



# Future Trends in Broiler Nutrition



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## The approach has changed

**Farmer centric  
past approach**

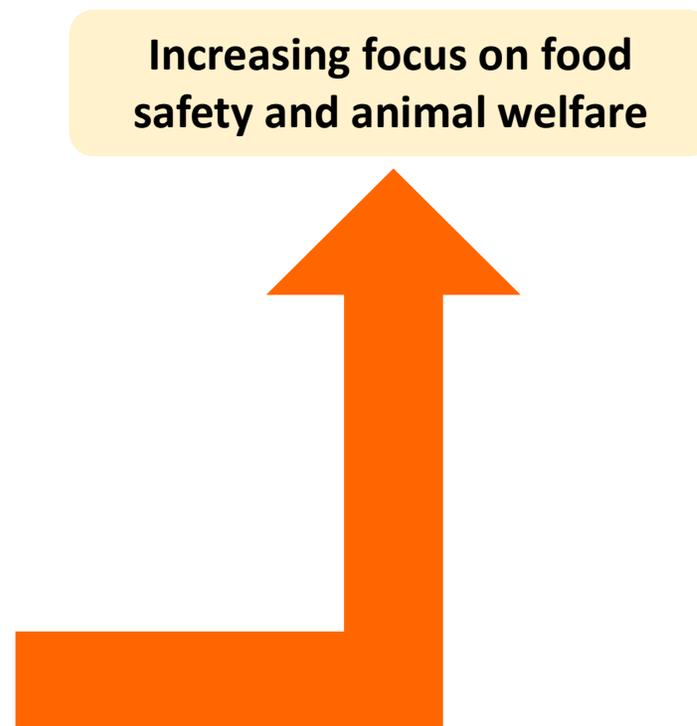
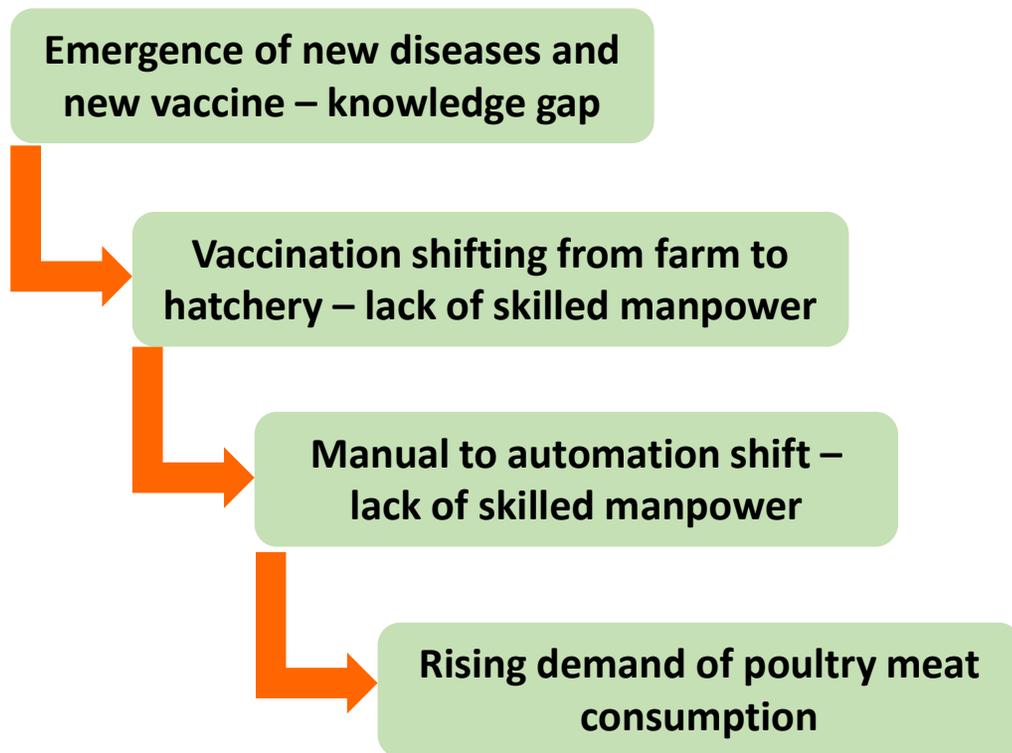
**Greater production with least cost – higher profitability –  
production sustainability – income generation for farmers.**

**TRANSITION  
PHASE**

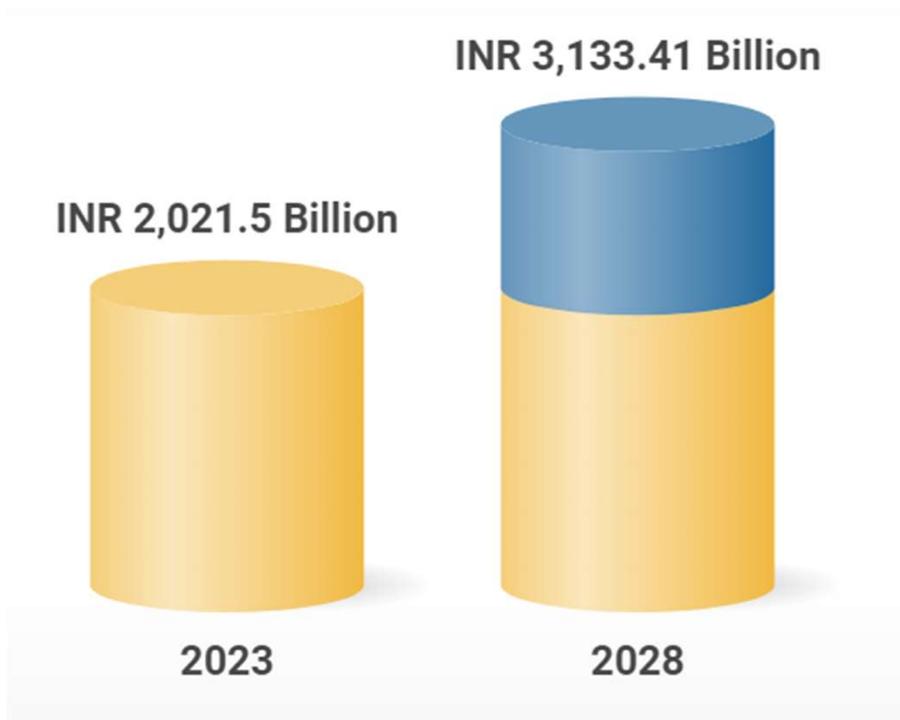
**Consumer centric  
Present approach**

**Efficient production – with less cost – consumer  
consciousness - safe food – premium price – higher margin**





The market is bullish ... expected to show a CAGR of more than 9% in the coming decade



**Poultry takes hit from soaring feed price, falling demand**

*The India poultry market size reached a value of USD 30.46 billion in 2023. The industry is further expected to grow at a CAGR of 8.1% in the forecast period of 2024-2032 to reach a value of approximately USD 61.41 billion by 2032.*

*The strong growth of the food services market, including food chains, restaurants, and fast-food joints, is leading to the increased consumption of broiler meat and eggs. In India, both traditional Indian non-vegetarian recipes and fast-food recipes involve the use of broiler meats, as well as eggs, making them a significant part of cooking.*

# Nutrition and performance achievement

Year	BW kg	FCR	BW kg	FCR
	<b>Males</b>		<b>Females</b>	
2007	2.867	1.701	2.436	1.811
2022	3.222	1.517	2.774	1.545
<b>Change</b>	<b>12.4%</b>	<b>10.8%</b>	<b>13.8%</b>	<b>14.7%</b>

Year		Protein%	AME kcal/kg	D Lysine %	D M+C %
2014	Starter	23.0	3000	1.28	0.95
	Grower	21.5	3100	1.15	0.87
	Finisher	20.0	3200	1.06	0.83
2022	Starter	23.0	2950	1.32 (+3.1%)	1.00 (5.3%)
	Grower	21.5	3050	1.18 (2.6%)	0.92 (5.7%)
	Finisher	19.5	3100	1.08 (1.9%)	0.86 (3.6%)

## A sensible feeding program is required

*Targeting meeting CP requirements of chickens of any category should lead to unnecessary inclusion of protein rich materials.*

*To meet the requirements of Lys, Met, Thr and Try through dietary ingredients leads to 4% points increment in dietary CP content.*

*The amino acids, both essential and non-essential, thus supplied get absorbed at a cost of energy. The whole process leads to a negative energy balance.*

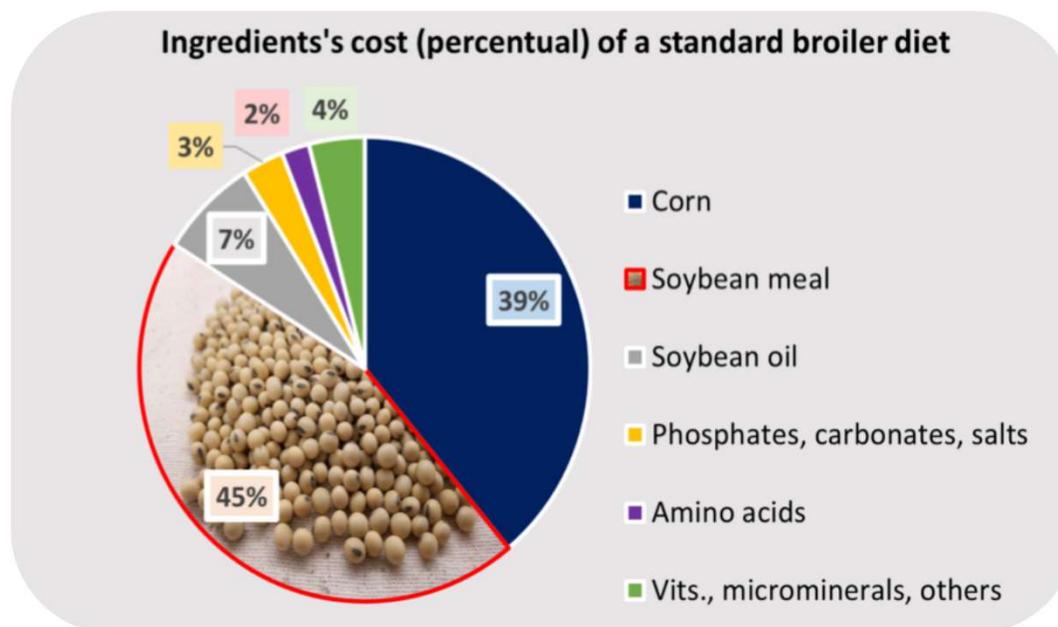
*The problem is comparatively less with energy sources so long maize is available and is continued to be used as the main cereal grain in feeding regimen of poultry.*

## A sensible feeding program is required



*An imbalance in dietary amino acid with apparently perfect crude protein content made the birds fanatically searching for the deficient amino acids – the condition rectified after the protein imbalance was taken care of.*

# Feed production strategy is highly skewed



*Is the formulation strategy too much dependent on maize and soybean?*

*Is there any PLAN B if the major ingredients go limited in supply?*

*Is the sector ready to come out of the Play Safe dogma and take up some adventure?*

# The alarm bell is ringing

## Maize prices surge 20% in India as government promotes ethanol production

ETPrime

ET Bureau • Last Updated: Jan 17, 2024, 06:29:00 PM IST

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### Synopsis

Maize prices in India have surged by 20% in the first two weeks of January compared to October due to increased demand after the government's plans to procure the commodity for ethanol production. This move comes as restrictions are placed on using sugar for biofuel production. The prices are expected to stay firm in the coming months, and there could even be a shortage of the commodity.



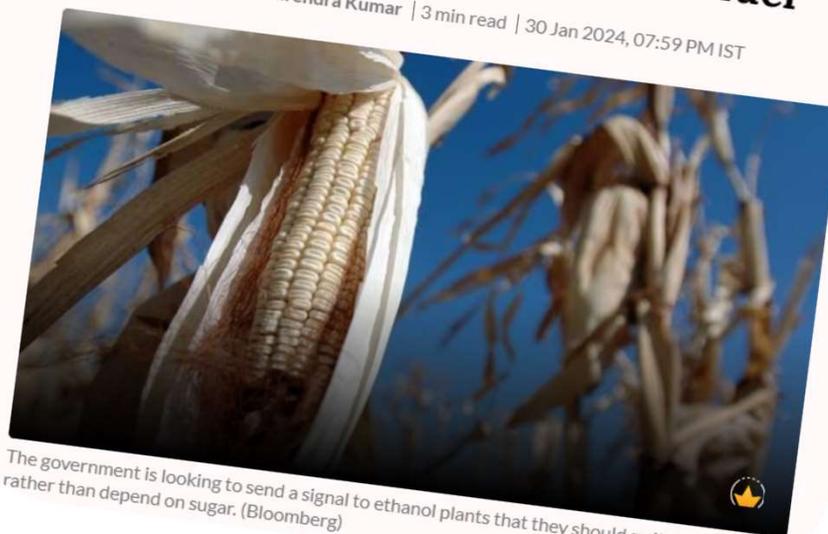
Women agricultural labourers peel off the maize after harvesting it from the field.

**Maize prices** increased by 20% in the first two weeks of January compared to October as demand picked up after the government's plans to procure the commodity for **ethanol production** due to restrictions on the use of **sugar** for producing **biofuel**.

## Maize in focus as government pushes for cleaner ethanol-blended fuel

mintPremium | INDUSTRY

Puja Das, Dharendra Kumar | 3 min read | 30 Jan 2024, 07:59 PM IST



The government is looking to send a signal to ethanol plants that they should switch to maize rather than depend on sugar. (Bloomberg)

## The alarm bell is ringing

*The Union government is discussing a proposal for state agencies to procure more maize for use in producing ethanol and reduce dependence on sugar for the biofuel.*

*The Union government is discussing a proposal for state-run cooperatives to procure maize, or corn, from farmers from the next Rabi season to meet its ambitious ethanol-blended fuel target, a top official said.*

*If the proposal goes through, the National Agricultural Cooperative Marketing Federation of India Ltd and the National Cooperative Consumers' Federation Of India Ltd will procure maize from farmers at state-set guaranteed prices.*

### What is the alternative?

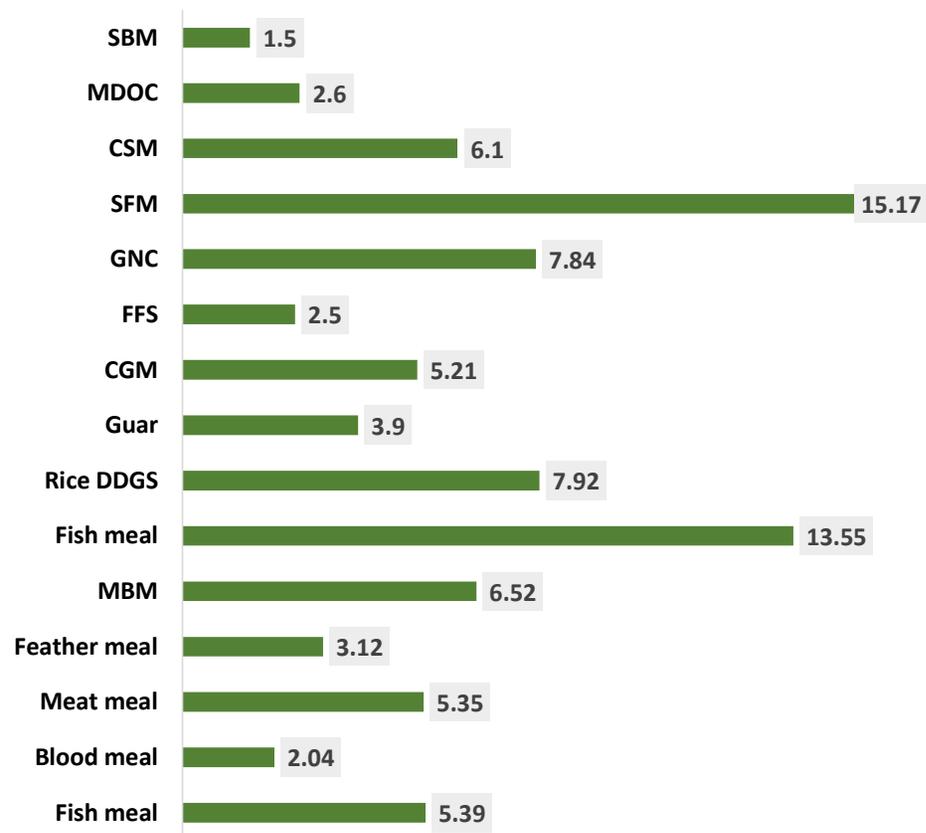
## In an exclusive e-interview with Think Grain Think Feed, experts from Kemin South Asia share tips on least-cost feed formulation for broiler and layer industry. Below are the excerpts.

Soybean prices have almost doubled compared to previous years. What are the alternatives to soybean meal you suggest in least-cost feed formulation with their maximum limits both in broilers and layers?



Dr. Partha Das

Dr. Partha & Dr. Bharat: Since Soyabean price has almost doubled compared to last year, feed manufacturers have favorably used different viable alternate sources like Mustard de-oiled cake (DOC), Groundnut DOC, and Cotton DOC among the oilseed cakes (oil extracted variety), Rice distiller's dried grains with solubles (DDGS), Corn DDGS among fermentation Byproducts, Gluten Meals (Maize and Rice), Fish Meal, meat and bone meal (MBM) & Poultry Meal among the alternate animal protein sources. Key factors that governs the best utility of these alternate ingredients in both broilers and layers largely depends on the availability of raw materials with lower variation in nutrient composition, considering the accurate digestibility coefficients and viability of unit cost of protein from these ingredients.



Crude protein content: coefficient of variation

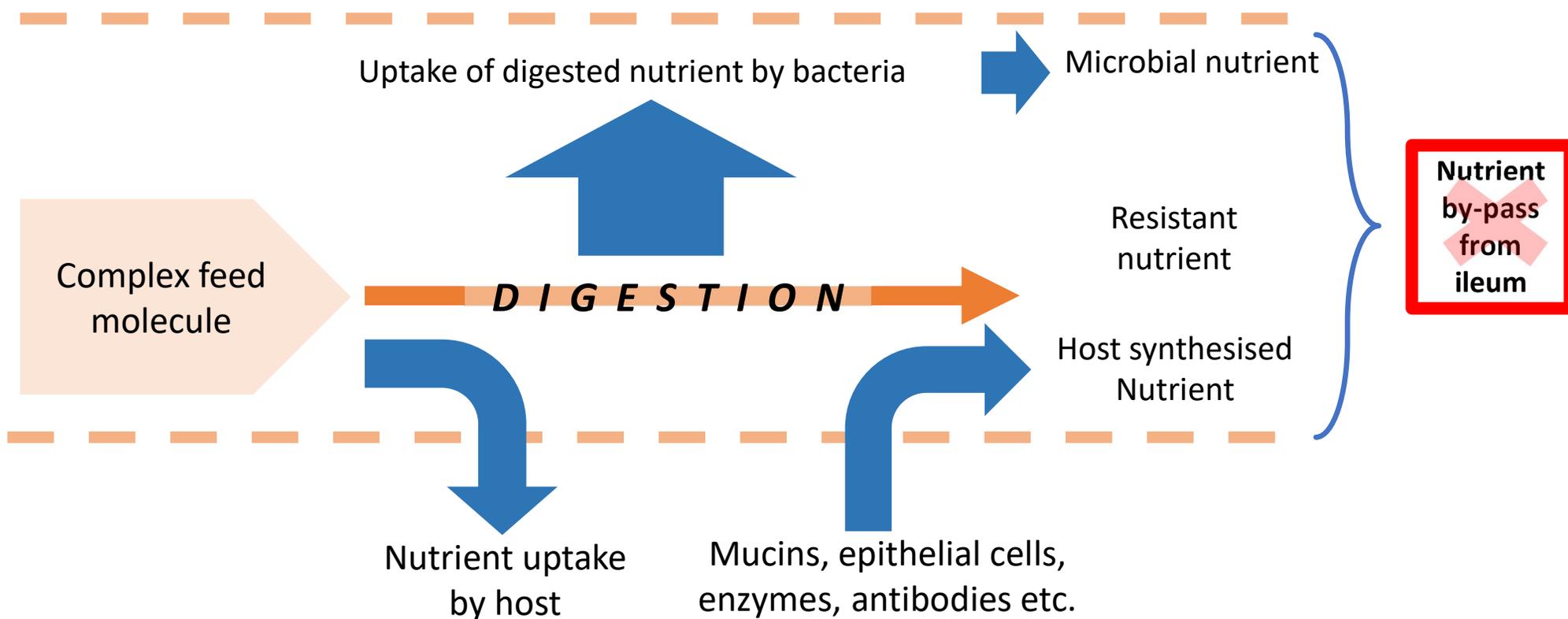
Source: <https://benisonmedia.com/least-cost-feed-formulation/>

## The likely alternatives

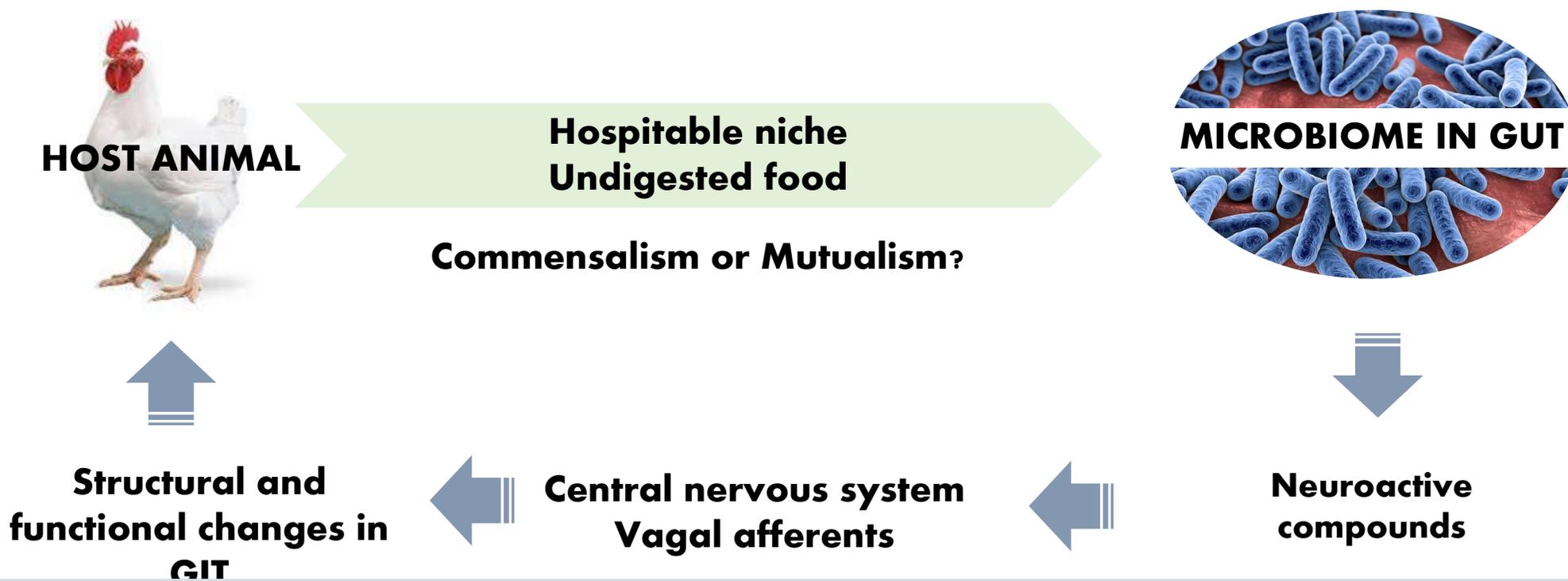
Alternative to maize		
Raw materials	Broiler	Layers
Jowar	20	30
Rice	10-15	15-20
Wheat	5-10	10-15
Wheat flour	5-10	10-15
Bajra	20	30
Rice polish	5-8	15-20
Wheat bran	5	15

Alternative to maize		
Raw materials	Broiler	Layers
Mustard cake	3-4	4-5
Ground nut cake	4-5	4-5
DDGS	3-4	5-6
Cotton seed meal	3	4
Maize gluten meal	4-5	4-5
Fish meal	4-5	2-3
MBM	4-5	3-4
Poultry meal	4-5	3-4
Sunflower meal	2-3	5-6
DORB	4-5	15-25

# Should we be shy to use the alternatives?



# The future lies in the superorganism



*The future of broiler nutrition depends on how the integrity of the host – gut microbiome superorganism is maintained.*

## Fermentable oligosaccharides

- *Abundance of cereal by products, rich in fermentable oligo saccharides, is likely.*

## Hind gut fermentation

- *The oligo saccharides can be utilized to produce a hospitable niche for hind gut microbiota.*

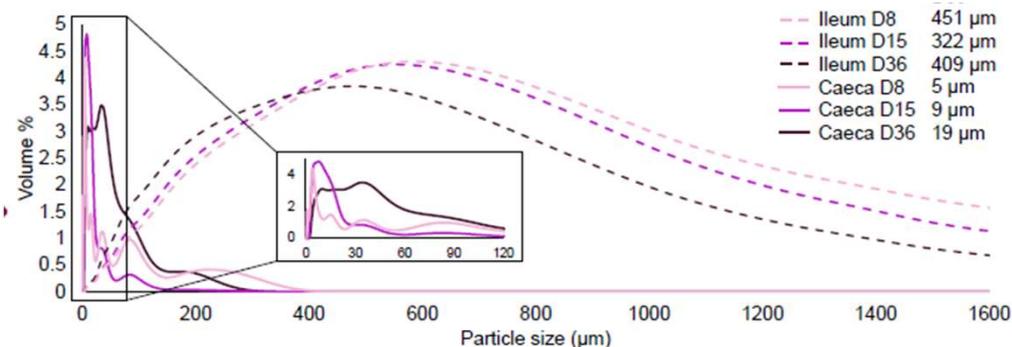
## Cell wall degradation

- *Partial degradation of cell wall than depolymerization will be the area of interest.*

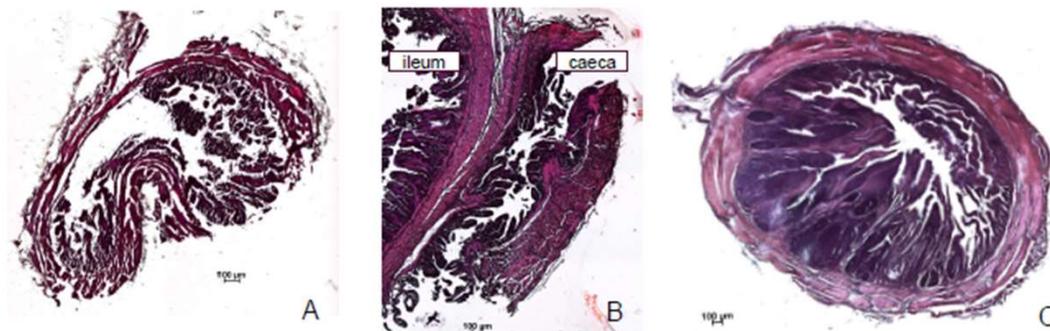
*The future of broiler nutrition lies in developing feeding strategies that promotes digestion of ingredients with inferior digestibility in the caeca to yield VFAs to provide enough acetate supply in the liver to support energy metabolism.*

# Intervention and desired digesta particle size

Particle size distribution of ileal and caecal digesta



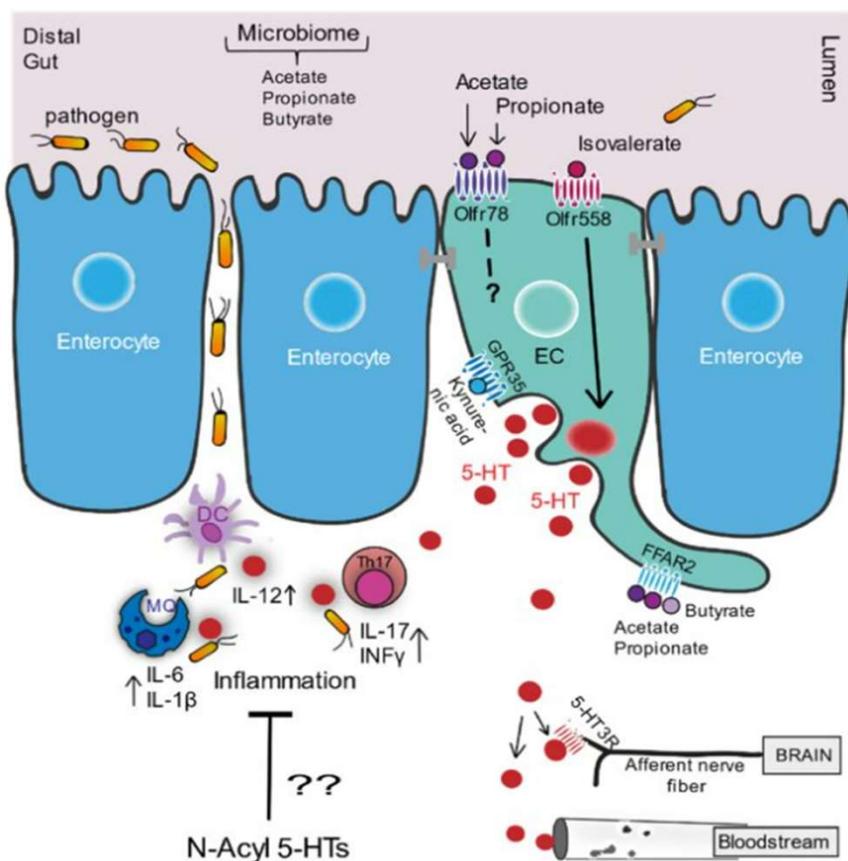
- Digesta flow from ileum to caecum is highly restricted.
- Particle size allowed to pass through increases with age.



Section of a caecal entrance at 8 (A), 15 (B) and 36 (C) d of age

*The future of broiler nutrition lies in developing feeding strategies that yields desirable particle size in situ which can move easily from the ileum to caecum.*

# The neurotransmitter cascade



- Selective fermentation of dietary components of lower digestibility happens in hind gut.
- Yields BCFA and SCFA.
- Stimulation of the serotonin pathway.
- Proinflammatory and anti-inflammatory responses are elicited.

*The future of broiler nutrition lies in developing feeding strategies that yields components in situ which stimulates the endogenous pathways in the caeca to stimulate the serotonin mediated neurotransmitter cascade.*

- **Animal Feed or Human Food - A resolution is needed.**
- **Proactiveness is preferred over reactivity.**
- **The future lies on the efficiency with which the industry becomes ready with equipment to convert low digestible “by products” to readily utilizable “secondary nutrients”.**