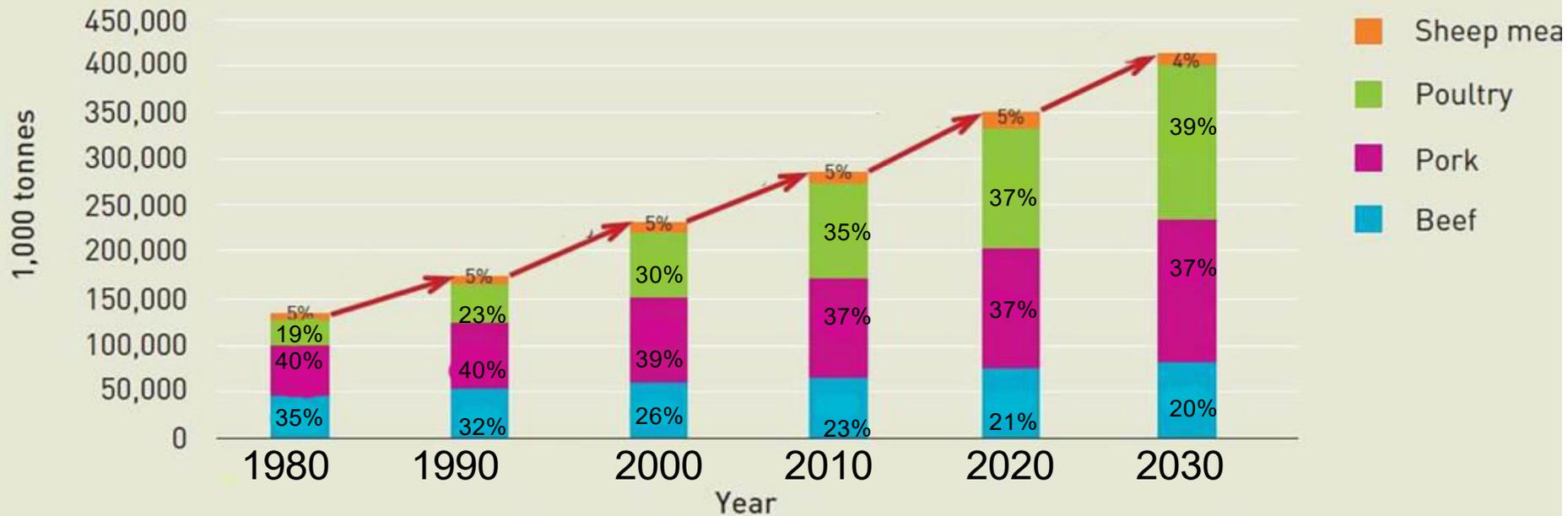


Role of Protein Meals for Sustainable Poultry Production in Pakistan

Prof. Dr. Talat Naseer Pasha

- **Increase in demand of animal origin food due to:**
 - **Population growth**
 - **Urbanization**
 - **Income growth**
 - **Changing consumer preferences**
 - **Export potential**

Global Meat Demand & Growth Estimates 2030



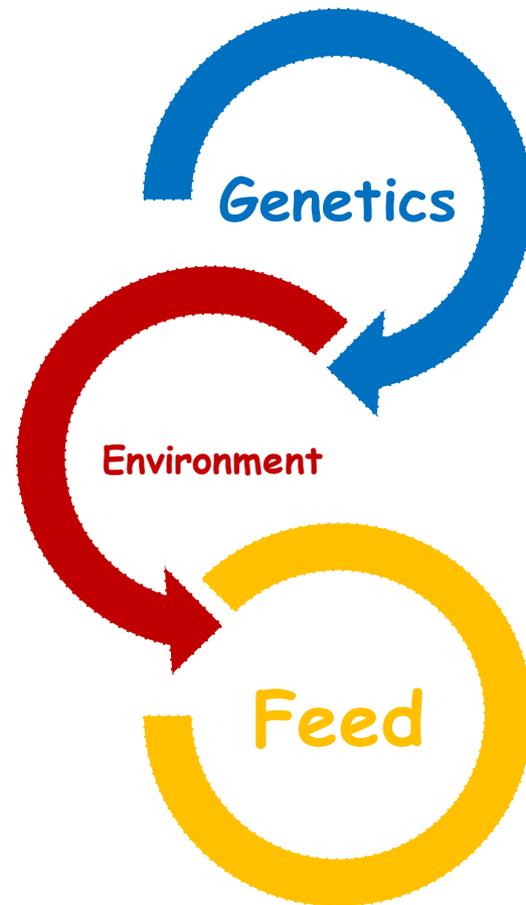
Comparing Beef, Mutton, Chicken



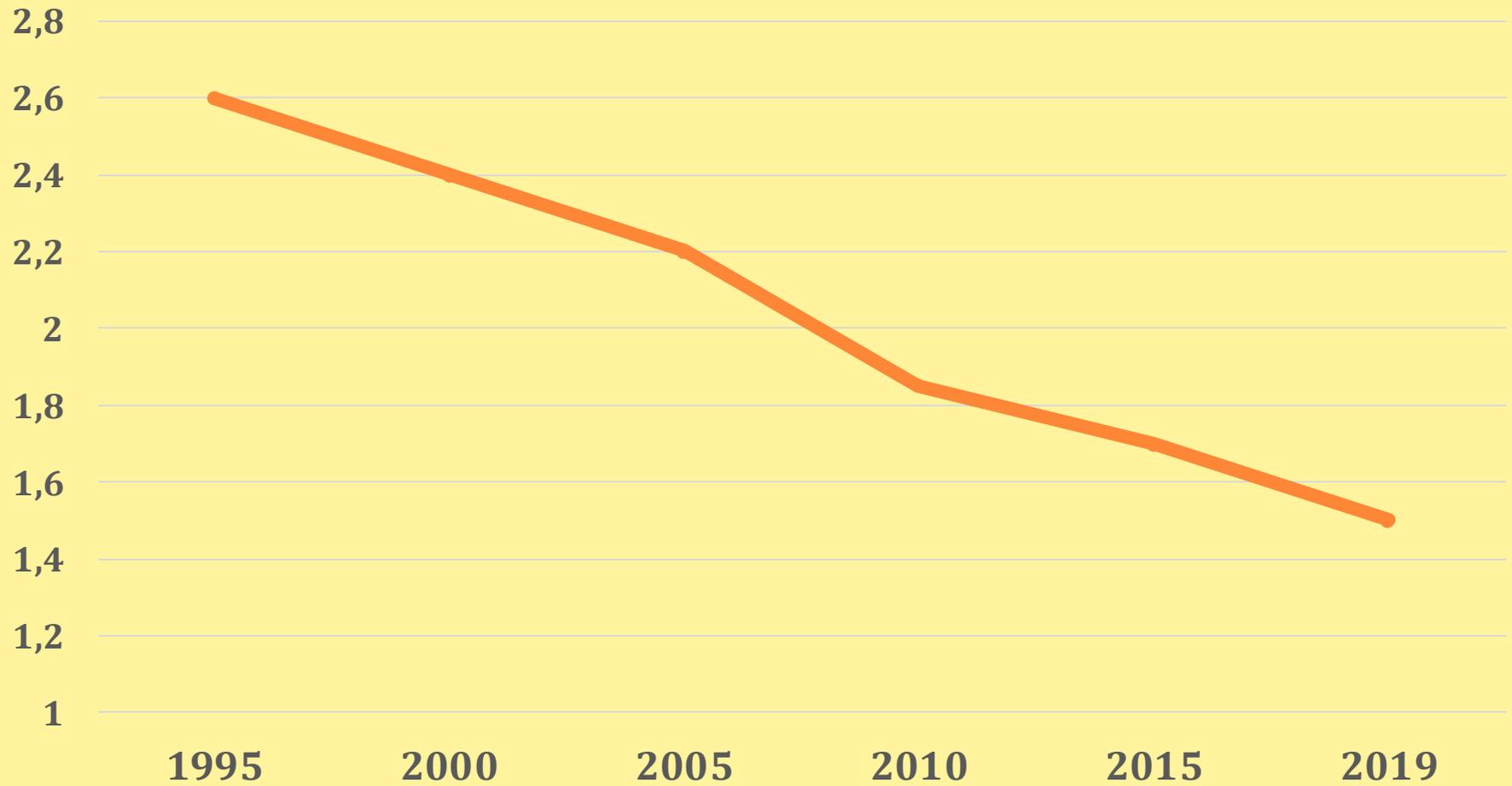
- **Beef** - 5 to 7 kg of grain, 365 days & 16,000 liters of water
- **Mutton** - 5 to 7 kg of grain, 180 days & 6,000 liters of water
- **Chicken** - 1.5 to 1.7 kg of feed, 35 days & 3,000 liters of water



Major Factors for Successful Poultry Production

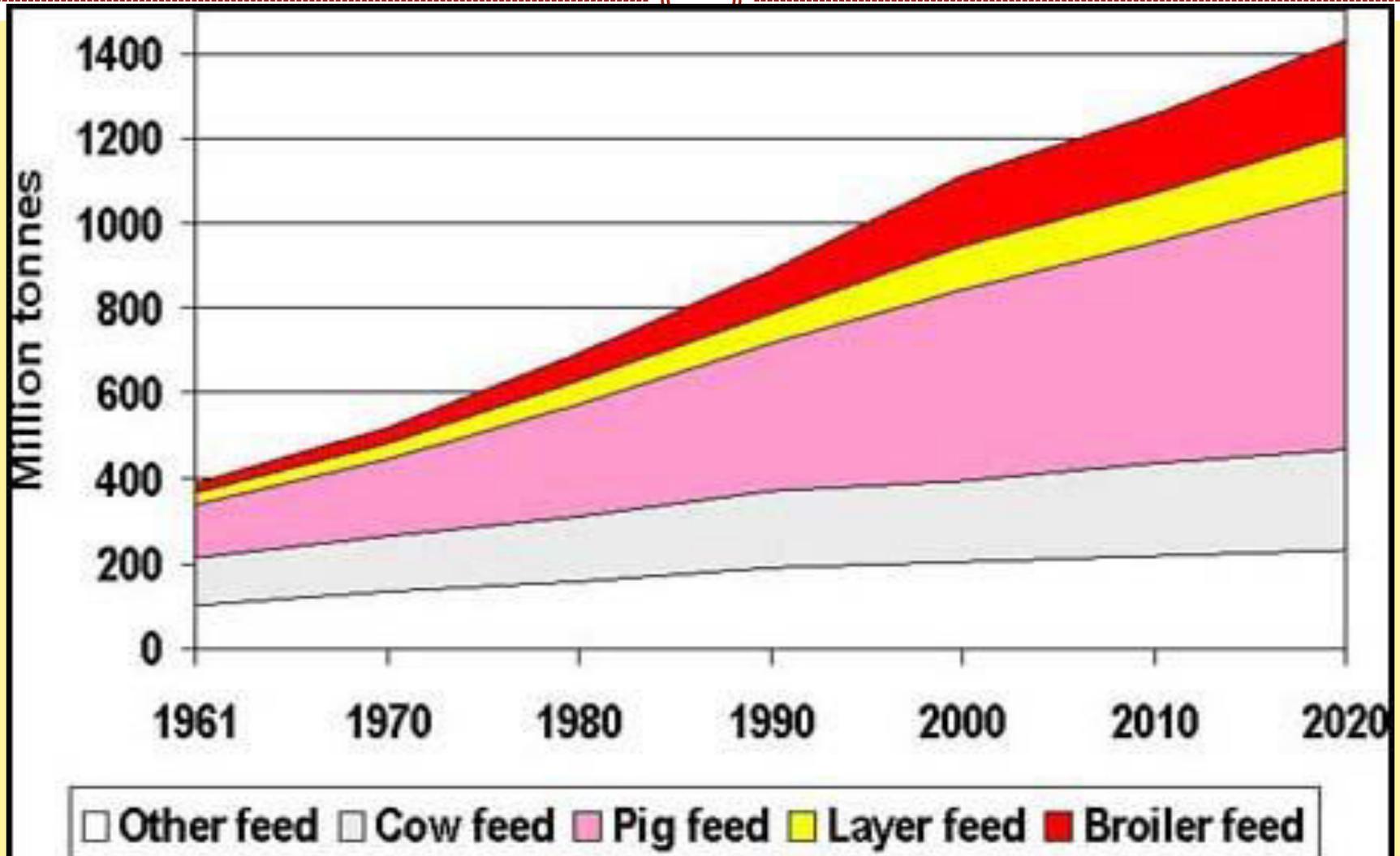


Feed Conversion Ratio



Today's bird selected for high efficiency has specific nutritional requirements. Feed is developed to match the ever growing requirements of modern bird

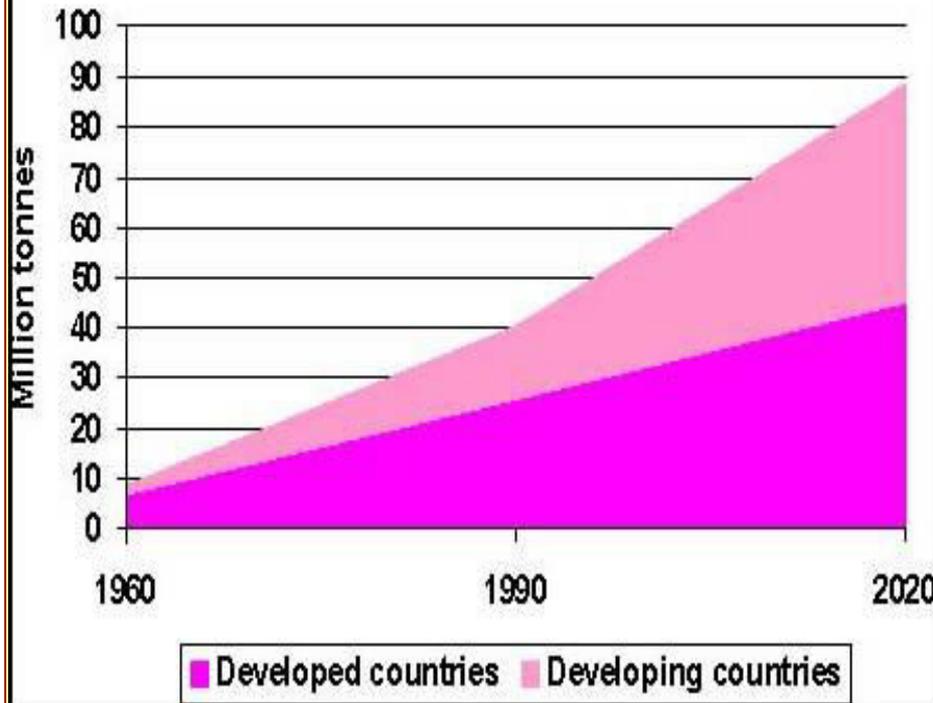
World Feed Production



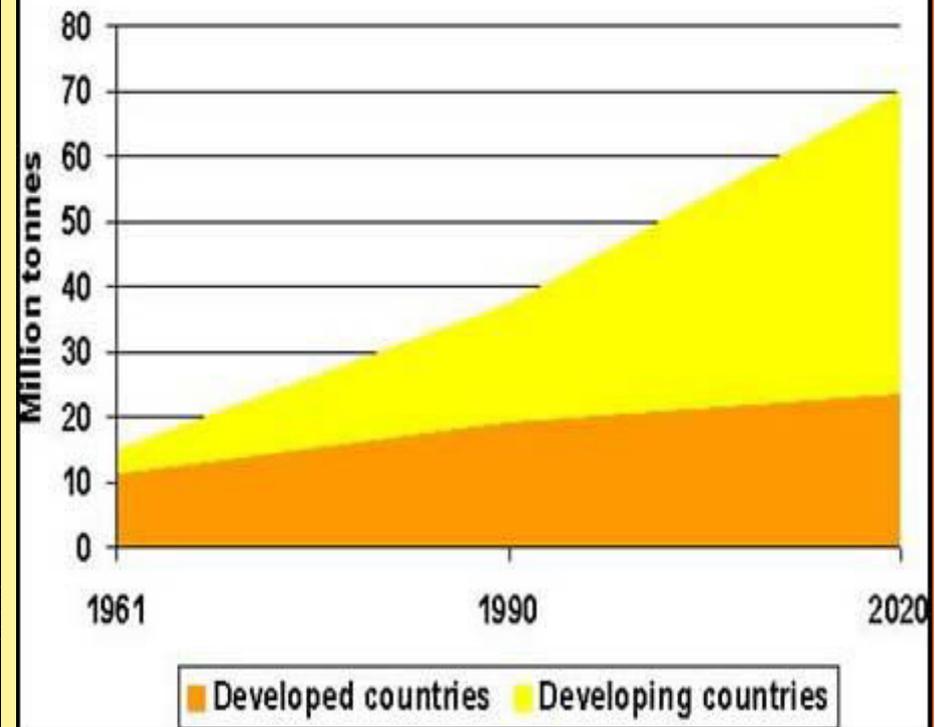
Requirement of Feed Raw Material



Chicken Meat Production

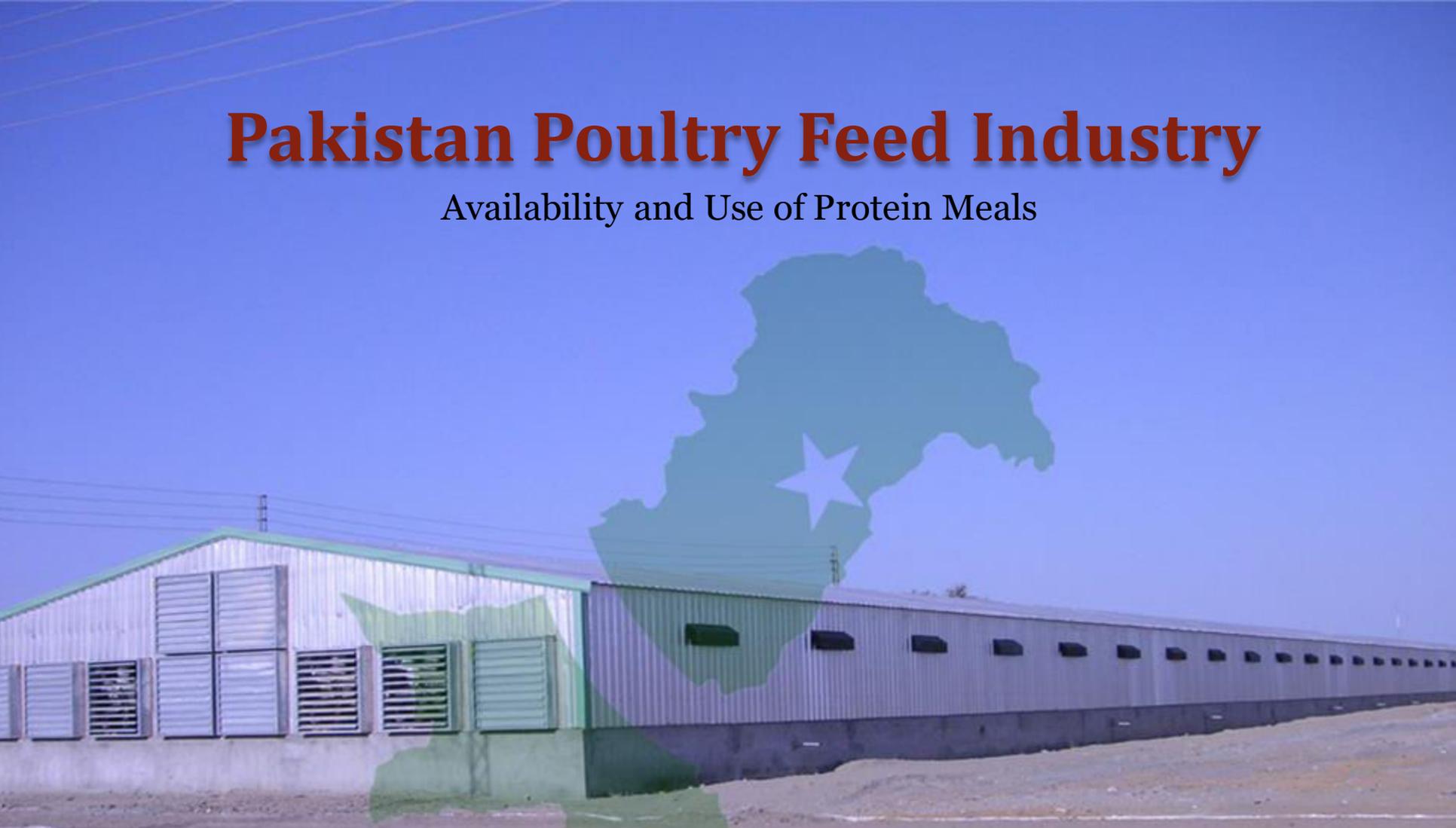


Eggs Primary Production



Pakistan Poultry Feed Industry

Availability and Use of Protein Meals



Pakistan Poultry Industry

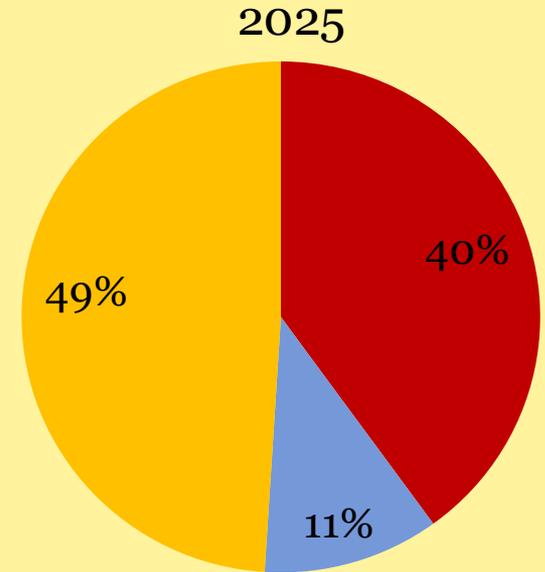
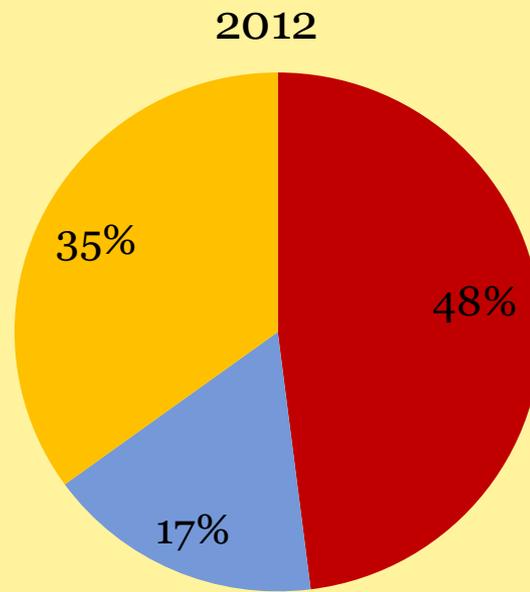
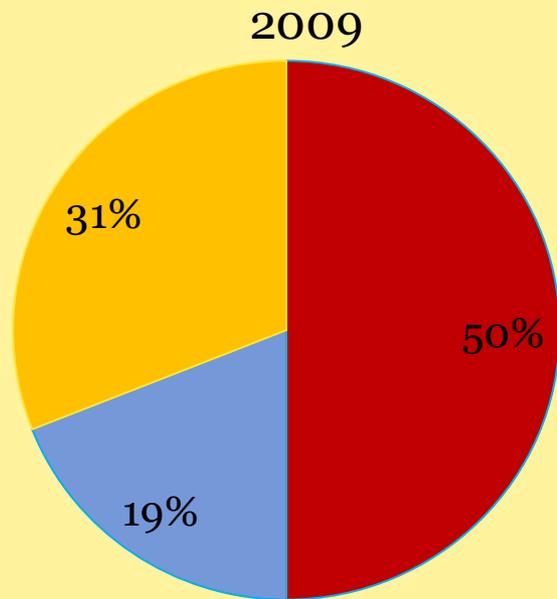


- **11th largest poultry producer in the world**
- **Current investment Rs. 700 billions**
- **Growth Rate ~ 5 % annually**
- **Poultry meat 1,518 thousand tons (36 %)**
- **Poultry Eggs: 19 billions**
- **Employment provision > 1.5 millions**
- **Share in economy**
 - **Gross Domestic Products: 1.4 %**
 - **Agriculture Value Added: 7.5 %**
 - **Livestock Value Added: 12.7 %**

Changing Composition of Pakistan Meat Production



■ Beef ■ Mutton ■ Chicken



Projected

Why More Poultry?



- **Efficient**
- **Affordable**
- **Nutritious**
- **Wholesome**



Challenge



**To produce least cost feed for maximum output
without sacrificing;**

- **Animal health and welfare**
- **Environmental quality**
- **Human safety**



Sector

Ingredient

Contribution (%)

Agriculture

Corn
Sorghum
Milo
Wheat

50



Agro Industrial

Rice Tips
Rice Polishing

13



Wheat

Wheat Bran

Oil Extaction

Soybean Meal
Canola Meal
Rapeseed Meal
Sunflower Meal

35



Gum

Guar meal

Sugar

Molasses

Gelatin

DCP

Fisheries

Fishmeal/ By product meal

2

Premixes

Vitamins/ Minerals
Amino Acids /Enzymes/Premixes



Protein Meals

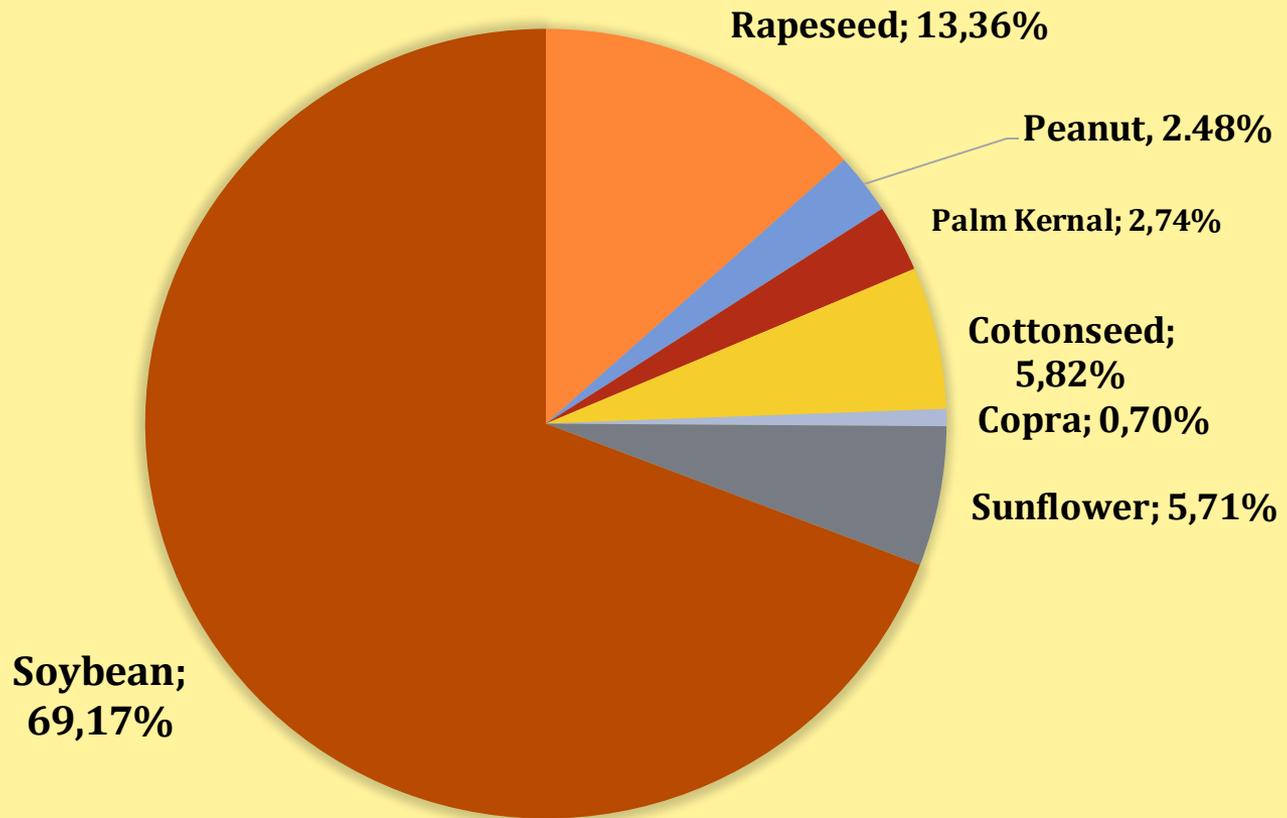


Protein: Vital and essential nutrient for growth, production, immunity, adaptation to the environment, and in many biological functions

Major Protein Sources for Poultry

Plant proteins	% CP	Animal proteins	% CP
Soybean meal	47.5	Meat-bone meal	51.6
Canola meal	34.8	Fish meal	50-70
Cottonseed meal	41.0	Poultry byproduct	59.5
Sunflower meal	36.8	Feather meal	82.0
Peanut meal	49.0		

Oilseeds: Global Scenario



Source: Foreign Agriculture Service/USAID

Soybean Meal



- **De-hulled meal** **47-49% protein**
- **Hulled meal** **44% protein**
- **Soybean meal is an excellent source of lysine tryptophan and threonine only methionine is deficient.**
- **The amino acid in corn protein and soy protein combine well to provide a balance mixture for poultry feed requirement.**
- **Variation in total amino acid content of SBM is lower than that observed in fish meal, canola and rapeseed meal.**

Rapeseed Meal



- **Protein content: 35-44% of DM.**
- **Poorer in lysine than SBM: 5.5 vs 6.3.**
- **Richer in Sulphur containing amino acids.**
- **Contains 30% hulls.**
- **CF 10-18% of DM.**
- **High lignin content: 10% of DM.**
- **Erucic acid (bitter taste and health problems).**
- **Glucosinulates (Anti Nutritional Factor)**

Rapeseed Meal

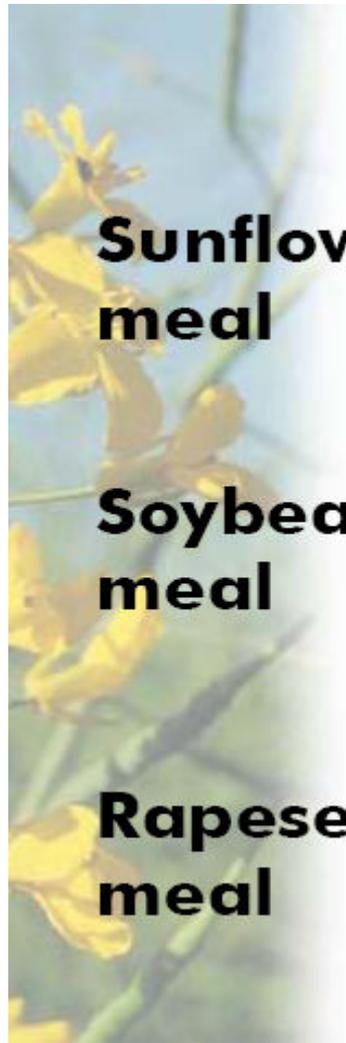


- **Poor reputation..... Erucic acid (bitter taste and health problems).**
- **Glucosinulates (ANF).**
- **Proteases, Xylanases and Phytases: reduction of encapsulating effect of cell wall & increased nutrient availability.**

Sunflower meal



- **Crude Protein 23% (Non-dehulled) and 40% for highly decorticated solvent extracted meal.**
- **Fiber 20-26 % in dehulled sunflower meal.**
- **Quality of sunflower meal depends.....seed composition, Hulls/kernel ratio, Dehulling and storage.**
- **Richer in Sulphur containing amino acids.....Methionine.**
- **Lower Lysine than SBM3.5 vs 6.1.**



Sunflower meal

Soybean meal

Rapeseed meal

Crude Protein

Crude Fiber

fat

water



% of total mass

Cotton seed meal



- **India, China and USA and Pakistan Main producers.**
- **Poultry limited due to:**
 - **High fiber content (even more than 20%).**
 - **Storage problem: Mold development when wet and dust explosion when dry.**
 - **Gossypol: Egg yolk discoloration in layers**
- **Inferior in four of the most important essential amino acids lysine methionine threonine and tryptophan.**
- **Digestibility of these amino acids is lower than that found in soybean meal.**

Canola meal



- **00 variety of rapeseed .**
- **Low erucic acid.**
- **Low glucosinulates.**
- **Ist introduced in Canada in 1970s.**

Fish Meal



- **5-6 Million tonsGlobal production.**
- **Peru and Chile.....Main producers.**
- **Obtained by cooking, pressing, drying and milling fresh raw fish and fish trimmings.**
- **Coarse brown flour.**
- **Excellent source of highly digestible protein, long chain omega 3 fatty acids.**
- **High biological value in poultry.....other than protein , source of Ca, P, Se and I.**
- **High price.....& Quality issue**

Pakistan Poultry Feed Industry

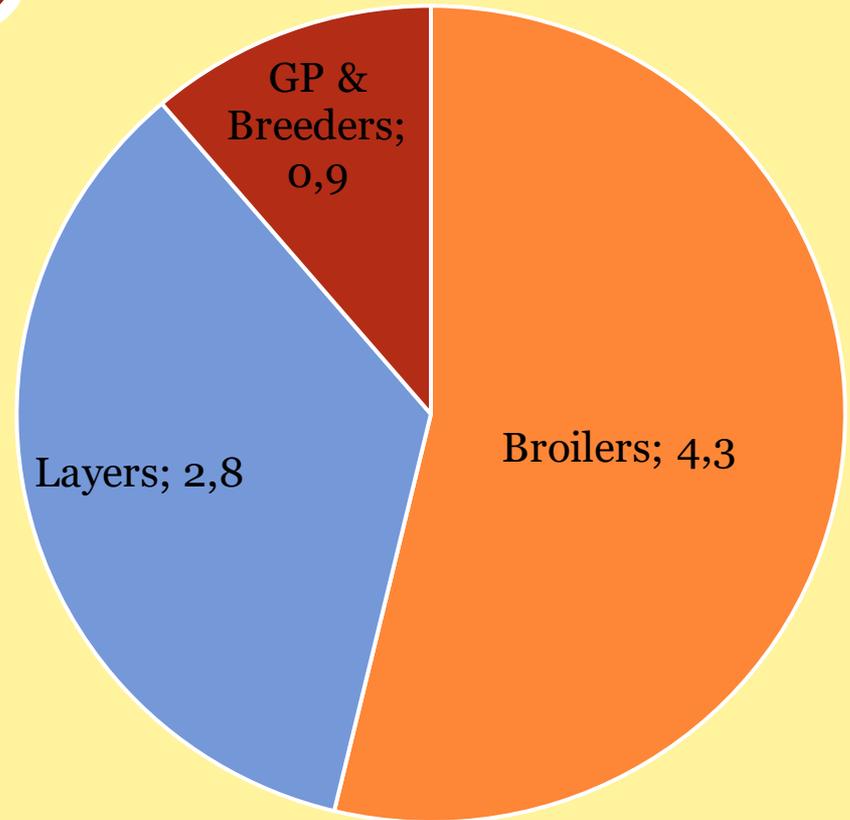


- **Important contributor for economical and efficient poultry production**
- **65-75% of recurring costs**
- **Estimated poultry feed production in Pakistan = 8 million tons**

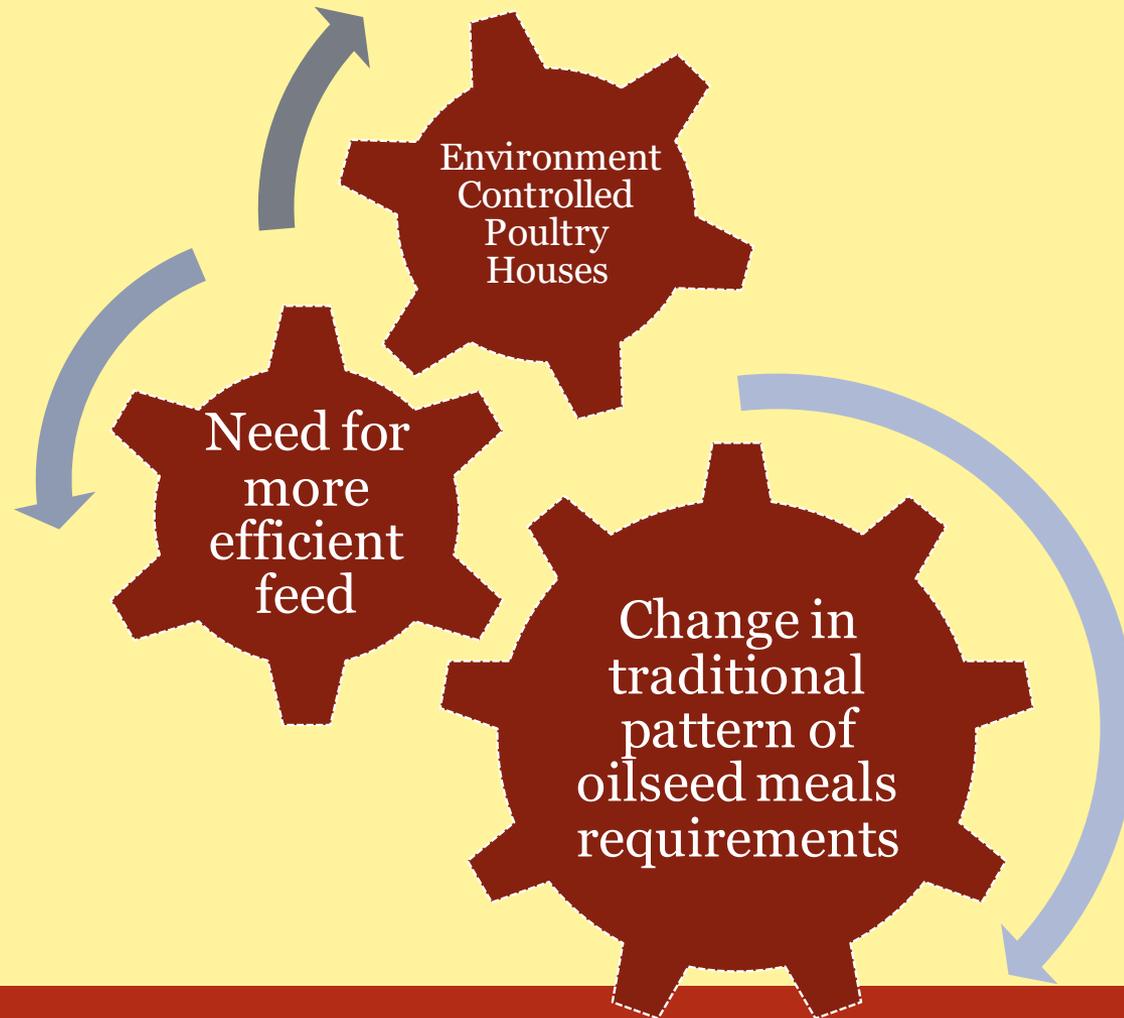
Broilers = 4.3

Commercial Layers = 2.8

GP & Breeders = 0.9

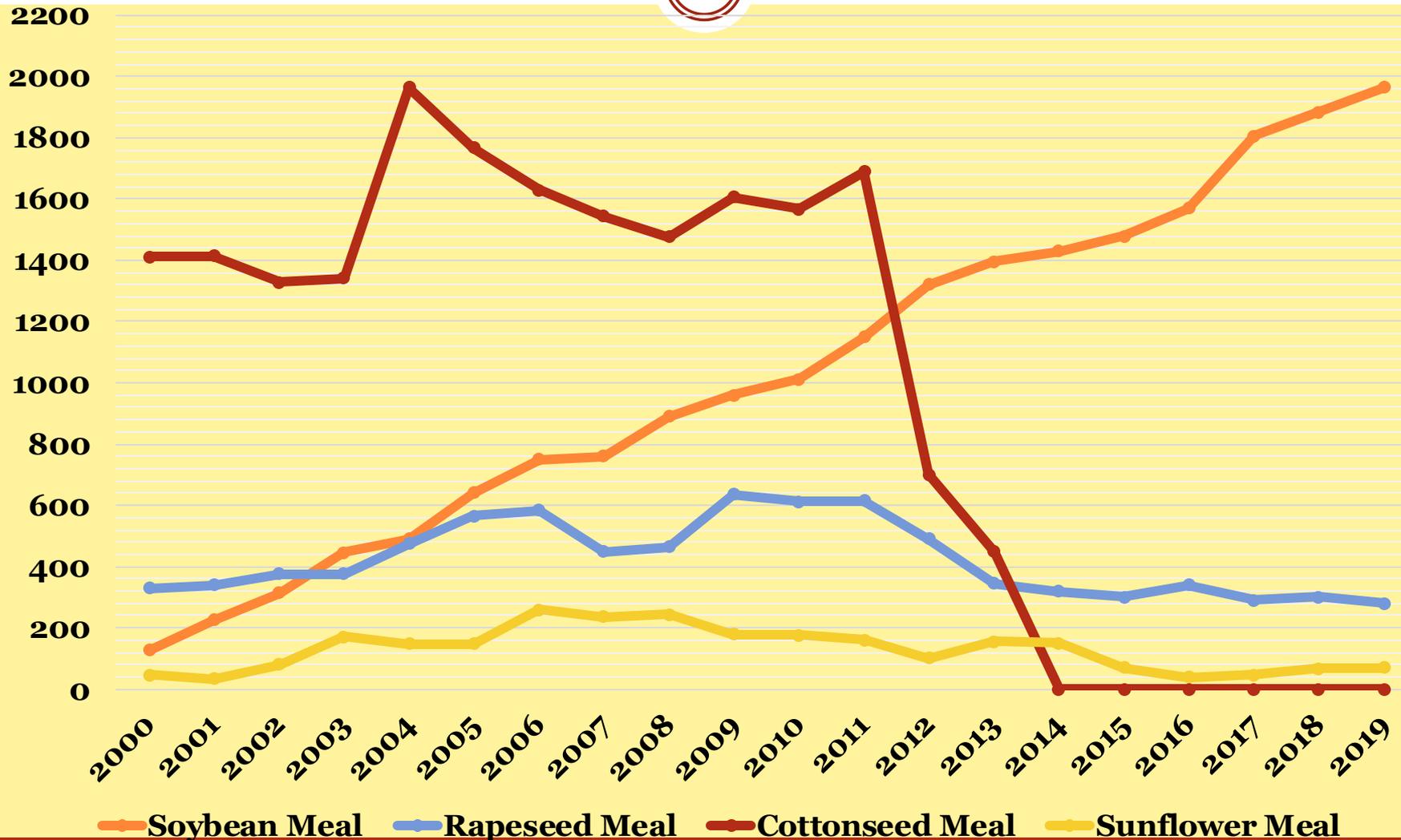


Hi-Tech Poultry Production



Pakistan Oilseed Meals for Poultry

(Thousand Tons)



Oilseed Crops of Pakistan



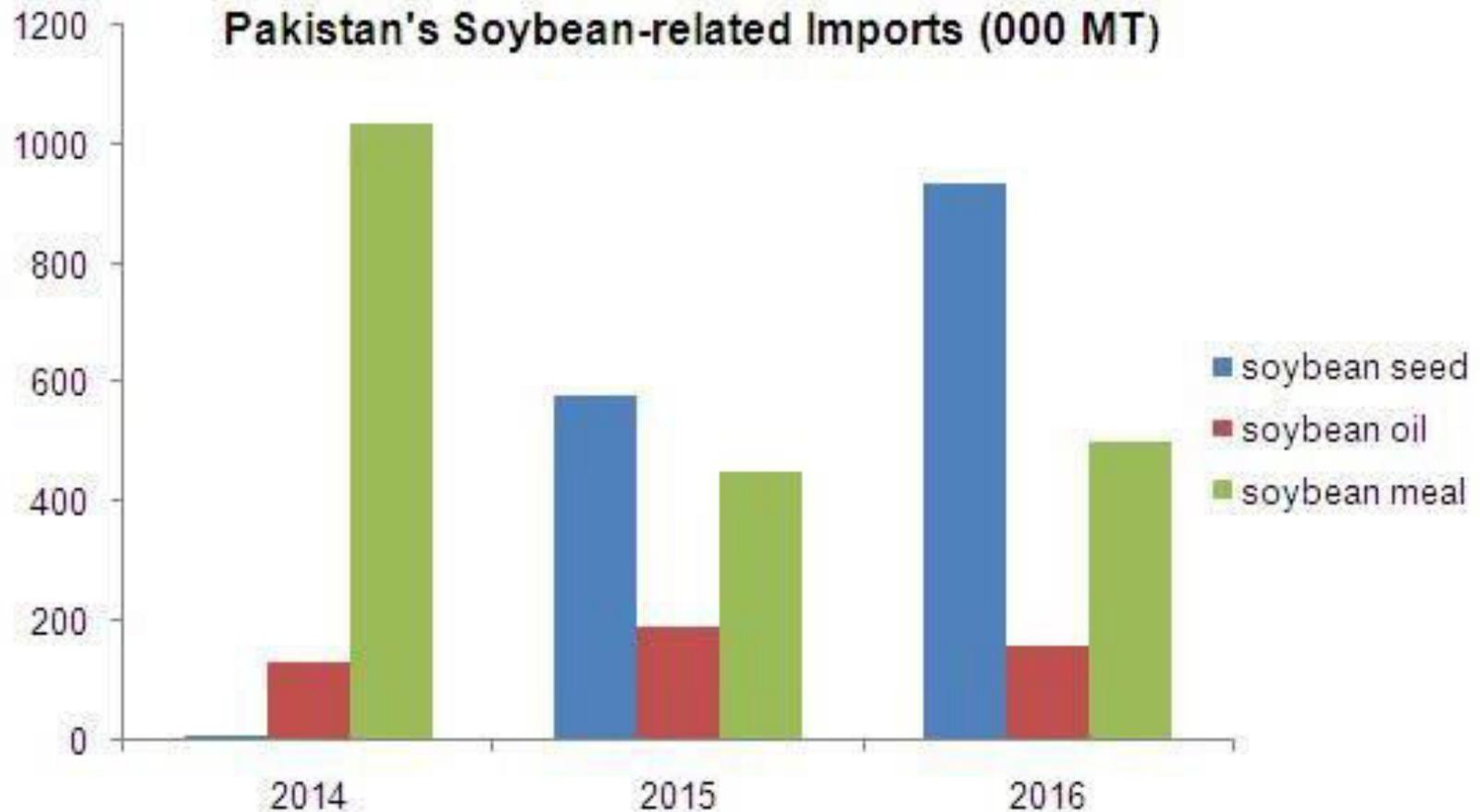
Area and Production of Major Oilseed Crops

Crops	2017-18 (Jul-Mar)			2018-19 (Jul-Mar)		
	Area (000 Acres)	Production		Area (000 Acres)	Production	
		Seed (000 Tons)	Oil (000 Tons)		Seed (000 Tons)	Oil (000 Tons)
Cottonseed	6,672	3,057	367	5,252	2,748	330
Rapeseed-Mustard	492	226	72	643	318	102
Sunflower	259	147	56	264	142	54
Canola	60	35	13	68	38	14
Total	7,483	3,465	508	6,227	3,246	500

During 2018-19 (July-March), 2.421 million tons edible oil valued US\$ 1.455 billion was imported.

Source: Pakistan Oilseed Development Board (PODB), Pakistan Bureau of Statistics

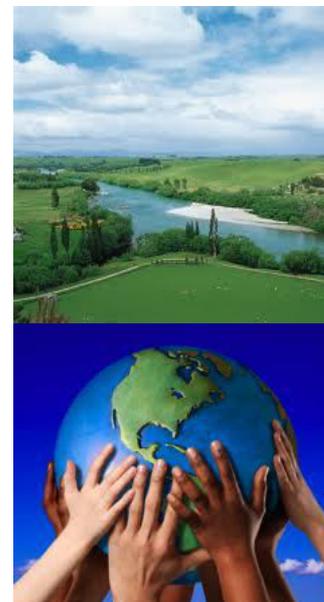
Pakistan Soybean Imports



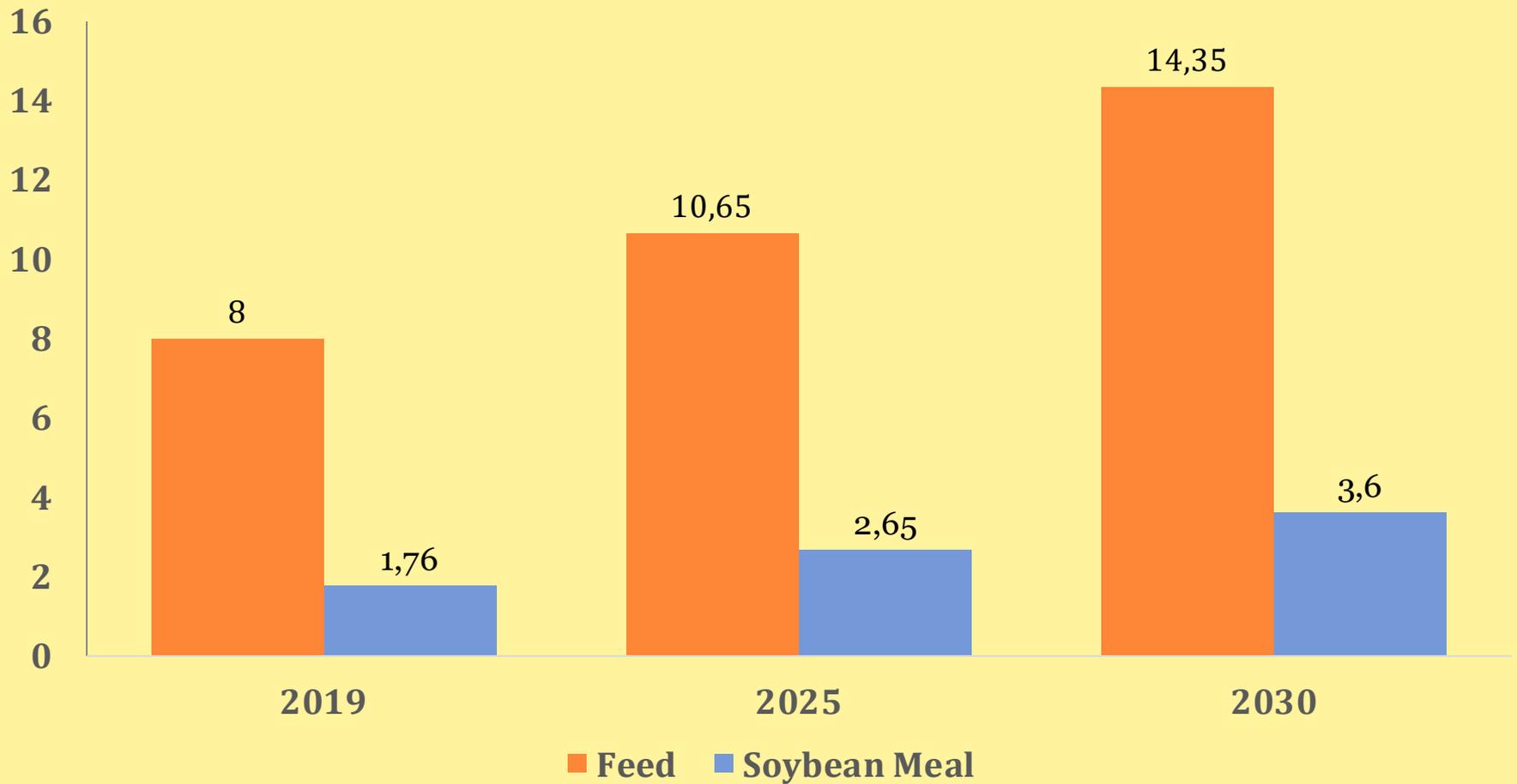
Sources: PVMA, PEOC, USDA



SAFE ✓ **FEED**



Projected Feed Production & Soybean Meal Requirements for Pakistan Poultry (Million Tons)



Recommendations



- With less than 10% share of local crops in the country's edible oil demand and no soybean cultivation, Pakistan is heavily dependent on imports.
- Need for Government policies to encourage local production of oilseeds.
- Provision of quality seeds and production technologies to farmers.
- Promotion of Soybean in Northern areas of Punjab, Khyber Pakhtunkhwa during autumn and during spring Southern Punjab and Sindh
- Support price and buy back arrangements of farmers' produce through All Pakistan Solvent Extractors Association (APSEA) and PVMA.



Thanks