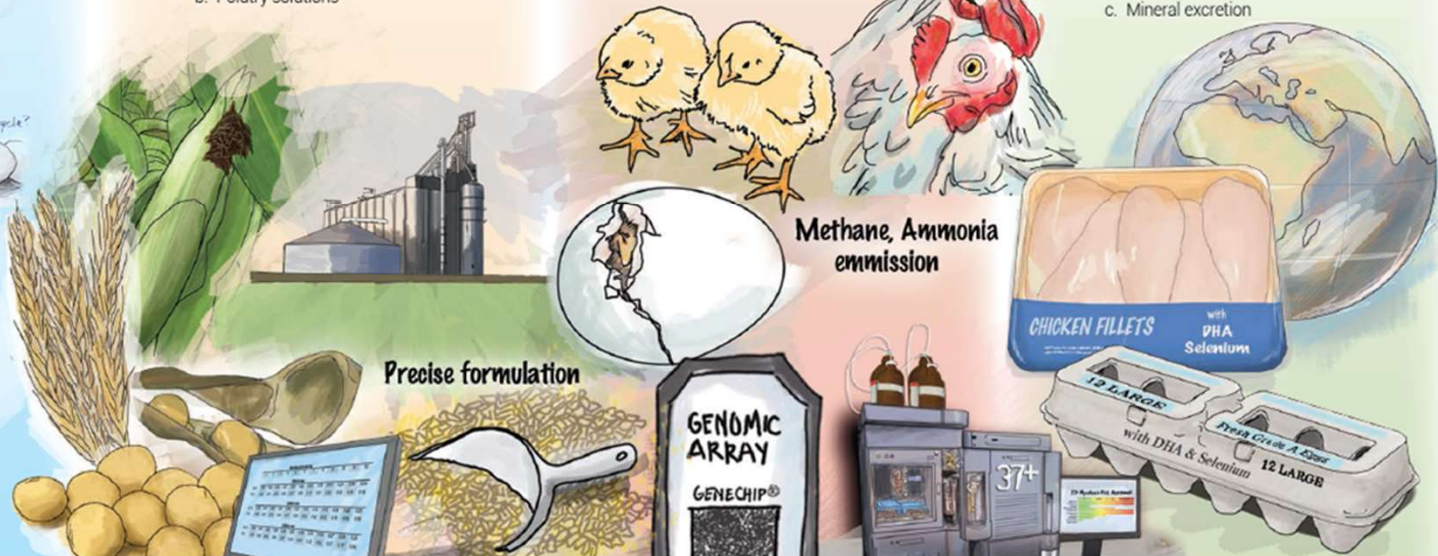
5. Performance and profitability

1. Meat quality
2. Egg quality
3. Safety
4. Innovation
 - a. Functionality
 - DHA, selenium
 - b. Poltry solutions

1. Nutrition
2. Health
3. Trust
 - a. Safety
 - b. Quality

4. Satisfaction
 - a. Tenderness
 - b. Taste
 - c. Juiciness

1. Stewardship
 - a. Measuring environmental impact
 - b. Mitigating environmental impact
 - c. Sustainability
2. Environmental management
 - a. Carbon balance
 - b. Nitrogen balance
 - c. Mineral excretion



**An egg a day keeps
a doctor away**





Take less from the Nature

Give more to the Nature