India Corn Outlook

03 May 2024

Coimbatore

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U.S. GRAINS COUNCIL

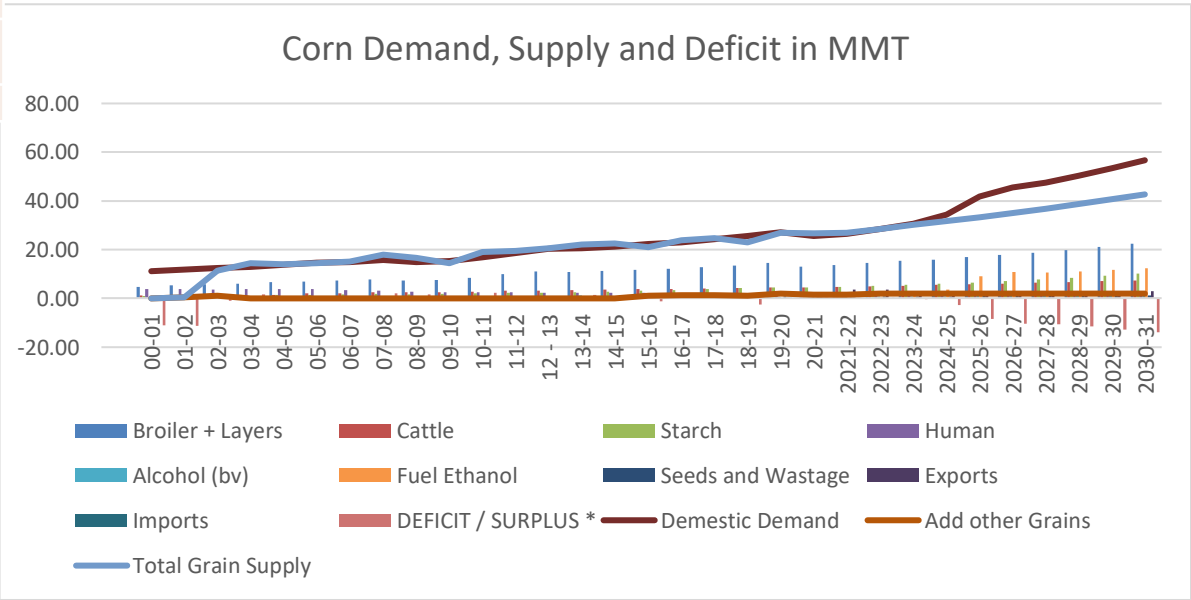
Feed, Corn and Protein Meal Demand in India

Feed and Protein Meal Demand in MMT												
Table 1: India Feed Demand in MMT												
	2019/20	2020/21	2021/22	2022/23	2023/24 (P)	2024/25 (F)	2025/26 (F)	2026/27 (F)	2027/28 (F)	2028/29 (F)	2029/30 (F)	2030/31 (F)
Poultry Feed Demand	29.05	26.10	27.34	29.02	30.64	31.78	33.73	35.38	37.56	39.68	42.12	44.72
Cattle Feed Demand (Org)	13.00	14.00	14.98	16.03	17.15	18.35	19.64	21.11	22.69	25.14	27.15	29.33
Aqua Feed Demand	1.98	2.12	2.27	2.43	2.72	2.91	3.11	3.35	3.60	3.87	4.18	4.51
	44.03	42.22	44.59	47.48	50.51	53.04	56.48	59.84	63.85	68.69	73.45	78.56
Milk Production (MMT)	198.40	206.34	221.06	225.48	232.25	239.21	248.78	258.73	266.49	277.15	288.24	299.77
Cattle Feed Ingredient demand (MMT)	99.20	103.17	110.53	112.74	116.12	119.61	124.39	129.37	133.25	138.58	144.12	149.89

Corn Demand in India

Demand and Supply Of Corn in MMT									
	2009/10	2015/16	% change	2019/20	% change	2025/26	% change	2030/31	% change
Seed/wastage	0.51	0.71		0.71		0.86		1.10	
Poultry	7.60	11.75	54.50	14.52	4.73	16.86	3.22	22.36	6.52
Livestock	2.54	3.70	45.68	4.50	4.31	5.74	5.53	7.33	5.53
Starch	1.87	3.07	64.35	4.53	9.50	6.36	8.04	10.24	12.21
Food	2.51	2.17	-13.54	2.12	-0.40	2.00	-1.17	2.00	0.00
Brewery	0.29	0.86	199.00	0.60	-6.04	0.88	9.35	1.42	12.21
Fuel Ethanol	0.00	0.00		0.00		9		12.26	
Total Demand	15.32	22.26		26.99		41.70		56.71	
Supply (All grains)	14.50	21.00		26.97		33.25		42.71	
	Exporter	Importer		Importer		Importer		Importer	

As per OECD-FAO Agricultural outlook 2023-2032, released on 6 July 2023, maize consumption in 2020-2022 (est) averaged at 29.829 MMT and will increase to 35.544 MMT (without the biofuels) and consumption is increasing at 1.63% in 2032. Corn for feed in 2020-2022 (Est) averaged 15.393 MMT and is projected to increase to 19.383 MMT by 2032 at a growth of 2.33%. Maize production in the similar timeframe 2020-22 averaged 32.589 MMT and to increase to 38.884 MMT by 2032 with the growth rate of 1.8%. India is projected to export 3.33 MMT in 2032 as per OECD.



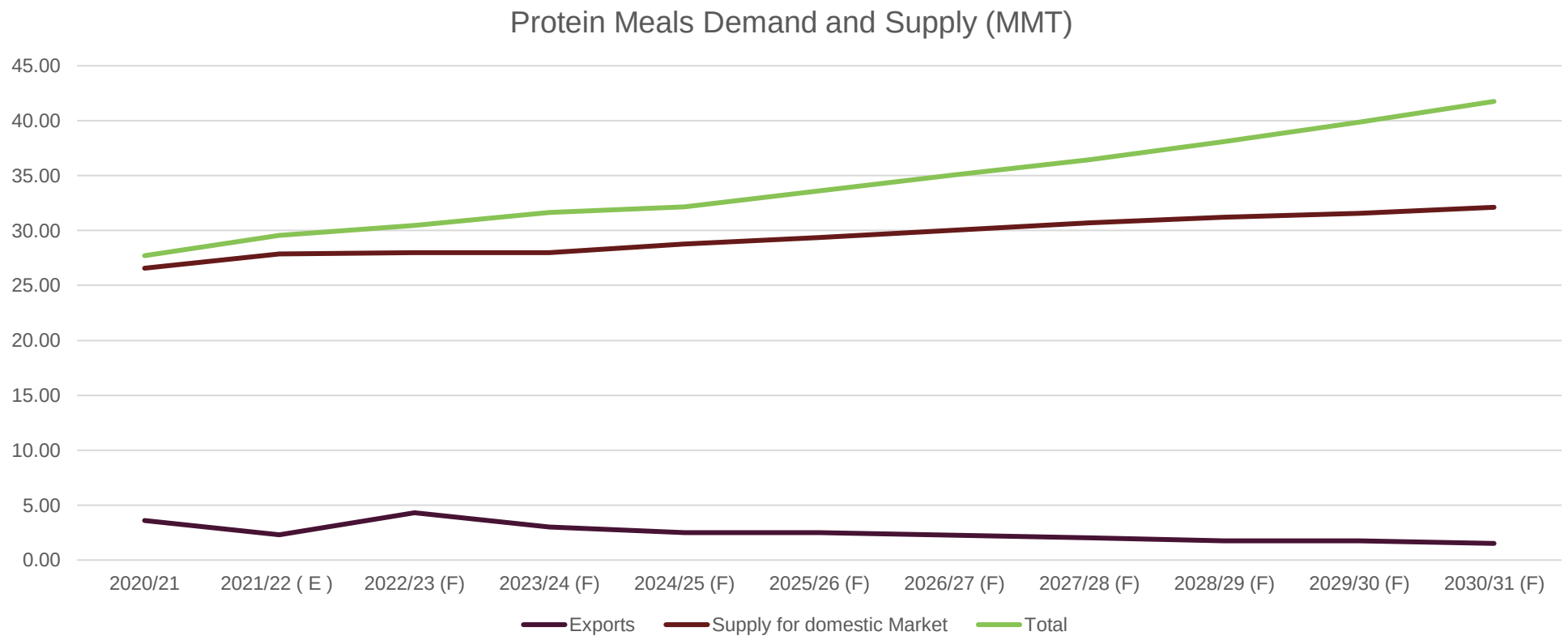
Protein Meal Demand in India

Table 2: Protein Meal Demand and Supply in MMT

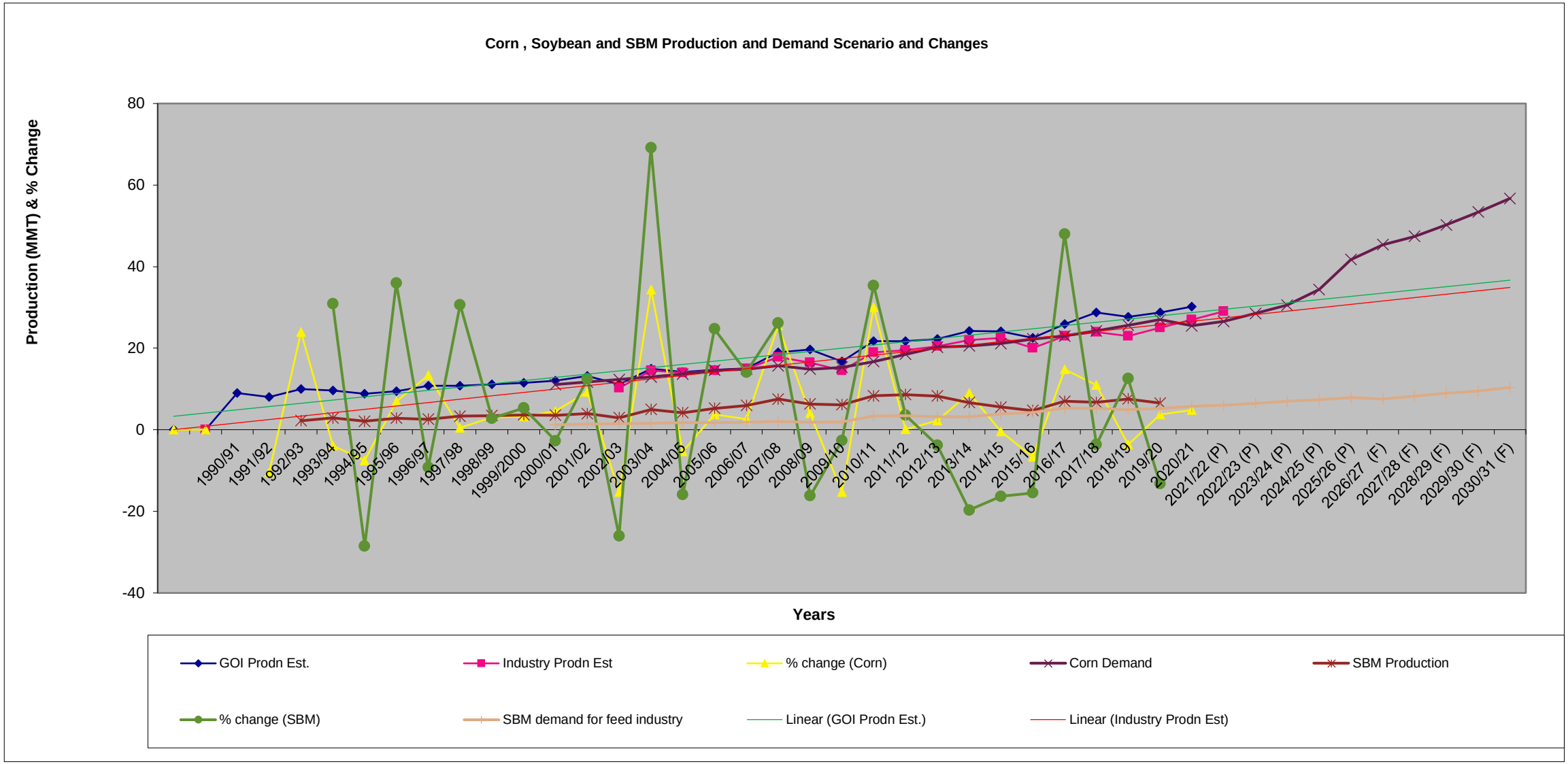
Supply		2020/21	2021/22 (E)	2022/23 (F)	2023/24 (F)	2024/25 (F)	2025/26 (F)	2026/27 (F)	2027/28 (F)	2028/29 (F)	2029/30 (F)	2030/31 (F)
SBM		7.60	6.70	8.00	7.16	7.30	7.45	7.561003	7.63661299	7.7129791	7.751544	7.79030174
Mustard Meal *		4.80	5.90	6.11	6.14	6.26	6.39	6.48	6.58	6.58	6.61	6.65
Cotton Seed Meal *		8.73	8.43	9.54	9.21	9.30	9.44	9.54	9.65	9.77	9.86	9.96
Peanut Meal *		1.43	1.40	1.39	1.35	1.05	1.06	1.07	1.08	1.08	1.09	1.10
Sun meal *		0.24	0.21	0.15	0.16	0.16	0.17	0.172	0.173	0.174	0.175	0.176
DORB *		7.03	7.17	6.70	6.50	6.70	6.80	6.868	6.920	6.971	7.024	7.076
CGM (4% of maize crush for starch)		0.20	0.21	0.23	0.24	0.25	0.25	0.28	0.31	0.34	0.3724	0.4096
Distillers Grains** (Maize + Rice)		0.15	0.16	0.16	0.22	0.26	0.30	0.31	0.34	0.36	0.42	0.46
Total		30.18	30.18	32.28	30.97	31.28	31.87	32.28	32.69	32.99	33.31	33.62
Exports		3.60	2.30	4.30	3.00	2.50	2.50	2.25	2.00	1.75	1.75	1.50
Supply for domestic Market		26.58	27.88	27.98	27.97	28.78	29.37	30.03	30.69	31.24	31.56	32.12
Projected Demand of Meals												
Poultry		5.74	6.01	6.38	6.74	6.99	7.42	7.78	8.26	8.73	9.27	9.84
Dairy (org)		3.50	3.75	4.01	4.29	4.04	4.32	4.64	4.99	5.53	5.97	6.45
Dairy (unorg)		17.83	19.11	19.34	19.79	20.25	20.95	21.65	22.11	22.69	23.39	24.11
Aqua		0.64	0.68	0.73	0.82	0.87	0.93	1.00	1.08	1.16	1.25	1.35
Total		27.71	29.55	30.46	31.64	32.15	33.63	35.08	36.45	38.11	39.89	41.76
Shortfall		1.13	1.67	2.48	3.67	**3.37**	4.26	5.05	5.76	6.87	8.33	9.63
% Shortfall		4.09	5.67	8.16	11.59	10.48	12.66					

As per OECD-FAO Agricultural outlook 2023-2032, released on 6 July 2023, protein meal supplies in India 2020-22 averaged at 22.886 MMT and increase to 26.504 MMT by 2032 at a growth rate of 1.43%. Protein meal consumption in 2020-22 is estimated at 20.834 MMT and expected to be 25.633 MMT by 2032 at a growth of 1.91%. Exports is 2032 are projected at 1.61 MMT. Milk production in 2032 is projected at 249 MMT by OECD and GOI projects milk production to reach 300 MMT by 2030.

Feed and Protein Demand and Supply



Corn and SBM Supply and Demand



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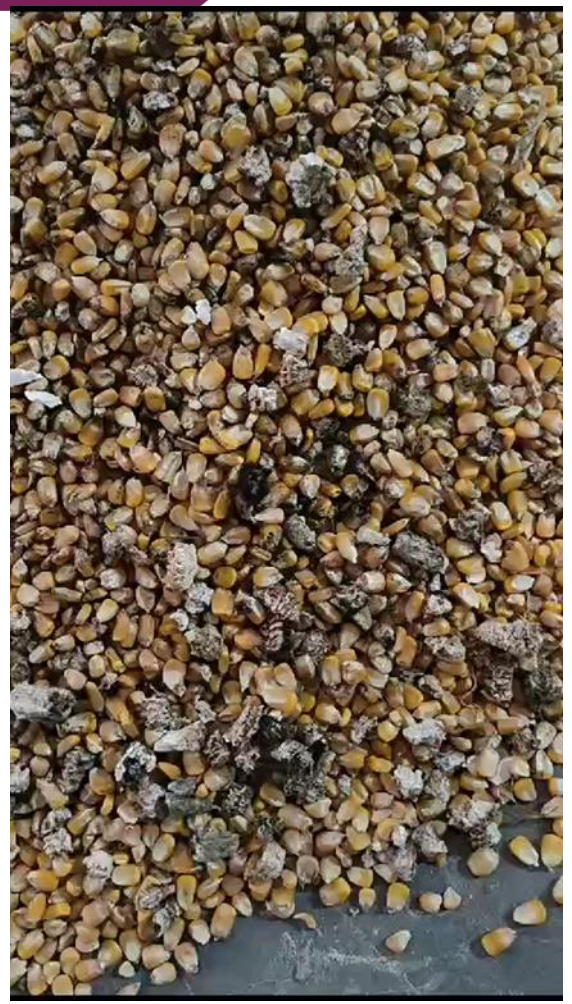
Current Corn S&D

Current and Projected Corn demand (MMT)		
	2023-24	2024-25 (P)
Poultry	15.32	15.89
Dairy	5.21	5.47
Starch	5.5	5.9
Food	2	2
Alcohol (Bv)	0.73	0.8
Ethanol (FI)	3	4
Seed/Waste	0.78	0.82
Exports	2.87	0.8
Total Demand	35.41	35.68
Production	30	
Other grains use	1.8	1.8
Ending Stocks	-3.61	
Imports		0.25

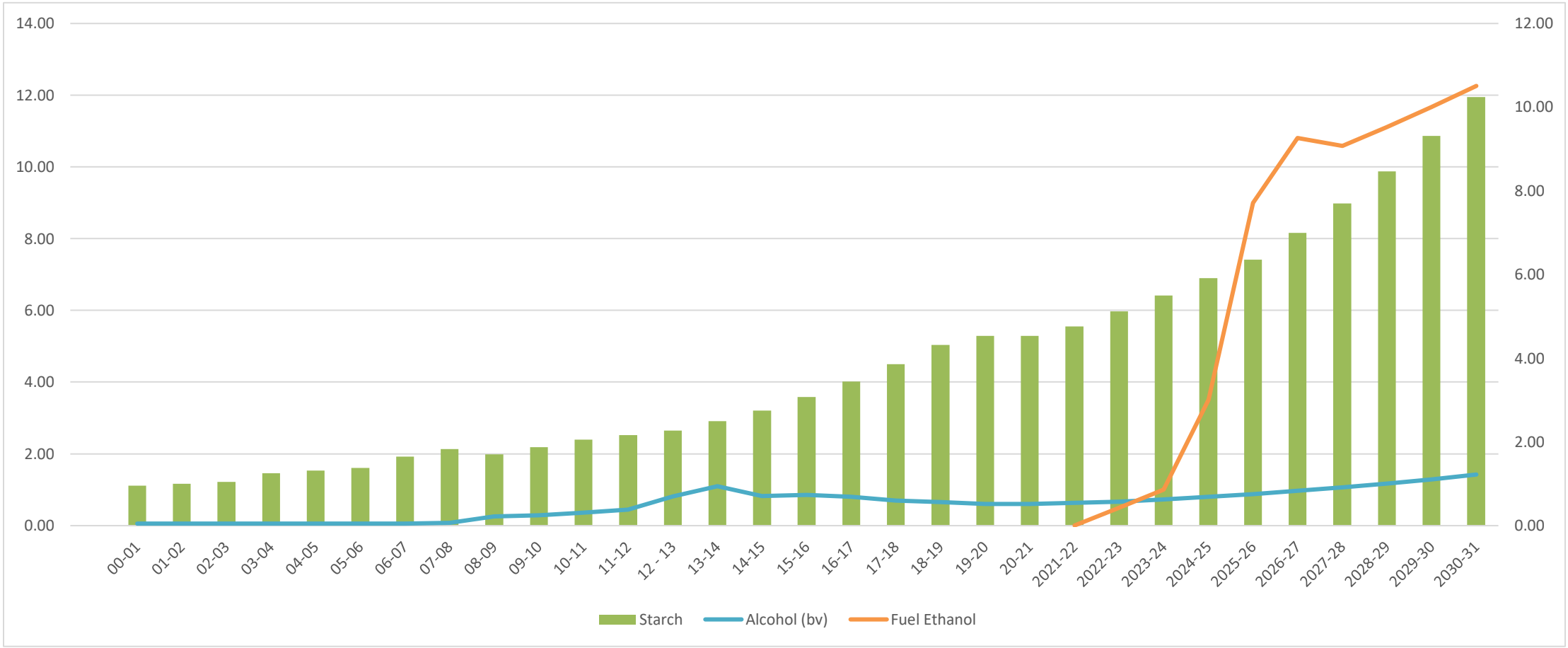
Corn use (ETH) 2023/24
(as per demand 5.4 MMT)
Corn use(ETH) in 2024/25
(as per demand 6-7 MMT)

New land….Seed…

Mynamar	50,000
Ukraine	1,20,000
Russia	50,000
Others	30,000
Total	2,50,000



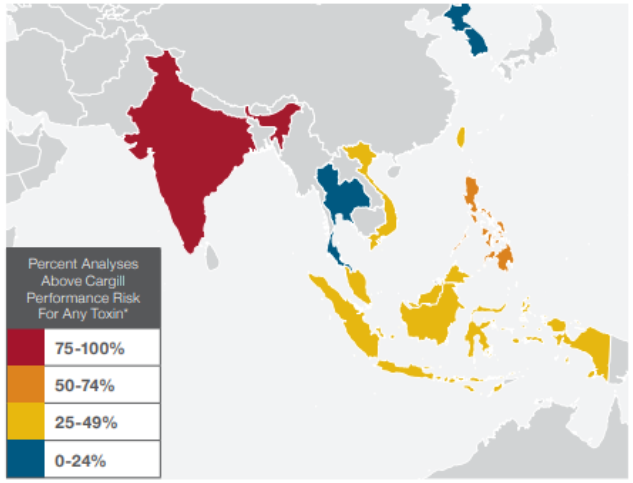
Biggest Disruptor ….in corn demand (Corn for fuel ethanol)



Mycotoxins (Cargill Survey 2022)

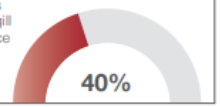
World Survey (ASIA)

Regional Data: **Asia**



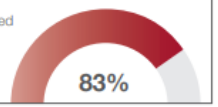
Total Analyses **30,156**

% Analyses Above Cargill Performance Risk Threshold



Total Contaminated Analyses Above Detection Limit **25,116**

Percent Contaminated Analyses Above Detection Limit



Toxin	Total Analyses	% Contaminated Analyses Above Detection Limit	% Contaminated Analyses Above Perf. Risk Threshold	Year-Over-Year Analyses Cont. Above Cargill Perf. Risk Thres. Trend
AFL	13,826	91%	53%	↑9%
FUM	3,480	81%	43%	↑ 8%
OTA	2,106	68%	2%	↓ 1.5%
T2	2,669	80%	15%	↑ 1.5%
DON	3,845	70%	33%	↑ 6.5%
ZEN	4,230	81%	35%	↑ 4%
TOTAL	30,156	83%	40%	↑ 9%

India does have issues during production and storage of feed ingredients. Other Asian countries import good quality material, stock for short period and use.

INDIA

Cargill Mycotoxin Survey (India)

De Oiled Rice Bran (DORB)

Mycotoxin	N° Samples	N° Positive	N° Above Performance Risk	Average (ppb)	Maximum (ppb)
Aflatoxin (total)	2,163	2,135	1,849	31	268
Fumonisin	18	18	13	829	4,160
T2 Toxin (total)	18	18	11	42	135
Vomitoxin	1	1	1	3,250	3,250
Zearalenone	18	17	12	195	784

Soya Bean Meal

Mycotoxin	N° Samples	N° Positive	N° Above Performance Risk	Average (ppb)	Maximum (ppb)
Aflatoxin (total)	50	49	16	14	81
Fumonisin	12	12	4	409	1,270
T2 Toxin (total)	12	12	6	32	96
Zearalenone	12	10	4	31	134

Ground Nut De Oiled Cake (DOC)

Mycotoxin	N° Samples	N° Positive	N° Above Performance Risk	Average (ppb)	Maximum (ppb)
Aflatoxin (total)	80	80	75	83	323
Fumonisin	15	15	9	784	1,521
T2 Toxin (total)	15	15	7	53	353
Zearalenone	15	12	5	71	333

Distillers Dried Grains with Soluble (DDGS)

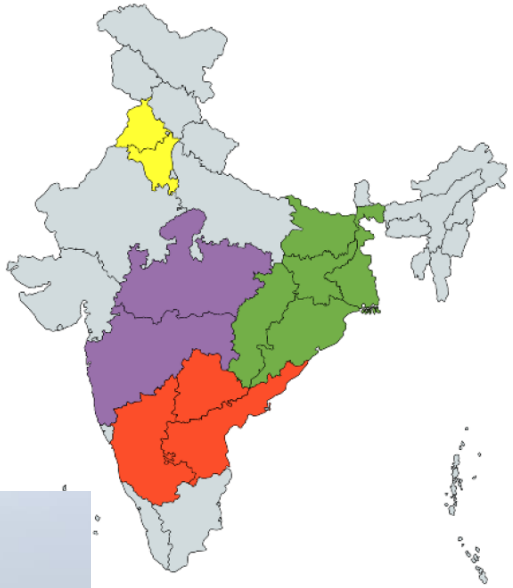
Mycotoxin	N° Samples	N° Positive	N° Above Performance Risk	Average (ppb)	Maximum (ppb)
Aflatoxin (total)	40	40	39	77	217
Fumonisin	14	14	9	830	2,900
T2 Toxin (total)	14	14	14	388	703
Zearalenone	14	14	13	293	965

Future Plans (Rice to corn area)

Regional analysis of Maize Production & Distillery demand

North Western region
Punjab + Haryana
6298 KLPD
(7602 KLPD)

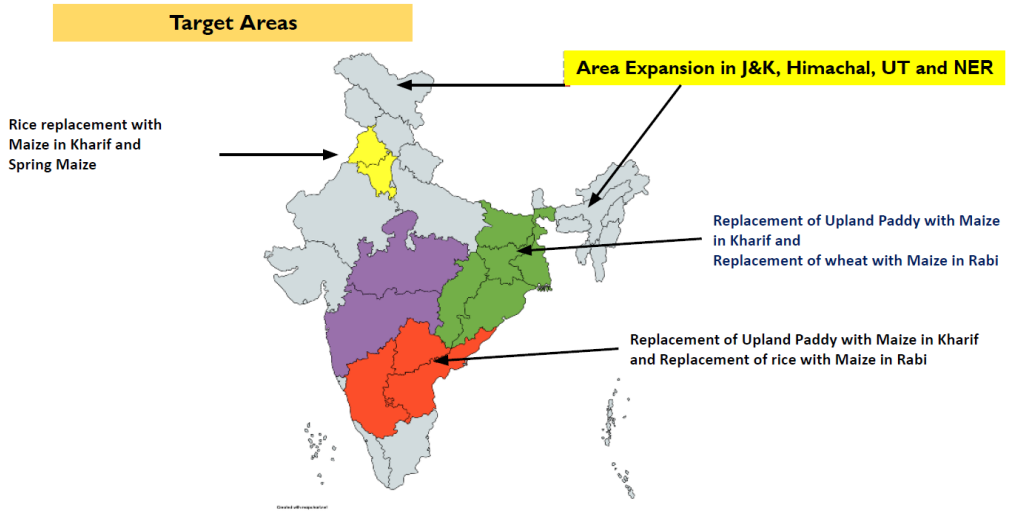
Central region
Madhya Pradesh + Maharashtra
4600 KLPD



Eastern region
Bihar + West Bengal + Chhattisgarh + Odisha
7264 KLPD

Southern region
Telangana + Andhra Pradesh + Karnataka
3200 KLPD

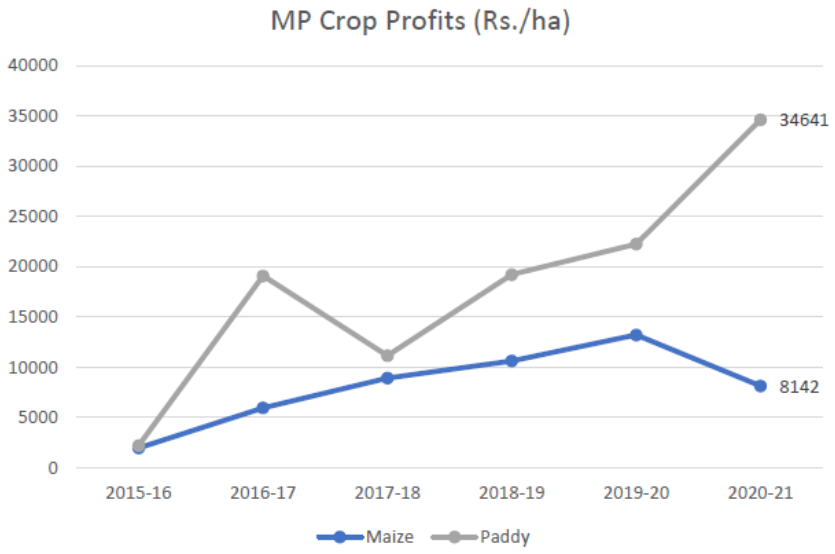
Enahancement of acreage under Maize



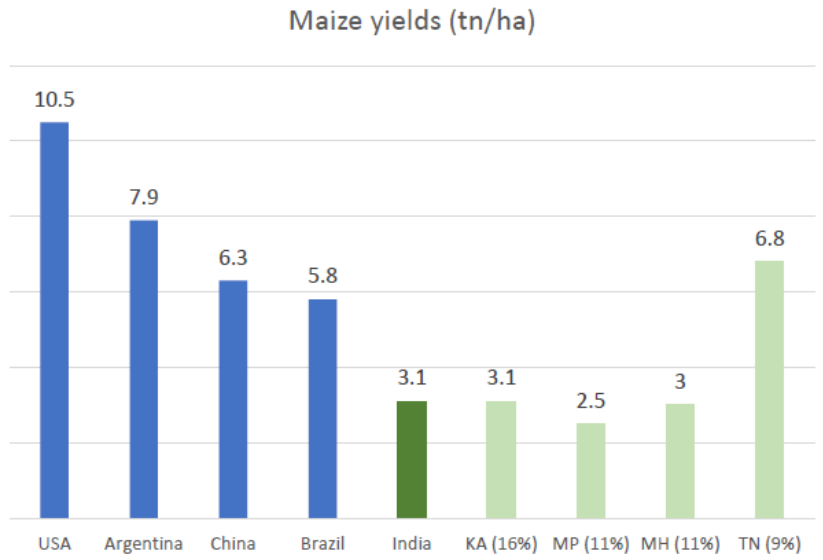
- To Promote catchment area model, OMCs may explore to incentivize the distilleries attached to catchment area
- Farmers to get Minimum Support Price (MSP) for Corn
- Ethanol Price from maize = X+ Delta
    - Where X = Ethanol Price from Maize
    - Delta = additional incentive to those suppliers who have agreement with farmers or state govt. for the catchment area for supply of Maize.

Will the farmers shift?

- Maize V/s paddy Profits (MP in Rs./ha)



- Maize Yields: TE 2020-21



Source: DES

Arcus Policy Research

Rabi Area under corn – Target Bihar

Government of India
Ministry of Agriculture & Farmers Welfare
Department of Agriculture & Farmers Welfare
Crops Division

Final area coverage under Rabi crops as on 02.02.2024

(Area in lakh hectare)

S. No.	Crops	Normal Rabi Area (DES)	Area Sown		Difference over last year
			2023-24	2022-23	2022-23
1	**Wheat**	**307.32**	**341.57**	**339.20**	**2.37**
2	**Paddy**	**52.50**	**39.29**	**40.37**	**-1.07**
3	**Pulses**	**152.74**	**160.08**	**166.19**	**-6.11**
a	Gram	100.92	104.74	110.71	-5.97
b	Lentil	14.37	19.57	18.52	1.05
c	Fieldpea	6.50	10.14	9.64	0.50
d	Kulthi	1.98	4.08	4.08	0.00
e	Urdbean	8.81	6.96	7.73	-0.78
f	Moongbean	12.02	5.93	6.78	-0.85
g	Lathyrus	2.90	3.60	3.45	0.15
h	Other Pulses	5.23	5.06	5.29	-0.22
4	**Shri Anna -cum-Coarse cereals**	**51.32**	**57.38**	**53.57**	**3.81**
a	Jowar	25.23	25.17	22.37	2.80
b	Bajra	0.00	0.17	0.16	0.01
c	Ragi	0.00	0.76	0.86	-0.10
d	Maize	20.41	23.08	22.62	0.46
e	Barley	5.68	8.21	7.57	0.65
5	**Oilseeds**	**84.45**	**110.96**	**109.76**	**1.20**
a	Rapeseed & Mustard	73.06	100.44	97.97	2.47
b	Groundnut	6.94	4.88	5.68	-0.80
c	Safflower	0.69	0.79	0.86	-0.07
d	Sunflower	1.30	0.57	0.92	-0.34
e	Sesamum	0.52	0.58	0.56	0.02
f	Linseed	1.94	3.30	3.20	0.10
g	Other Oilseeds	0.00	0.40	0.58	-0.18
	Total Crops	**648.33**	**709.29**	**709.09**	**0.20**

(5) Rabi Maize

Sl.No.	State	Normal Area (DES)	Target (SDA)	Normal of Corr. week	Current Week 2023-24	2022-23
1	2	3		4	5	6
1	ANDHRA PRADESH	2.03	2.15	1.622	1.170	1.820
2	ARUNACHAL PRADESH	0.08	0.11	0.100	0.107	0.107
3	ASSAM		0.42	0.371	0.393	0.411
4	BIHAR	4.53	7.94	5.477	7.920	6.357
5	CHHATTISGARH		1.30	0.942	1.130	1.140
6	GUJARAT	1.08	1.10	1.042	1.154	1.056
7	HARYANA					
8	HIMACHAL PRADESH					
9	JAMMU AND KASHMIR					
10	JHARKHAND	0.14	0.35	0.090	0.104	0.090
11	KARNATAKA	1.86	1.40	0.883	1.060	1.140
12	KERALA	0.00				
13	MADHYA PRADESH	0.14				
14	MAHARASHTRA	3.66	2.75	2.667	3.376	3.882
15	ORISSA	0.04	0.36	0.182	0.242	0.235
16	PUNJAB					
17	RAJASTHAN	0.13		0.000		
18	TAMIL NADU	1.89	1.90	1.816	2.205	1.954
19	TELANGANA	1.69	2.07	1.425	2.079	2.207
20	UTTAR PRADESH	0.51	0.15	0.222	0.083	0.501
21	UTTARAKHAND	0.00				
22	WEST BENGAL	2.50	1.67	1.470	2.006	1.680
23	Others*	0.13	0.05	0.046	0.046	0.039
	CENTRAL LEVEL	**20.410**	**23.719**	**18.356**	**23.076**	**22.619**

*Other include Manipur, Mizoram, Nagaland, Tripura & D&N Haveli

Bihar Area

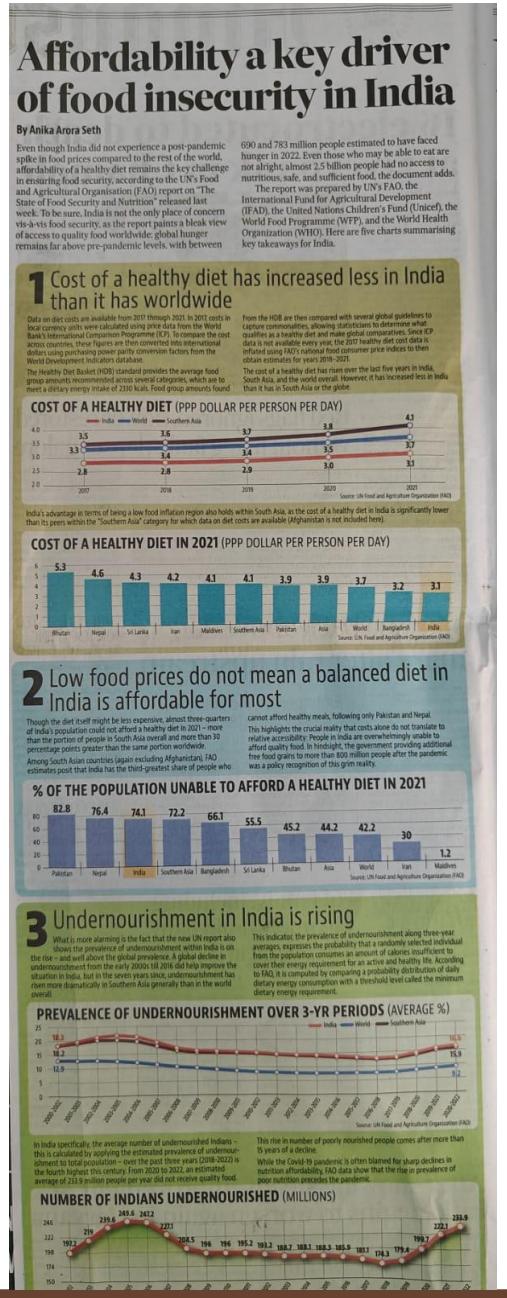
Bihar Corn -District wise crop acreages

District -Wise Cropping area of Bihar for 2023-24			
District Name	No OF Panchayats	Maize Cropped area (Ha)	% area out of Total
Purnea	255	108508	13.70%
Araria	221	90196	11.39%
Katihar	240	78543	9.92%
Kishanganj	129	65962	8.33%
Khagaria	131	60372	7.62%
Madhepura	172	52989	6.69%
Bhagalpur	246	39102	4.94%
Supaul	184	38555	4.87%
Saharsa	153	36719	4.64%
Samastipur	384	35557	4.49%
Muzaffarpur	100	30000	3.79%
Begusarai	265	29610	3.74%
Others		125887	
Total of		792000	

States	Last year Sowing (Million Ha)	Sowing as on 2nd week Feb 2024 (Million Ha)	Estimated Yield (MT/ha)	Estimated Production (Million Tons)
Bihar	0.65	0.79	5.4	4.2
Maharashtra	0.39	0.34	2.2	0.7
West Bengal	0.17	0.20	5.6	1.1
Karnataka	0.11	0.11	3.6	0.4
Andhra Pradesh	0.18	0.12	6.5	0.8
Tamil Nadu	0.20	0.22	5.6	1.2
Telangana	0.20	0.22	6.5	1.4
Gujarat	0.11	0.12	1.5	0.2
Uttar Pradesh	0.05	0.01	2.6	0.0
Others	0.26	0.14	3.3	0.5
All India	2.31	2.26	4.7	10.6

- Bihar and Tamil Nadu exhibited increases in sowing area from last year to February 2024, while Andhra Pradesh saw a decrease. Andhra Pradesh has the highest estimated yield, and Bihar is projected to have the highest production. Overall, India's Rabi estimated production has increased despite a slight decrease in the total sowing area.

Atleast 55 rakes have been shipped from Bihar as on date



Affordability a key driver of food insecurity in India

By Anika Arora Seth

Even though India did not experience a post-pandemic spike in food prices compared to the rest of the world, affordability of a healthy diet remains the key challenge in ensuring food security, according to the UN's Food and Agricultural Organisation (FAO) report on "The State of Food Security and Nutrition" released last week. To be sure, India is not the only place of concern vis-à-vis food security, as the report paints a bleak view of access to quality food worldwide: global hunger remains far above pre-pandemic levels, with between 690 and 783 million people estimated to have faced hunger in 2022. Even those who may be able to eat are not alright, almost 2.5 billion people had no access to nutritious, safe, and sufficient food, the document adds.

The report was prepared by UN's FAO, the International Fund for Agricultural Development (IFAD), the United Nations Children's Fund (Unicef), the World Food Programme (WFP), and the World Health Organization (WHO). Here are five charts summarising key takeaways for India.

1 Cost of a healthy diet has increased less in India than it has worldwide

COST OF A HEALTHY DIET (PPP DOLLAR PER PERSON PER DAY)

COST OF A HEALTHY DIET IN 2021 (PPP DOLLAR PER PERSON PER DAY)

2 Low food prices do not mean a balanced diet in India is affordable for most

% OF THE POPULATION UNABLE TO AFFORD A HEALTHY DIET IN 2021

3 Undernourishment in India is rising

PREVALENCE OF UNDERNOURISHMENT OVER 3-YR PERIODS (AVERAGE %)

NUMBER OF INDIANS UNDERNOURISHED (MILLIONS)

Prices/affordability (be it for food or feed)

Prices over time in Rs/MT (At origin)

	01 Oct 2022	01 Jan 2023	01 Apr 2023	01 Jul 2023	24 Jul 2023	16 Dec 2023	02 May 2024
Corn	24250	25000	25500	19500	22000	25500	24500
SBM	40000	44000	47500	44000	42500	47000	43000
DORB	17500	13500	14250	16500	19000	15000	15000
DDGS (IN) Rice (45% Pro)			27500	29500	29500	29500	28000
DDGS (IN) Corn (26% Pro)						22000	20000
DDGS (US) (Corn (29% pro + 6% fat) Price Delivered India without Duty	34440	34440	31160	26240	26240	28800	25050

Source: Industry Data (Domestic prices); USGC Internal (US Corn DDGS prices)

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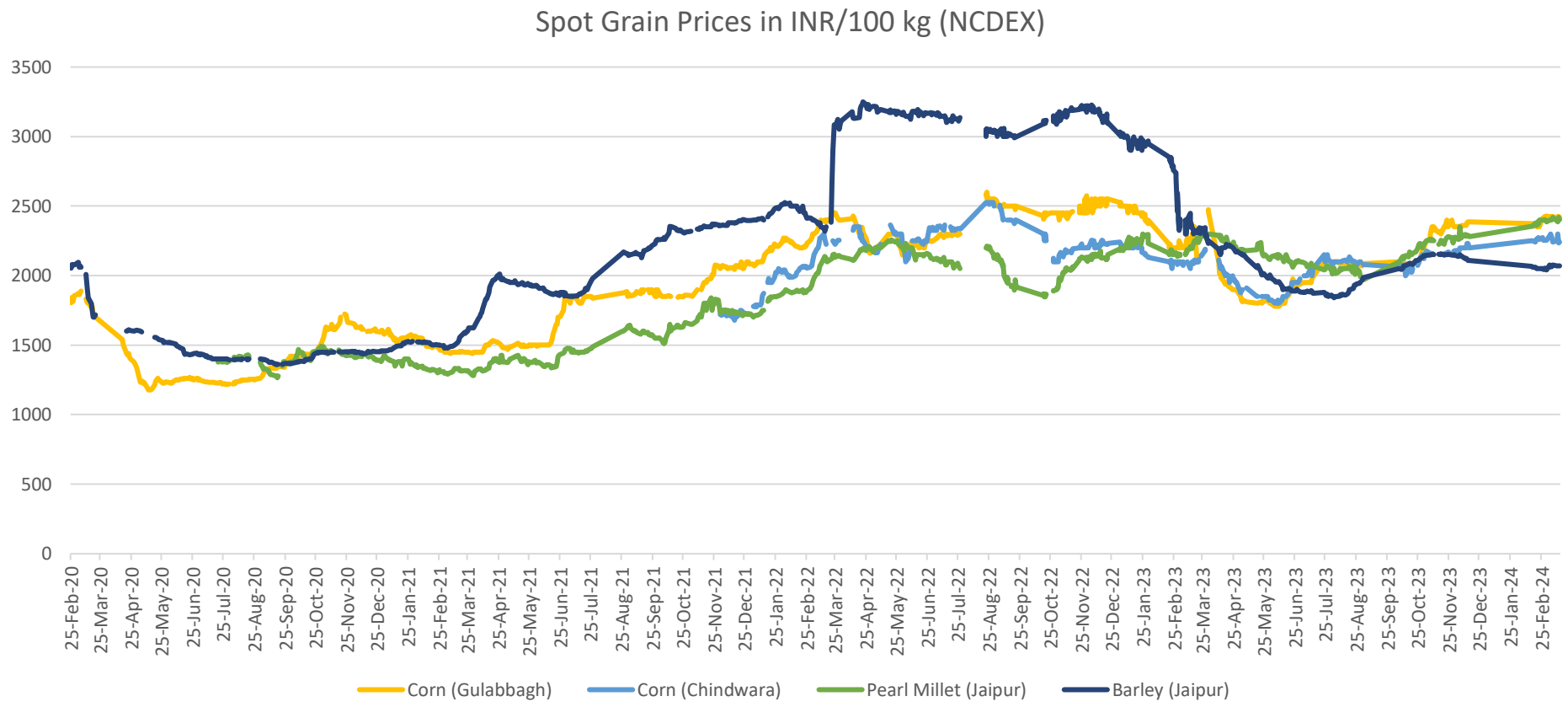
Grain prices



Barley
Production 15% down
15% damage
Diversion to Cattle feed

India’s feed import

India's imports of various feeds in Kgs						
230990, Animal Feed Preparations (Mixed Feeds, Etc.), Other Than Dog Or Cat Food						
	2019	2020	2021	2022	2023	Jan - Feb 2024
	Qty	Qty	Qty	Qty	Qty	
_World	17,44,52,139	19,07,49,061	20,11,08,535	13,46,77,361	12,75,51,457	1,91,02,196
Sri Lanka	1,63,22,852	1,76,86,049	2,22,92,037	2,37,75,792	2,79,74,754	61,40,058
China	2,39,55,442	3,06,57,202	3,38,95,084	2,25,13,529	3,50,17,321	51,61,639
Vietnam	7,40,59,631	8,86,39,792	7,80,61,844	2,37,75,792	1,26,84,287	8,71,198
United States	73,68,088	60,93,059	91,83,893	88,94,041	99,06,392	13,17,593
Bangladesh	1,29,000	6,78,035	15,50,000	27,35,500	8,000	
Thailand					61,82,381	6,91,956
23099031, PRAWN AND SHRIMPS FEED						
	2019	2020	2021	2022	2023	Jan - Feb 2024
	Qty	Qty	Qty	Qty	Qty	Qty
_World	6,44,41,049	7,97,67,001	7,26,89,379	1,96,33,073	1,31,28,629	9,87,900
Vietnam	6,19,09,000	7,79,72,060	7,06,86,795	1,77,10,734	1,19,48,944	8,14,000
Thailand	17,32,712	6,18,320	6,36,389	6,09,196	4,10,461	78,200
United States	2,96,115	2,44,178	3,82,589	3,66,136	2,28,761	17,530
Malaysia	53,719	53,521	65,153	86,421	1,44,378	29,090
China	1,02,880	5,22,200	3,41,470	2,83,030	32,415	13,800
Taiwan	5,000	21,345	28,560	19,130	22,262	
23099010, COMPOUNDED ANIMAL FEED						
	2019	2020	2021	2022	2023	Jan - Feb 2024
	Qty	Qty	Qty	Qty	Qty	Qty
World	2,19,72,819	1,74,25,081	10,21,181	25,73,968	54,38,820	93,400
China	33,75,278	13,66,419	2,02,574	2,73,750	44,10,443	84,700
Bangladesh	84,000	3,25,000	4,90,000	16,10,000		
United States	9,76,384	8,40,753	59,362	27,441	20,719	
Spain	55,917	29,740	26,610			
Germany	49,526	1,11,040	40,000	20,000	20,000	
France	1,06,195	1,14,030	48,300			
Netherlands	57,799	26,278	25,245	11,800		
Sri Lanka					7,72,980	
Vietnam					78,019	
Source: Trade Data Monitor and Ministry of Commerce, GOI						

These imported feeds may contain GM ingredients and for sure from US, Vietnam, Bangladesh, Taiwan will contain GM corn, DDGS and SBM, which these countries import

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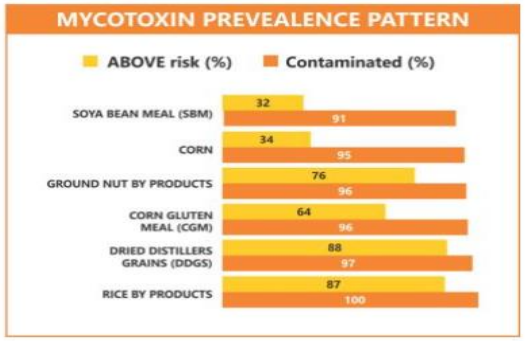
Grappling with growing energy & protein requirements

- Need to feed people with home grown, reasonably priced animal protein, or import this protein (chicken).
- India's grain and meal supplies are not keeping pace with the nutritional demand.
- India needs to supplement its grain and meal demand sustainably, with quality ingredients, via trade from the world market, or import animal protein.

Feed and Fodder Demand and Deficit in India in MMT				
Fodder	Parameter	2015	2020	2025
DRY FODDER	Requirement	491	530	550
	Availability	387	408	433
	Deficit (%)*	104 (21%)	122 (23%)	117 (23%)
GREEN FODDER	Requirement	840	880	1000
	Availability	619	596	600
	Deficit (%)*	221 (26%)	284 (32%)	400 (40%)
CONCENTRATE	Requirement	87	96	105
	Availability	58	61	65
	Deficit (%)%	29 (34%)	35 (36%)	40 (38%)
(Source: DAHD, Government of India National Action Plan for Fodder and Feed Security				

Cargill Mycotoxin Survey (Jan'22 – Nov'22) for the Indian region covers an overview of mycotoxin distribution and its concentration in various ingredients.



Thanks
Q & A