

Livestock & Feed Trends



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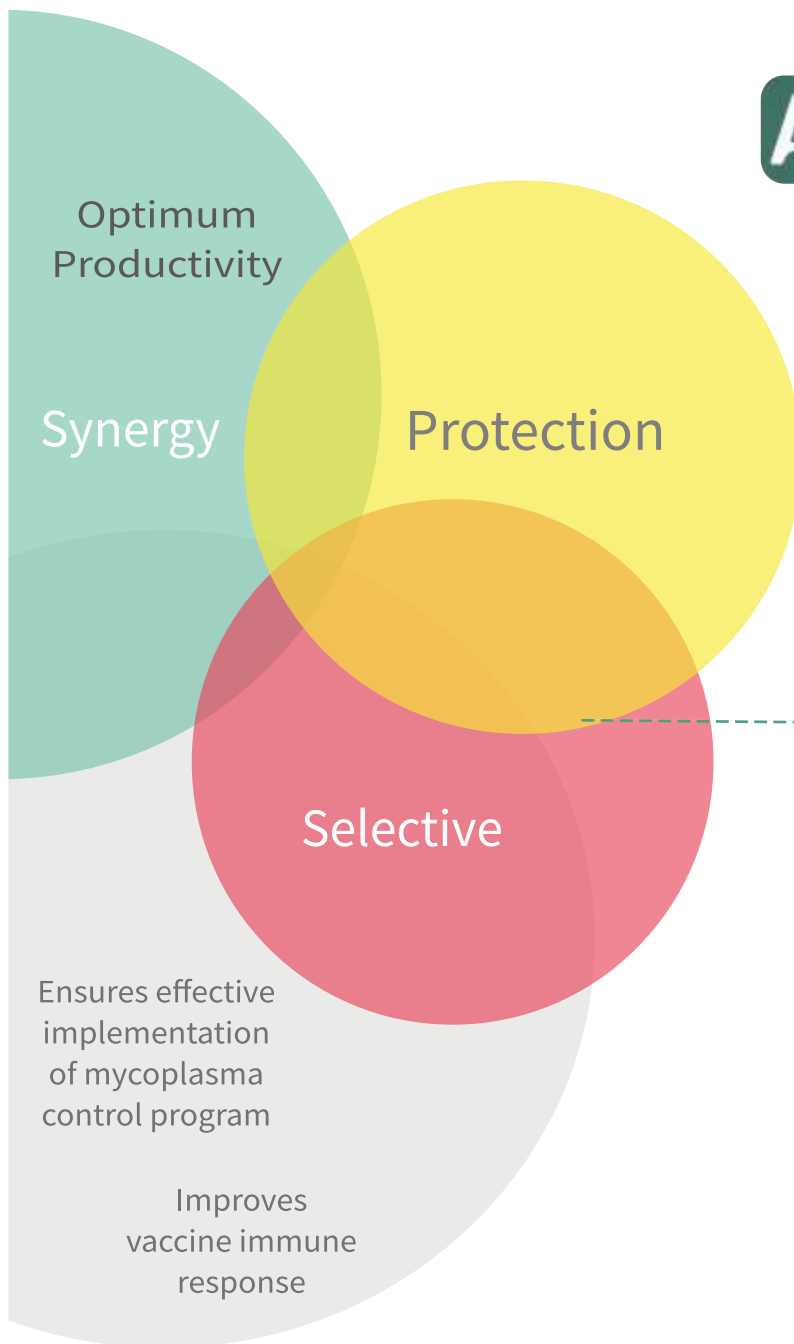
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From the Chairman's Desk.....

Dear Friends,

Greetings from CLFMA OF INDIA!

We have sailed through a year of unprecedented challenge posed by Covid19 and lockdowns. As we are looking towards a new financial year full of hope, optimism, and potential to further grow our industry; I take this opportunity to extend my heartfelt gratitude to you on behalf of CLFMA of India for your continued support and encouragement throughout this difficult time.

I would like to extend my sincere thanks to Mr. S.V.Bhave, immediate Past Chairman for his able leadership and contribution to the upliftment of CLFMA.

Every two years CLFMA of India, conducts election and chooses its new Managing Committee Members and Office Bearers. Accordingly, on February 1st, 2021 CLFMA conducted its 'Extra-Ordinary General Meeting & 1st Managing Committee Meeting' and elected its' new Managing Committee and Office Bearers for the period 2020-2022. I am thankful to the esteemed members for electing me as the new CLFMA Chairman and the 'New office bearers and Managing Committee Members' for the year 2020-2022. The details of announcements are presented in this magazine. This issue of the magazine also presents the updates about the recent activities conducted by CLFMA in detail.

It is a great honour for me to be nominated as CLFMA Chairman and am thrilled to carry forward the great legacy of many distinguished leaders with impeccable track record of serving our industry for more than 5 decades.

I assure you that, the newly appointed CLFMA managing committee shall remain devoted for the welfare and upliftment of our Industry and am looking forward to your continued support and co-operation from time to time and solicit your valuable inputs and suggestions to further strengthen our industry and enable it to achieve the newer heights.

With Warm Regards,

Yours sincerely,
For CLFMA OF INDIA,



Neeraj Kumar Srivastava
Chairman





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• website : www.clfma.org

• E-mail : admin@clfma.org



Commodity Updates

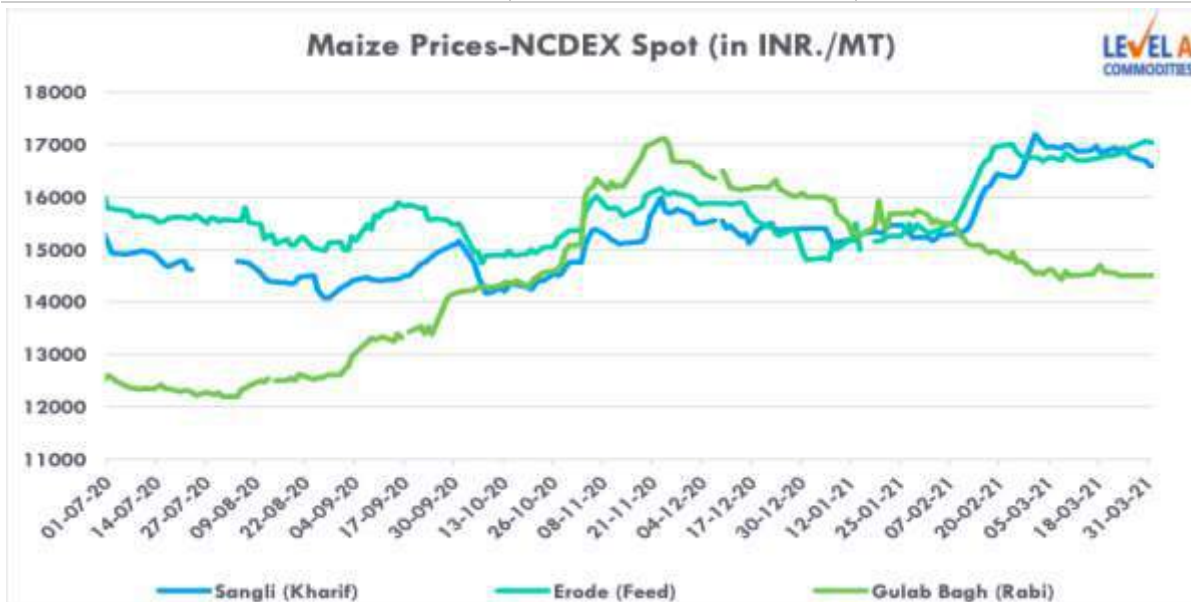


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**Domestic Prices in INR/MT:
Maize NCDEX Spot Price (in INR/MT.):**

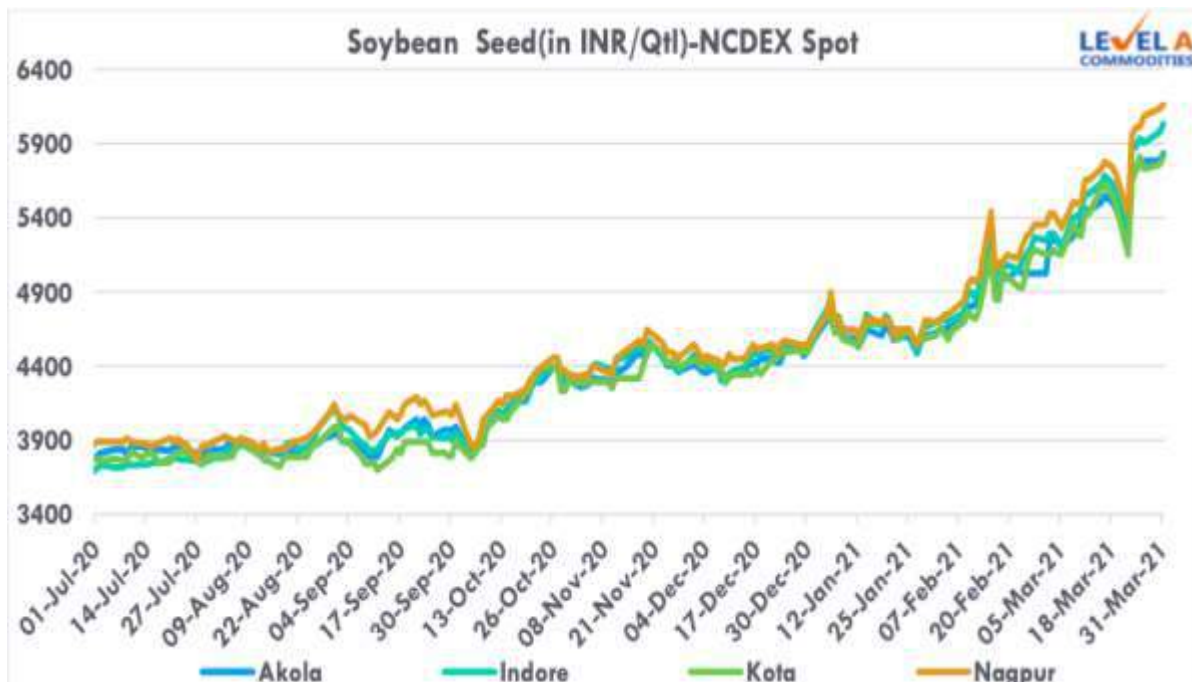
| Location | 31-Mar-21 | 26-Feb-21 |
|-------------------|-----------|-----------|
| Gulab Bagh (Rabi) | 14500 | 14750 |
| Sangli (Kharif) | 16590 | 16610 |
| Erode (Feed) | 17040 | 16750 |



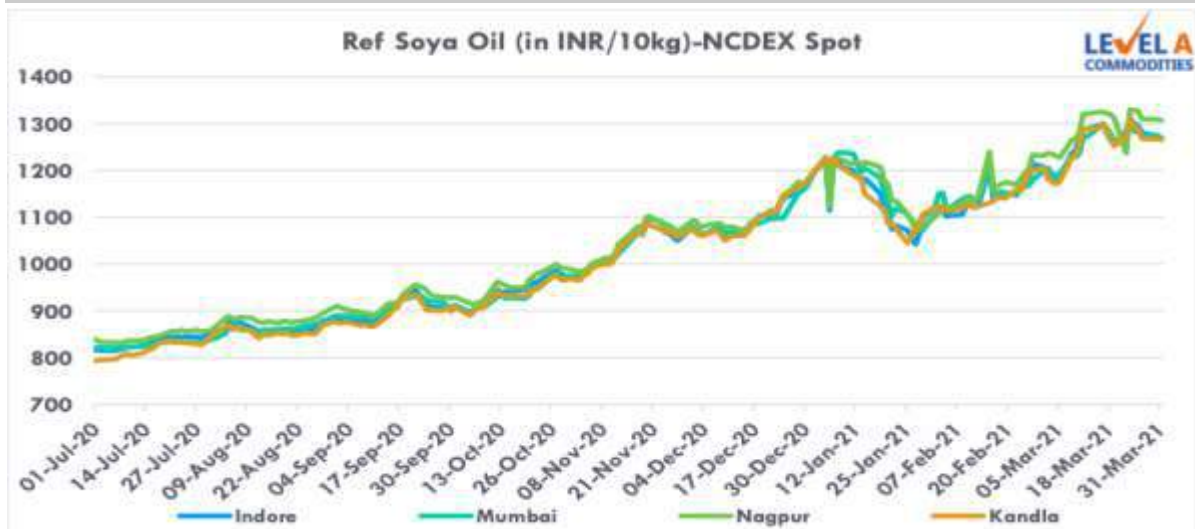
Soybean: Soybean Complex Prices-NCDEX Spot:

| Commodity (Unit) | Location | 31-Mar-21 | 26-Feb-21 |
|----------------------------|----------|-----------|-----------|
| Ref Soya Oil (in INR/10kg) | Kandla | 1,266 | 1,200 |
| | Indore | 1,266 | 1,207 |
| | Mumbai | 1,270 | 1,200 |
| | Nagpur | 1,308 | 1,233 |
| Soybean Seed(in INR/Qtl) | Akola | 5,833 | 5,025 |
| | Indore | 6,032 | 5,248 |
| | Kota | 5,811 | 5,155 |
| | Nagpur | 6,161 | 5,353 |
| Soymeal (in INR/MT) | Indore | 46,750 | 39,850 |

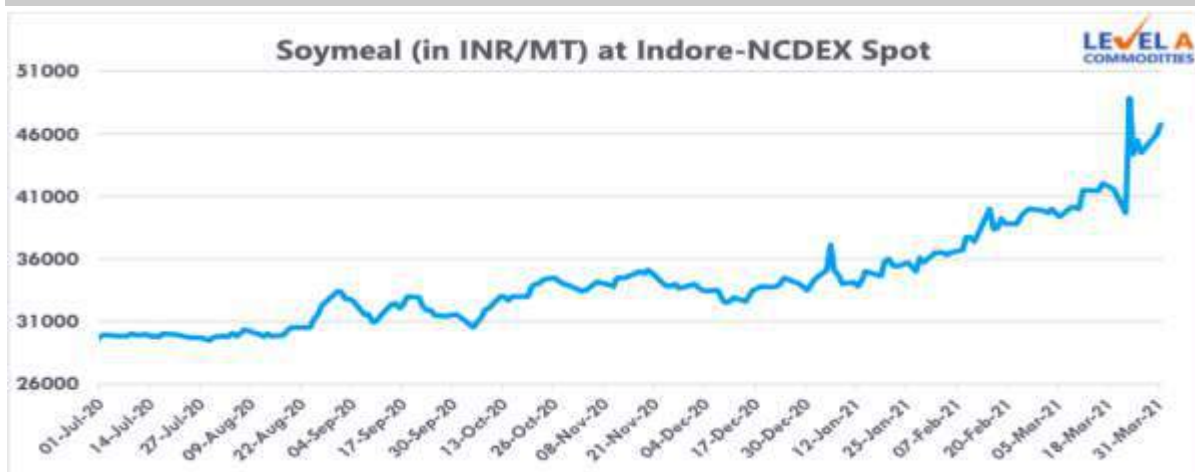
Soybean Seed



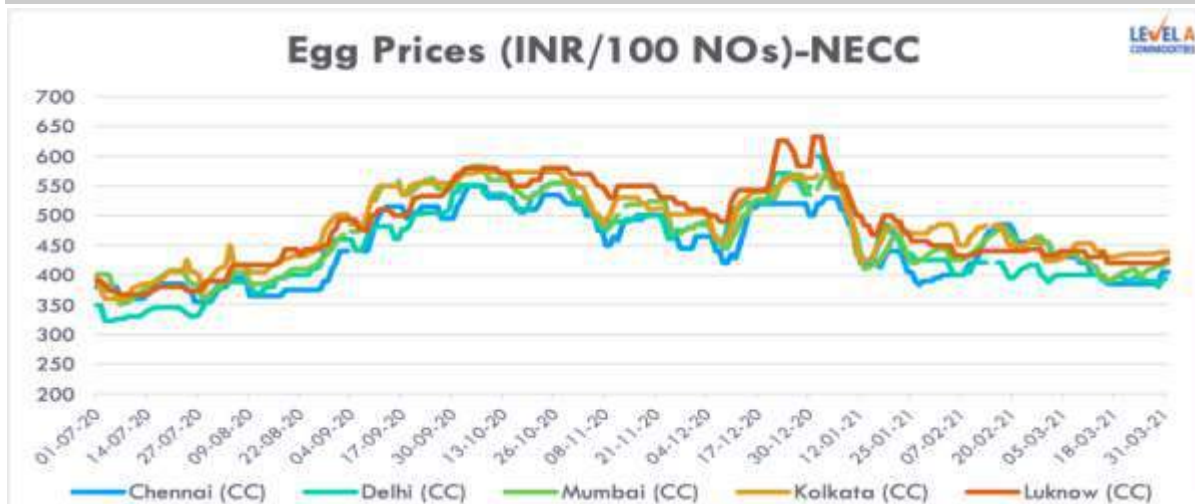
Soya Oil



Soymeal Prices-NCDEX Spot:



Egg Prices



| Egg Rates | | |
|------------------|-----------|-----------|
| NECC Prices | | |
| Market | 31-Mar-21 | 28-Feb-21 |
| Ahmedabad | 415 | 430 |
| Ajmer | 376 | 375 |
| Asansole | - | - |
| Barwala | 375 | 373 |
| Banglore (CC) | 405 | 450 |
| Brahmapur (OD) | 395 | 394 |
| Burdwan (CC) | - | - |
| Chennai (CC) | 405 | 455 |
| Chittoor | 398 | 448 |
| Delhi (CC) | 394 | 395 |
| E.Godavari | 375 | 385 |
| Hyderabad | 362 | 390 |
| Ludhiana | 371 | 385 |
| Midnapur (KOL) | - | - |
| Mumbai (CC) | 420 | 455 |
| Muzaffarpur (CC) | 424 | 433 |
| Mysuru | 410 | 453 |
| Nagpur | 395 | 440 |
| Namakkal | 390 | 340 |
| Patna | 424 | 429 |
| Pune | 422 | 455 |
| Ranchi(CC) | 433 | 443 |
| Vijayawada | 385 | 395 |
| Vizag | 383 | 435 |
| West Godavari | 375 | 385 |
| Warangal | 364 | 392 |

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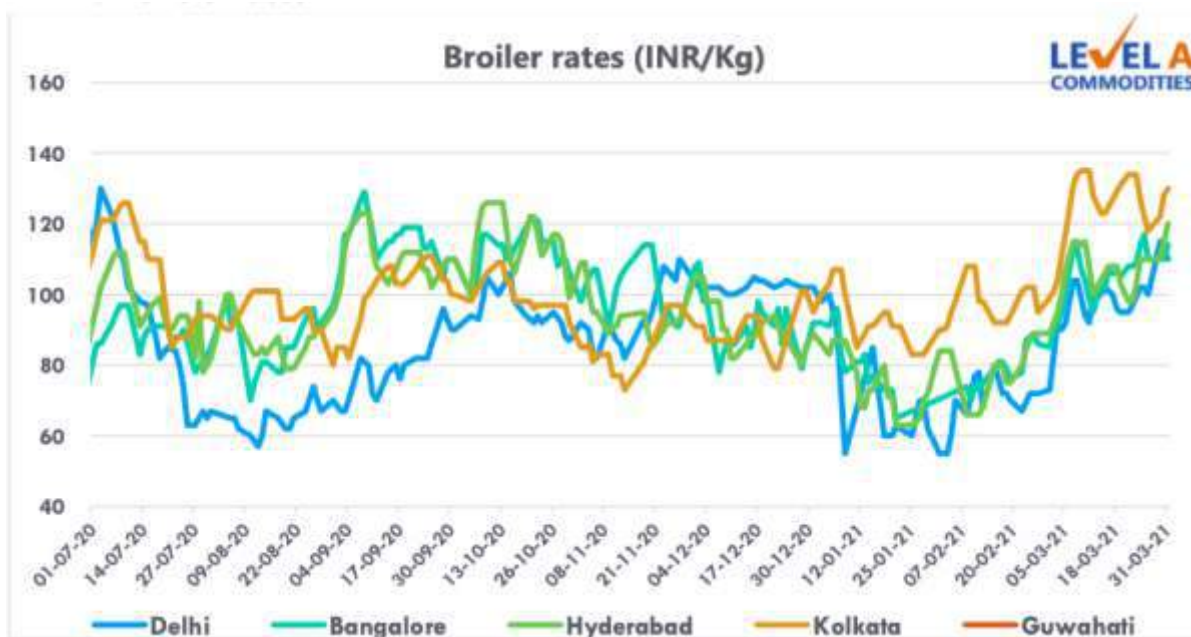
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Prevailing Prices

| Market | 31-Mar-21 | 28-Feb-21 |
|----------------|-----------|-----------|
| Allahabad (CC) | 410 | 414 |
| Bhopal | 388 | 405 |
| Hospet | 365 | 360 |
| Indore(CC) | 400 | 410 |
| Jabalpur | 385 | 412 |
| Kanpur (CC) | 410 | 419 |
| Kolkata (CC) | 438 | 480 |
| Lucknow (CC) | 427 | 450 |
| Raipur | 392 | 410 |
| Surat | 427 | 423 |
| Varanasi (CC) | 433 | 453 |

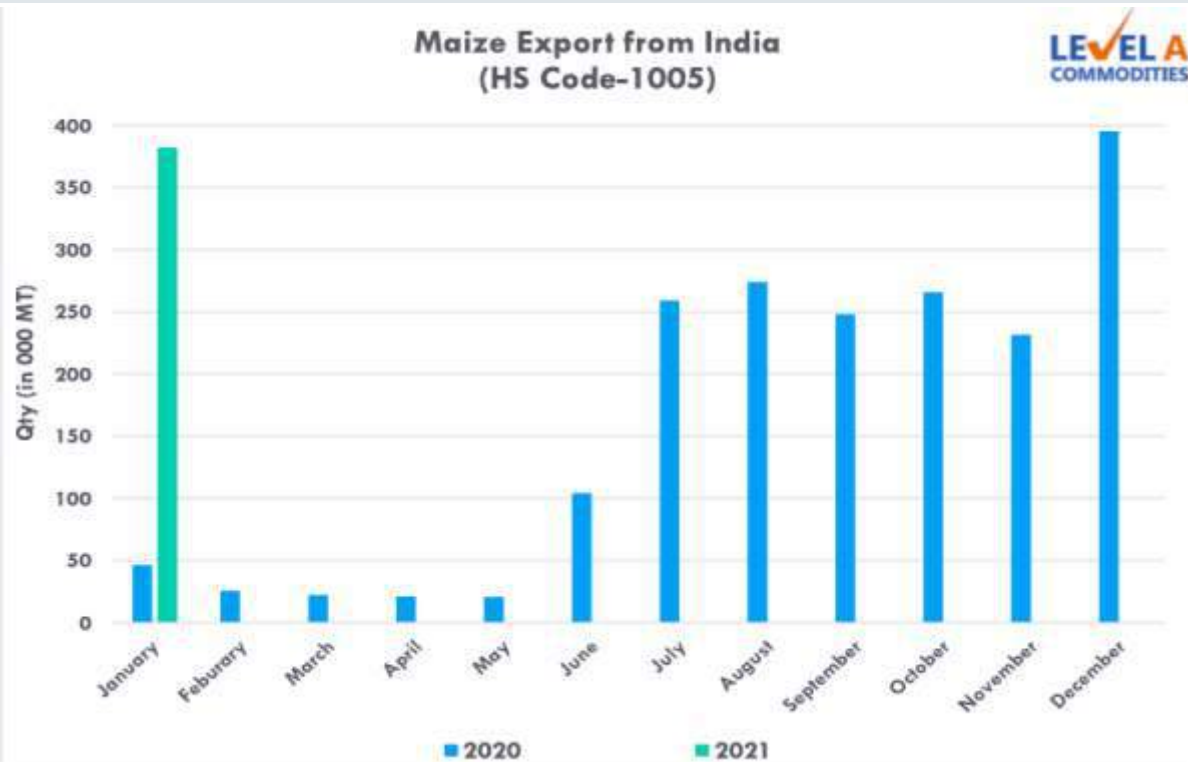
Broiler Rates



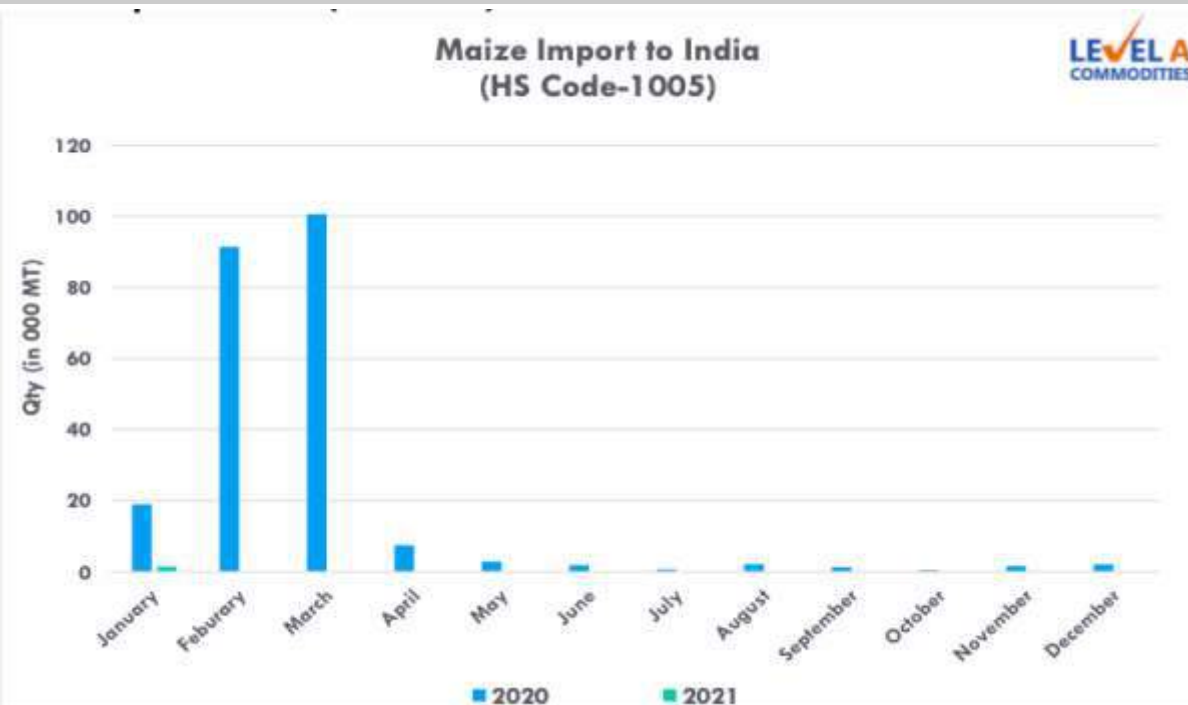
| Broiler rates (INR/Kg) | | |
|-------------------------|-----------|-----------|
| Market | 31-Mar-21 | 28-Feb-21 |
| Delhi | 110 | 70 |
| Punjab | 104 | 71 |
| Raipur | 100 | 76 |
| Pune | 127 | 70 |
| Bangalore | 114 | 84 |
| Hyderabad | 120 | 89 |
| Gujarat | 125 | 73 |
| Kolkata | 130 | 97 |
| Lucknow | 115 | - |
| Guwahati | - | - |
| Chicks Price (INR/Unit) | | |
| Market | 31-Mar-21 | 25-Feb-21 |
| Punjab | 45 | 31 |
| Chandigarh | 45 | 31 |
| Haryana | 45 | 31 |
| Himachal Pradesh | 46 | 32 |
| Rajasthan | 46 | 32 |
| Jammu & Kashmir | 46 | 32 |
| Uttarakhand | 47 | 32 |
| Uttar Pradesh | 50 | 36 |
| Madhya Pradesh | - | - |
| Chhattisgarh | - | - |
| Bihar | 50 | 40 |
| Jharkhand | 50 | 40 |

Trade Details

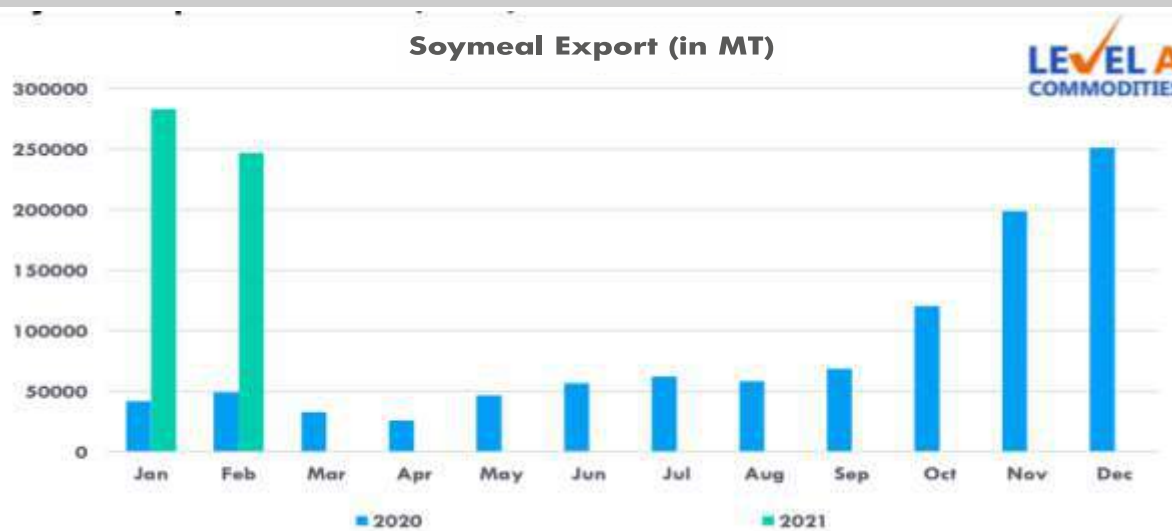
Maize Export from India



Maize Import to India



Soymeal Export from India(In MT)



Market Updates

Maize Domestic

Tight global supplies to continue driving India's maize exports till May

Maize (corn) exports from India are expected to go on till May with global supplies projected to be tight this year and demand continuing from Malaysia and Vietnam. The Food and Agriculture Organization (FAO), a UN arm, and the US Department of Agriculture have both projected that the ending stocks this marketing season (July 2020-June 2021) would be lower compared with last year. Both agencies have, however, raised the ending stocks in their reports this month on higher production estimates.

The FAO's Agricultural Marketing Information System (AMIS), in its report for this month, said maize ending stocks will be 275.7 million tonnes (mt) against 301.7 mt. The ending stocks size for this season has been raised by two mt from last year. The USDA's World Agricultural Supply and Demand Estimates (WASDE), in its report, projected the ending stocks at 287.67 mt (303.13 mt). The USDA has also increased its projections from last month marginally by over one mt. AMIS said maize production would be higher at 1,152.8 mt (1,138.5 mt). Compared with last month, the estimate has been raised by 3.5 mt. USDA's WASDE estimated maize production this season at 1,136.31 mt (1,116.53 mt) with the projections being raised by two mt from last month. "Production estimate has been raised further this month on bigger than earlier anticipated outputs in the EU, Ukraine, and several countries in Sub-Saharan Africa, in particular Ghana," said AMIS. It said utilisation would touch a record 1,179.5 mt against 1,158.2 last season, while the USDA put it at 1,151.77 mt. AMIS said that there would be a significant call in the stocks from last season in view of "sharp drawdowns in China, the US and EU".

Robust shipments

The USDA said it was raising the projections for India's maize exports, which have already touched a six-year high. According to Agricultural and Processed Food Product Export Development Authority (Apeda), exports of other cereals in which maize figures increased to 18.78 lakh tonnes (lt) during the first nine months of the current fiscal compared with 3.71 lt during the same period a year. According to Apeda data, based on Kolkata-based Director-General of Commercial Intelligence and Service, maize exports during April-November of the current fiscal were 14.18 lt compared with 3.70 lt a year ago and 10.51 lt in 2018-19. "Supplies are tight within India itself and we expect the situation to ease in April when the new crop will arrive from States such as Maharashtra and Andhra Pradesh," said Agri Commodities Exporters Association (ACEA) President M Madan Prakash. "Quality maize is not available in India currently," said Bimal Benghani, Managing Director of Kolkata-based exporting house Bengani Food Products. This has impacted maize prices which have currently dropped to below ₹1,490 a quintal in various terminal markets across the country compared with rates that topped ₹1,600 a month ago.

Prices to stay steady

Prices have, however, been ruling below the minimum support price of ₹1,850 a quintal fixed by the Centre for the current season. According to the International Grains Council, maize export prices currently ranged between \$237 (₹17,000 from Argentina) and \$263 (₹19,200 from Brazil) a tonne. "We are offering maize to Vietnam at \$275 cost and freight a tonne (₹20,075)," said Prakash, whose Chennai-based firm Rajathi Group exports agricultural products including maize and onion. "When the season started, maize was offered at \$220 a tonne (₹16,075) a tonne. But freight charges have more than doubled now from \$200 (₹14,600) to \$500 (₹36,500) for a 20-foot container," he said. "Though Bangladesh is not buying now, Malaysia and Vietnam are buying. Shipments are continuing at a good pace," said Bimal Benghani.

During the April-November period, Bangladesh accounted for 9.95 lt of the total 14.18 lt, while Nepal accounted for another 3.82 lt. Bangladesh imported Indian maize since its crop was affected by unseasonal rains and floods last year. According to Prakash, exports have slowed a tad this month compared to January and February. "But we expect shipments to pick from next month," he said. "Bangladesh will begin buying our maize from May onwards," the Kolkata-based firm's managing director said. ACEA's Prakash said that there was less headroom for maize prices to rise further. But Bengani sees little scope for prices to drop too, though the starch industry, the second-biggest consumer after the poultry sector, had ample stocks. Though the poultry sector is not in a good condition, the industry expects shortage to drive demand as many birds were culled during the recent outbreak of bird influenza.

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According to Dutch multinational banking and financial services Head of Commodities Strategy Warren Patterson wrote in his analysis of USDA's WASDE report that the trade had expected further downward revision of ending stocks. This, perhaps, is another indication that the headroom for price rise could be limited. India's maize exports this fiscal are in contrast to last financial year, when the commodity's prices zoomed to ₹2,600 a quintal on supply shortage. The industry imported 3.12 lt of maize in 2019-20 to overcome the shortage compared with about 30,000 tonnes import during 2018-19. Last year's prices have encouraged farmers to go for higher planting this year, resulting in the Centre projecting a record 30.16 mt output of maize in its second advance estimate for the current season against last season's 28.77 mt. The higher production has now come in handy for exports, which had surged to a record 47.88 lt in 2012-13 before tapering off to a low 3.71 lt last fiscal.

India extends grant to PH corn sector

As the coronavirus pandemic continues to have a firm grip over the globe, the Indian government has extended a \$50,000 grant to the local corn sector to highlight the importance of agriculture in the face of a pandemic. Indian Ambassador to the Philippines Shambhu Kumaran, in a forum organized by the Philippine Chamber of Agriculture and Food Inc., said they are willing to exchange technologies with the Philippines to improve the operations of smallholder farmers. On top of the grant, the Indian and the Philippine governments are working on a possible agritech and fintech exchange that may address the gaps in the country's agricultural value chain and the private banks' reluctance in providing loans to agricultural businesses given the risks that are associated with it.

Kumaran said they were already in talks with Finance Secretary Carlos Dominguez III to offer a technology to the Development Bank of the Philippines that would allow it to calculate risks in providing credit to farmers using geospatial and satellite data. "It will be free of charge. The revenue model allows that the creditors and software companies have the benefit from using the technology," he said.

India's fintech industry has steadily grown over the years, boasting of over 1,000 agri-tech startups as of 2020. These companies are engaged in addressing water and crop stress in farm production that advises farmers on what crops to use depending on the weather. The possible replication of an Indian financing system called "Viability Gap Fund" was also proposed by the Philippine Maize Federation Inc. that could finance the construction of post-harvest facilities. India's help to the sector is a welcoming development, as smart public policies are critical in developing agriculture.

2021 Kharif sowing slowly picks up; over 56 lakh hectare coverage so far

The planting of summer (kharif) crops like rice is slowly picking up and has so far covered 56.50 lakh hectare (ha) across the country in the ongoing 2021-22 kharif season, according to the Agriculture Ministry data. Farmers have begun planting of kharif crops in areas where harvesting of rabi (winter) crops has been completed. So far, farmers have completed harvesting 48 per cent of rabi crop areas. Kharif crops are largely rainfed. The sowing of these crops normally picks up with the onset of southwest monsoon from June. "The trend of summer sowing progress is very good as on date. Besides, the prospect of rabi crops is also very good and about 48 per cent of overall rabi crops have been harvested as on March 26 in the country," the ministry said in a statement.

There is no impact of COVID-19 pandemic situation on progress of area coverage under summer crops in the country, it said. As per the latest data, rice has been sown in 36.87 lakh hectare so far in the kharif season of the 2021-22 marketing year (July-June), higher from 31.62 lakh hectare in the year-ago. Sowing of kharif rice has begun in West Bengal, Telangana, Karnataka, Assam, Andhra Pradesh, Odisha and other states.

The coverage of oilseeds like groundnut has increased marginally to 7.20 lakh hectare from 6.91 lakh hectare, while that of pulses to 5.53 lakh hectare from 3.58 lakh hectare in the year-ago period.

In case of coarse cereals, the area coverage was 6.79 lakh hectare so far in the ongoing kharif season, as against 6.72 lakh hectare in the year-ago. Water levels in 130 reservoirs till March 25 in the country stood at 86 per cent of what it was in the year-ago period, the statement added.

Maize International

WASDE:

This month's 2020/21 U.S. corn supply and use outlook is unchanged from last month. The projected season-average farm price is unchanged at \$4.30 per bushel.

Global coarse grain production for 2020/21 is forecast 5.9 million tons higher to 1,444.8 million. The 2020/21 foreign coarse grain outlook is for larger production, increased trade, and greater ending stocks relative to last month. Foreign corn production is forecast higher with increases for India, South Africa, and Bangladesh that are partly offset by a decline for Mexico. India corn production is higher with increases to both area and yield. South Africa corn production is raised reflecting more favorable yield prospects. World barley production is higher with an increase for Australia.

Corn exports are raised for India, Vietnam, and South Africa. Imports are increased for Vietnam, Bangladesh, and the Philippines. Barley exports are raised for Australia, with higher imports for Saudi Arabia and Algeria. Foreign corn ending stocks for 2020/21 are higher, mostly reflecting increases for India, Vietnam, and Paraguay that are partly offset by reductions for Argentina and Mexico. Global corn ending stocks, at 287.7 million tons, are up 1.1 million from last month.

Canada Outlook:

For 2020-21, corn imports are projected at 1.6 Mt, 14% lower than in 2019-20. Corn exports are predicted at 1.4 Mt, increasing from 677 thousand tonnes (Kt) last year. STC reported that corn imports for the first five months of the current crop year decreased by 9% from the same period in 2019-20. As for the exports, STC reported an almost four-fold increase for the first five months of the current crop year, compared with the level for the same period in 2019-20, but still lower than the level attained in 2018-19. About 55% of the exports were destined to the EU, with 20% to the US and the rest to other countries. Domestic use for 2020-21 is predicted to increase by 1% to 14.1 Mt due to rising feed use. Carry-out stocks are forecast to fall by 14% to 2.2 Mt from the record level in the previous year. The average price of Chatham corn for 2020-21 is expected to increase by 15% to \$225/t, underpinned by stronger US corn prices, but partially offset by a negative price basis. The USDA did not make any revisions to the 2020-21 US corn supply and usage forecasts. However, the corn production estimate for India for 2020-21 was revised up by 1.7 Mt, which is mostly behind a more than 2.0 Mt increase in the world corn production estimate and a more than 1.0 Mt increase in the world corn carry-out stock estimate, compared to the February updates. World corn carry-out stocks were pegged at a five-year low.

For 2021-22, the area seeded to corn in Canada is forecast to decrease by 3% from 2019-20 to 1.4 Mha, as some corn area is forecast to shift to oilseeds. Production is forecast to decrease by 2% to 13.3 Mt on a projection of lower harvested area. Imports are expected to increase given the predictions for lower domestic supply and the appreciation of the Canadian currency making US corn more attractive. Supply is projected to drop by 2% from 2020-21, mainly due to lower carry-in stocks and production. Exports are projected to remain stable. Domestic use is projected to fall on reduced feed use. Carry-out stocks are forecast to decrease by 5% to 2.1 Mt. The average price of corn for 2021-22 is forecast to drop by 4% to \$215/t, following the predictions for lower US corn prices and a negative price basis.

The 2021-22 corn production in the US was projected at 15.15 billion bushels (Bbu) by the USDA in its 97th annual Agricultural Outlook Forum. It is 7% above the level of the previous year, based on projections for increased planted area and improved yields. If realized, the US will have the

largest corn crop output on record. Total US corn use in 2021-22 was forecast to rise by 3.4% from a year ago on growth in domestic use, including feed consumption and ethanol production, and continued strength in exports. Projected ending stocks would increase by 3.3%, but remain tight and represent the second lowest level in the past seven years, which, together with the forecast for increased total use, results in a virtually unchanged stock-to-use ratio. The average farm price is expected to decrease slightly to US\$4.20/bu, due to expectations for a recovery in grain production in the world's major exporting and importing countries.

IGC Report:

Global grain production in 2020-21 is forecast to increase to a record 2.224 billion tonnes, according to the most recent grain market report from the International Grains Council.

Output in 2020-21 is expected to be 39 million tonnes larger than the previous year and 9 tonnes higher than last month's projection.

The IGC said record harvests are forecast for wheat (774 million tonnes) and corn (1.139 billion).

Despite the projections for record production, the IGC expects a fourth consecutive drawdown of world carryover stocks, to 609 million tonnes, down 8 million tonnes from 2019-20. The Council said the drawdown is entirely due to further depletion of corn inventories.

Trade is forecast to reach a record 416 million tonnes, up 22 million from the previous year, with record-level shipments of wheat and corn anticipated.

Soymeal Domestic

Export of oilmeals in April-February rises 49%: SEA data

Export of oilmeals jumped 205% year-on-year in February to 393,309 tonne, compared with 128,761 tonne, according to data compiled by the Solvent Extractors' Association of India (SEA).

The overall export of oilmeals during April 2020 to February 2021 recovered sharply and stood at 3,358,649 tonne provisionally, against 2,256,614 tonne during the same period of the previous year, up by 49%, according to the association.

The export of soybean meal jumped mainly because of better realisations, thanks to lesser supply from Argentina and Brazil, coupled with good demand of non-GMO soybean meal from the US and Europe, the association said in a statement.

The revival of export to Iran also resulted in an overall surge in export of soybean meal in the last four months, BV Mehta, executive director, SEA, said.

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| Total Ash | Max. | 32 - 35.0% |
| Crude Fibre | Max. | 2.0% |
| Calcium | Min. | 9.0 - 10.0% |
| Phosphorous | Min. | 4.5 - 5.0% |
| Sand & Silica | Max. | 2.5 - 3.0% |
| Lysine | Min. | 2.0% |
| Methionine | Min. | 0.6% |
| Pepsin Digestibility | Min. | 85.0% |
| ME Value | | 2000 - 2200Kcal/Kg |

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According to the data, rapeseed meal export crossed a million tonne, owing to higher purchase by South Korea, followed by Thailand and Bangladesh. Ricebran extractions export doubled due to heavy demand from Vietnam and new demand from Bangladesh due to failure of the rice crop, Mehta said.

Oil industry body pegs mustard output at 89.5 lakh tonnes

The Central Organisation for Oil Industry and Trade (COOIT) has pegged the mustard crop at a record 89.5 lakh tonnes (lt) for the 2020-21 rabi season, up 19 per cent over previous year's 75 lt.

COOIT sees higher production of mustard in Rajasthan, Uttar Pradesh, Gujarat, West Bengal and Bihar among others. Babulal Data, Chairman, COOIT, said farmers have been favourably inclined towards cultivation of mustard resulting in higher sowing this rabi season.

"The weather, too, has been largely been favourable, and hence, per hectare production is also expected to be higher. Accordingly, we will see record production of mustard seed this year, which will benefit all stakeholders' farmers, consumers and edible oil industry," Data said in a statement. Production in Rajasthan is seen higher at 35 lt (32 lt), while in Gujarat the output is estimated at 4 lt (3 lt). Production of taramira in Rajasthan is pegged at 2 lt.

In Uttar Pradesh, COOIT sees mustard output at 15 lt (13 lt) and in Bihar at 10 lt (7 lt). In Madhya Pradesh and Chhattisgarh, the output is expected to be 10 lt in 2020-21 against 6.5 lt last year.

Similarly, West Bengal is likely to produce 5 lt (4.5 lt) of the oilseed, while in Punjab and Haryana the production is estimated at 10.5 lt (10 lt).

Price outlook bullish

Lakshmi Chand Agarwal, President, COOIT, said the mustard prices are expected to stay firm considering the bullish trend in the global market. Mustard prices are ruling much higher than the Centre's minimum support price of ₹4,850 per quintal. Prices of good quality mustard, with oil content of 48 per cent are ruling at ₹5,500-5,800 and are unlikely to come down, he said.

Soymeal International

WASDE:

U.S. soybean supply and use projections for 2020/21 are mostly unchanged this month. With soybean crush and exports projected at 2.20 billion bushels and 2.25 billion bushels, respectively, ending stocks remain at 120 million bushels, down 405 million from last year's record. The U.S. season-average

soybean price is projected at \$11.15 per bushel, unchanged from last month. Although current cash prices are significantly higher, prices received through January have averaged just over \$10.00 per bushel, reflecting forward pricing at lower prices. Soybean meal prices are also unchanged at \$400.00 per ton. The soybean oil price is forecast at 41.0 cents per pound, up 1 cent from last month.

Global 2020/21 oilseed supply and demand forecasts include higher production, exports, and ending stocks. Global production is raised 0.7 million tons to 595.8 million, with higher soybean and rapeseed partly offset by lower palm kernel, cottonseed, and sunflowerseed. Soybean production for Brazil is raised 1 million tons to 134 million, reflecting a revision to the 2019/20 crop and this season's expected yield trend. India's soybean production is raised 0.2 million tons to 10.7 million based on updated government area data. Conversely, Argentina's soybean production is reduced 0.5 million tons to 47.5 million due to dry weather conditions over the past month.

Global oilseed exports are raised 0.8 million tons to 194.7 million, mainly on higher rapeseed exports for Ukraine and Australia. Rapeseed imports are increased for the EU-27+UK where the crop is also raised to 17.1 million tons based on updated government data. Global soybean crush is forecast up 1.6 million tons to 323.6 million as higher crush for Argentina and Brazil is partly offset by lower crush for China. Higher crush in Argentina results in higher meal and oil exports. Soybean crush for China is lowered 1 million tons to 98 million based on data to date. Global soybean stocks are slightly higher, with increased stocks for China and Brazil that are mostly offset by lower stocks for Argentina.

Canada Outlook:

For 2020-21 domestic supplies of soybeans are estimated up 4% from last year, to 7.4 Mt, versus 7.1 Mt last year, as a result of a marginal increase in carry-in stocks and a 3%, or 0.2 Mt, increase in production. Soybean imports are estimated up slightly to 0.4 Mt for the current crop year, versus the 0.24 Mt imported for 2019-20. Canadian exports of soybeans are forecast to rise by 23%, to 4.4 Mt for the current crop year, on strong world demand and increased domestic supplies. Domestic processing of soybeans is forecast to increase by 9% from last year to a historically normal 1.9 Mt, on good crush margins and strong demand for vegetable oils and protein meal. Soybean prices are estimated to increase by 39%, to \$585/t, versus the simple average of \$420/t earned in 2019-20.

The factors to watch for the remainder of the crop year are:

- South American harvest progress and shipping pace,
- strength of Chinese buying,
- US import demand for Brazilian soybeans and
- US plantings for 2021-22.

For 2021-22 planted area in Canada is forecast to increase by 12%, to 2.3 Mha, in response to high prices, with gains in area limited by concerns over low sub soil moisture, short growing season in western Canada and attractive prices for competing crops. Assuming 5-year average yields, production is forecast at 6.6 Mt, versus 6.4 Mt in 2020-21 and 6.1 Mt grown in 2019-2020.

Total supply is forecast to increase to 7.6 Mt as the rise in production and slightly higher imports more than offset lower carry-in stocks. Exports are forecast to increase by 14% to 5.0 Mt on continued strong world demand, with shipments headed to a diverse group of countries. Domestic processing is forecast to remain stable at 1.9 Mt. Carry-out stocks are forecast to fall to 0.23 Mt, versus 0.50 Mt for 2020-21 and the 5 year average of 0.57 Mt. Soybean prices are forecast to fall by \$35/t to \$550/t, under pressure from an expected easing of US prices.

The United States is unlikely to rebuild its soybeans stocks despite a sharp rise in planted area and production, based on the USDA's Agricultural Outlook Forum projections. The area planted to soybeans is projected to increase by 6.9 Million Acres (Mac), to 90 Mac, while yields rise slightly to 50.8 bushels per acre. Total soybean production is projected at 4.5 Billion Bushels (Bbu), implying supplies of about 4.7 Bbu, taking beginning stocks and imports into account. By comparison, US total soybean supplies for 2020-21 were marginally higher but slightly under 4.7 Bbu.

Demand for US soybeans is expected to fall marginally on a projected 50 Mbu drop in exports, resulting in a slight recovery in ending stocks of 0.15 Bbu versus 0.12 Bbu for 2020-21 and 0.53 Bbu for 2019-20. The US farm-gate season average price for soybeans is projected at US\$11.25/bu versus US\$11.15/bu for 2020-21 and US\$8.57/bu for 2019-20. This higher US price will support world prices for soybeans, including Canada.

IGC Report:

Principally tied to bigger outturns in the United States and Brazil, 2020-21 world soybean production is seen at 361 million tonnes, up 7 million tonnes from the previous year and just shy of the 2018-19 record, the IGC noted.

"With consumption expected to advance, (soybean) stocks are set to fall for a second successive year, with US inventories plunging after a season of heavy exports," the IGC said.

The IGC said soybean trade is projected to remain steady year-on-year, at an all-time high of 170 million tonnes, which will include roughly 100 million tonnes in shipments to China.

"With elevated values likely to results in a significant supply response, world acreage could expand by 4% year on year in 2021-22 as output increases to peak at 383 million tonnes," the IGC said.

The IGC noted that only a modest recovery in soybean stocks is anticipated in 2020-21, with inventories in key exporters remaining thin.

Market Drivers

Maize

| Market Drivers | Monthly Outlook |
|---|-----------------|
| Maize markets during Mar-21 compared to previous month | Bullish |
| Demand from domestic feed markets | Bullish |
| Expectation of new crop arrivals from the mid of April could weigh on market sentiments | Bullish |
| USDA increased its World Maize Ending Stock Estimate along with an increase in Production Estimates | Bullish |

Soymeal

| Market Drivers | Monthly Outlook |
|--|-----------------|
| Domestic soybean and soymeal rallied on firm global cues | Bullish |
| Soymeal export sales from India | Bullish |
| Soymeal prices are likely to feature gains in near terms as in sync with soybean and strong CBOT soy complex | Bullish |
| Global 2020/21 soybean production estimate increased to 361.8 million tonnes, according to USDA | Bullish |

Disclaimer: The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

REACH US



BIS Meeting dated 5th February 2021 attended by Dr. Prashant Shinde, Cargill: CLFMA got an invitation to participate in the WebEx Meeting to review NDDDB's comments on test methods prescribed in IS 2052. The discussion happened on current methods allowed for routine analysis and testing method for reference (dispute) samples of compound feed. Most of the current reference methods were retained and new analytical methods were added. A separate discussion for method of analysis of Vitamins & Trace Mineral and Aflatoxins was conducted on Feb 17, 2021. The details of this discussion are being given below under the heading "**BIS Meeting dated 17th February 2021**"

On 6th February 2021, Mr. Neeraj Kumar Srivastava have invited suggestions from CLFMA Members for the year 2020-2022 to energize, to strengthen and grow our Livestock Industry and I'm very happy to share that, we got a very good response from all CLFMA Members. Their suggestions will be extremely helpful in determining the activities that CLFMA should actively engage in.

We circulated an email on **CLFMA OF INDIA's** success in the present **Union Budget Proposal 2021 – 2022** on 9th February 2021 to all the Members. We are happy to inform that in the Budget 2021-2022, the Government has increased the duty from 5% to 15% for imported Fish Feed & Prawn Feed and retained the duty of 5% for Shrimp Larval Feed. This regulation is in alignment with the government's policy to promote domestic (Indian Aqua Manufacturers) production especially by micro, small and medium enterprises (MSMEs) under the 'Aatmanirbhar Bharat Programme'. The role of CLFMA remained instrumental in making this happen. It made several representations to the government, followed up persistently through emails and telephone calls and conducted various meetings with key decision makers by frequently visiting them at Delhi. All this hard work finally culminated into the **Government considering our request in the budget 2021.**

Further, in the **Budget 2021-2022**, the government asked, CLFMA to give the feedbacks about the impact to farmers for raising customs duty on cotton from 0% to 10% and on raw silk and silk yarn from 10% to 15%, withdrawal of end-use based concession on denatured ethyl alcohol and uniform calibration of duty structure to 15% on items like maize bran, rice bran oil cake, and animal feed additives.

As requested by the government, CLFMA gave its comments

to the Hon'ble Secretary, AHD, Shri, Atul Chaturvedi. On comparing the duty structure of the imported feed additives vs domestically produced feed additives CLFMA observed that Government has tried to regularize the uniform tax policy structure. For some set of products, they have increased the tax from 10% to 15% and for others, the tax is reduced. Considering the increased challenges of transport cost, which is closed to 4% and the recent price increased due to current global situation of the feed additives, the overall cost has increased to the tune of minimum 25% to 30%, hence the beneficial effect of this tax structure reduction is not going to get passed on to our farmers / feed millers and consumers resulting into the nullified effect. CLFMA will continuously work with the Government of India for the benefit of the Livestock Industry.

On 12th February 2021, CLFMA conducted its online CLFMA Visioning Exercise 2021 Meeting with CLFMA Office Bearers. It was attended by myself, Mr. Divya Kumar Gulati, Deputy Chairman, Mr. Suresh Deora, Hon. Secretary, Mr.S.V. Bhawe, Past Chairman, MS. Chandrika Venkatesh, Executive Director, Mr. Srinivasan.P.S, Mr. Vish Iyer & Mr. Raghavan Govindan from a Strategic Management Consulting Organization and this exercise is under process.

On 12th February 2021 as advised by CLFMA Technical Expert Committee, CLFMA Executive Director Ms.Chandrika Venkatesh sent answers on the queries queried by Dr. Gagan Garg, Assistant Commissioner on the Government approved Consolidated List of Animal Feed Additives / Supplements for import into India, which was forwarded to Drug Controller General of India(DCGI) office for further action.

BIS Meeting dated 17th February 2021 attended by Dr. Prashant Shinde, Cargill

BIS Conducted a virtual meeting to take its' opinion from the Expert Panel members from Livestock Sector. Mr.Prashant Shinde, CLFMA Feed Expert and Managing Committee Member from Cargill attended the meeting. The agenda was to discuss the Comments from NDDDB on the test methods given in IS 2052: 2009, The discussion was on Vitamin Analysis and Aflatoxin. The current method was not up to the mark, so they debated mainly regarding the analysis of Vitamin D as analysing Vitamin A and B is not a big issue. There was a Discussions about Urea Analysis as detection was a problem with respect to Zinc Coated urea products. The selection of the best method is under process. For Aflatoxin

the TLC Method is changed to PLC Method. Review of A5 standards on Feed ingredients will be done during the next FAD 5 meeting.

On **24th February 2021**, CLFMA sent representation to Shri. Giriraj Singh, Hon'ble Union Minister of Fisheries, AH&D, Dept of AH&D, New Delhi about Vaccination against – H5 N1 (Highly Pathogenic Avian Influenza Virus) infections with a request to form a committee to evaluate the merits to allow the vaccination against H5 N1 infection in a larger interest of the farmers and the country. After this the Ministry has accepted to consider this request. We are thankful to our Past Chairman Mr. B. Soundararajan for helping us in this regard.

CLFMA has provided 5 years Molasses Export Data in graphical form along with the net weight in Tons from the relevant sources to our CLFMA Member Mr. Pankaj Luhadia, Kissan Agrovet Pvt. Ltd.

USDA – CLFMA Webex Meeting on 12th March, 2021; The participants of the meeting were Senior Attaché Dr. Mariano J. Beillard, Attaché Mark Rosmann, Agricultural Specialists Mr. Amit Aradhey. And from CLFMA myself, Mr. Sumit Sureka, Dy. Chairman, Mr. Divya Kumar Gulati, Dy. Chairman, Mr. Suresh Deora, Hon. Secretary & Executive Director Ms. Chandrika Venkatesh participated. Mr. Neeraj Kumar Srivastava, Chairman have made presentation on CLFMA's important role in Livestock Sector and how CLFMA is engaged with Government, Research Institutes, Farmers, etc. We also updated the audience on the challenges in India and how the Livestock sector will grow in future and what is the scope for the growth of this sector in India and internationally as well.

On March 24, 2021 and 3rd April, 2021, CLFMA gave Representations on '**Request for URGENT Intervention by**

Govt. of India to Allow DUTY FREE IMPORT of 12 Lakh Metric Tons (MT) Soyabean Meal to safeguard Poultry Sector and other Livestock Farmers and Livestock Industry as a whole' to The Hon'ble Prime Minister of India, **Shri. Narendra Damodardas Modi**, with copies to **Shri Narendra Singh Tomar**, Hon'ble Minister of Agriculture and Farmers Welfare, Office of the Hon'ble Minister of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India, Room no. 120, Krishi Bhawan, New Delhi – 110 001, **Shri. Giriraj Singh**, Hon'ble Minister of Animal Husbandry, Dairying & Fisheries, Ministry of Animal Husbandry, Dairying and Fisheries, Government of India, Dr. Rajendra Prasad Road, Krishi Bhawan, New Delhi, India – 110001., **Shri. Piyush Goyal**, Minister for Commerce and Industry, Government of India, Room No.45, Udyog Bhavan, New Delhi – 110001., **Smt. Nirmala Sitharaman**, Hon'ble Finance Minister, Ministry of Finance, North Block, New Delhi – 110 001, **Shri. Atul Chaturvedi, Secretary (AHD)**, Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, Room No. 218, Krishi Bhavan, Dr. Rajendra Prasad Road, New Delhi 110001., **Shri. Sanjay Agarwal**, Secretary, Agriculture, Co-operation & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India, Krishi Bhavan, New Delhi, India – 110001.

CPDO&TI organised ONLINE DISCUSSION FORUM (ODF) on '**Poultry Feeding Trends in India**' on 27th March, Saturday 2021 from 10:30 am to 2 pm where Mr. Neeraj Kumar Srivastava, Chairman made the inaugural address. In the forum, Prof. A S Ranade was Guest of Honour. He along with other five renowned expert nutritionists across India spoke on various aspects of feeding Poultry and upcoming trends. CLFMA actively participated in the same.

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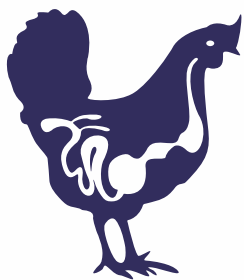
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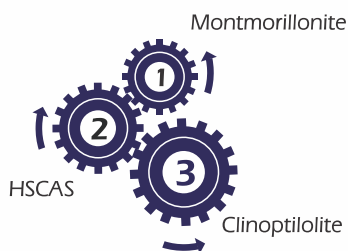
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New Dynamic Leadership Team at CLFMA OF INDIA 2020-2022

CLFMA of India is the apex organization and the voice of the country's dynamic livestock sector. The 54-year-old industry association is recognized as one among the highly reputed in India. CLFMA OF INDIA is well recognized by livestock farmers, Central and State Governments, government departments, Agricultural Universities, Veterinary Colleges and also National Research Institutes in India as well as outside the country.

On 1st February, 2021, CLFMA's Extra Ordinary General Meeting was held and the new leadership team took charge for the period 2020-2022. The outgoing Chairman Mr. S. V. Bhave expressed his appreciation and conveyed best wishes to the new team led by Mr. Neeraj Kumar Srivastava, World Area Director - SCA of Novus Animal Nutrition (India) Pvt. Ltd., who got elected as the new Chairman.

Mr. Bhave in his tenure was instrumental in developing a strong network with the Government especially with the Animal Husbandry Ministry and its departments. During the 52nd AGM & 61st Symposium held at Le Meridien, New Delhi, he was able to get Shri Giriraj Singh, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying as our Chief Guest and other well-known speakers viz. Shri Atul Chaturvedi, Hon'ble Secretary, Department of Animal Husbandry and Dairying, GOI., Shri. Pawan Agarwal, CEO, Food Safety and Standards Authority of India (FSSAI), Government of India, to quote a few. During his period, the 5th Combined Feed Additive List was approved by GOI. He conducted around 14 successful Events (Seminars & Webinars) at pan India locations which was well appreciated. **Mr. S.V. Bhave outgoing Chairman said that, it was indeed a great pleasure to work with CLFMA as a Chairman and after 2 years and 4 months extra responsibility due to COVID 19 pandemic, CLFMA has decided to appoint Mr. Neeraj Kumar Srivastava**, who is an accomplished, talented business leader having a proven record of successfully managing the businesses in Animal Health and Nutrition Industry. He has a great networking with all the industry stake holders including government authorities of the Animal Health and Nutrition sector - domestic and worldwide especially South Asia. As he is a Strong leader and talented professional with a Master of Science (M.Sc.) & MBA Marketing his experience and vision will be of great asset to CLFMA and under his Stewardship, we anticipate CLFMA would continue to grow to greater heights.

Mr. Neeraj Kumar Srivastava, Newly Elected Chairman thanked Mr. S. V. Bhave and said that, it was a great honour to be nominated as CLFMA Chairman, as CLFMA is a single leading voice of the Animal Husbandry Industry and promised to do his level best to help CLFMA work for the benefit of its members and the industry at large. He added that, he was truly honoured and thrilled to carry the great legacy of many distinguished leaders and which is more than 5 decades for serving our Industry. He promised to build and add to the best of his capacity towards the visibility of CLFMA, its image & reputation and working towards betterment of the livestock industry.

He also said that, Mr. Bhave's team has done a great job especially with regard to government engagements and conducting relevant seminars during his tenure.

CLFMA OF INDIA has over 230 members representing diverse subsectors of animal protein value chain including feed manufacturing, poultry, dairy and aquaculture business, animal nutrition and health, veterinary services, machinery and equipment, processing, distribution and retailing of meat and ancillary services such as banking.

**CLFMA OF INDIA Office Bearers
2020 – 2022**



Mr. Neeraj Kumar Srivastava
Chairman
Novus Animal Nutrition (India) Pvt. Ltd.



Mr. Divya Kumar Gulati
Dy. Chairman
Nurture Aqua Technology Pvt. Ltd.



Mr. Sumit Sureka
Dy. Chairman
Shivshakti Agro (India) Ltd.



Mr. Suresh Deora
Hon. Secretary
S. A. Pharmachem Pvt. Ltd.



Mr. Naveen Pasuparthi
Treasurer
Nanda Feeds Pvt. Ltd.



Mr. S. V. Bhawe
Immediate Past Chairman
Berg and Schmidt India Pvt. Ltd.



Ms. Chandrika Venkatesh
Executive Director

Following Office Bearers were elected for the period 2020 – 2022

- | | |
|----------------------------|--|
| 1. Chairman | : Mr. Neeraj Kumar Srivastava, Novus Animal Nutrition (India) Pvt. Ltd. |
| 2. Dy. Chairman | : Mr. Divya Kumar Gulati, Nurture Aqua Technology Pvt. Ltd. |
| 3. Dy. Chairman | : Mr. Sumit Sureka, Shivshakti Agro (India) Ltd. |
| 4. Hon. Secretary | : Mr. Suresh Deora, S. A. Pharmachem Pvt. Ltd. |
| 5. Treasurer | : Mr. Naveen Pasupathy, Nanda Feeds Pvt. Ltd. |
| 6. Immediate Past Chairman | : Mr. S. V. Bhawe, Berg and Schmidt India Pvt. Ltd. |
| 7. Executive Director | : Ms. Chandrika Venkatesh |

The other members of the Managing Committee 2020 - 2022 comprises of:

- | | |
|------------------------------|--|
| 8. Mr. Vijay Bhandare | : Bhavani Agrovet Pvt. Ltd. |
| 9. Mr. Selvan Kannan | : Noveltech Feeds Pvt. Ltd. |
| 10. Dr. Prashant Shinde | : Cargill India Pvt. Ltd. |
| 11. Mr. Anil M | : KSE Limited |
| 12. Mr. Sujit Komarla | : Komarla Feeds |
| 13. Mr. Lakshmanan | : Shanthi Poultry Farm Pvt. Ltd. |
| 14. Mr. Ramakanth V. Akula | : The Waterbase Limited |
| 15. Mr. Sandeep Kumar Singh | : Godrej Agrovet Ltd. |
| 16. Dr. Sujit Kulkarni | : Trouw Nutrition India Pvt. Ltd. |
| 17. Mr. Balaram Bhattacharya | : Indian Herbs Specialities Pvt. Ltd. |
| 18. Mr. R. Ramkutty | : Niswin Enterprises |
| 19. Dr. Devender Hooda | : Huvepharma SEA (Pune) Pvt. Ltd. |
| 20. Mr. Abhay Shah | : Spectoms Engineering Pvt. Ltd. |
| 21. Mr. Prashant Vatkar | : Godrej Tyson Foods Ltd. |
| 22. Mr. Nissar Mohammed | : Coastal Exports Corporation (Co-opted) |
| 23. Dr. Saikat Saha | : Evonik India Pvt. Ltd. (Co-opted) |
| 24. Dr. Vijay Makhija | : Intervet India Pvt. Ltd. (Co-opted) |

Mr. Suresh Deora, the New Hon. Secretary, CLFMA gave the vote of thanks and said that “The new team of CLFMA has an apt mix of experienced professionals which will strive to uphold the reputation and the legacy of CLFMA and work committedly towards its growth in the years to come. He concluded saying that the government engagements of CLFMA would be strengthened further and the new team will certainly work towards the overall development of the Animal Industry at large.

Online Discussion Forum (ODF)–of Poultry Feeding Trends Organised By CPDO & TI, Bengaluru

On 27th March, 2021

Central Poultry Development Organization & Training Institute under Government of India, Ministry of Fisheries, Animal Husbandry & Dairying, a premier Institute located at Hessarghatta, Bengaluru organized a one day online Discussion forum – on Poultry Feeding Trends on 27th March, 2021

Poultry sector in India is a techno-commercial sector with contribution of nearly 1.5 lakh crores to the GNP with about 6 million people being employed directly or indirectly. Agriculture drives poultry, the two major drivers of the sector are Corn and Soya. Poultry Feed forms 70% of the project cost either in Broiler, Layer or Breeder. Hence, this discussion forum is envisaged to outline the present feeding trends of poultry in India for efficient output.

The Online Discussion Forum started sharp at 10.30 am on 27th March, 2021 by opening remarks from Dr. Mahesh P.S., Joint Commissioner & Director, CPDO&TI. He addressed about current shocking prices of Soya crossing Rs. 50/- per kg due to various global and national factors. Further he said that poultry sector cannot be in isolation in the present context because, Corn and Soya availability and price is influenced by weather conditions in Brazil, Argentina, United States and India on an annual basis. The present observations are severe wet conditions in Brazil preventing the harvest, high dry weather in Argentina reducing the crop, extended lean season in US with stocks completely exhausted. Local issues like unforeseen rains in Madhya Pradesh and Maharashtra during November, 2020 made Soya to suffer fungal infection forcing millers to crush the grain to create soya meal which was exported due to global lucrative demand. This observation set the note for further discussions. The present global crisis of grounding of ship “Ever Green” in Suez Canal impacting global movement of goods across Asia and Europe was also brought out.

CPDO&TI is a trend-setting organization in offering online programmes from Sept. 2020. So far, three flagship programmes are rolled out. 1. Enterprenership in Poultry Awareness Week (EPAW), 2. Entrepreneurs Day (ED) and 3. Online Discussion Forum with specific objectives of basic awareness in poultry by EPAW, Success stories by ED and In-depth analysis of a topic by ODF. CPDO&TI launched its youtube channel by name CPDO&TI TRAINING and regularly streamed live episodes and uploaded past episodes by editing individual speaker videos. Team CPDO&TI developed a concept to create a Diary of past and present online events which led to the release of App “CPDO&TI” in Google Playstore Android Version on 27th March, 2021.



Dr. Mahesh made a presentation about the contents of the app which is very user friendly and low in size (6.5 MB). This app provides navigation by choosing language – English and Kannada and takes the viewer to the catalogue of events namely ED and ODF. Further the viewer can choose the choice of the event and choice of the speaker to see the video content of the speaker. A small attempt is made to dub few of the events in Kannada also.



Prof. Ajit S. Ranade, Associate Dean, Mumbai Veterinary College and subject matter expert on Nutrition was the guest of honour. In his address he appreciated the efforts of CPDO&TI in designing innovative programmes especially the release of CPDO&TI app to keep abreast with the technology. He emphasized importance of nutrition and research to exploit fullest genetic potential of the bird for the specific purpose of meat output, egg production or hatching eggs production in India matching international standards.



Mr. Neeraj Kumar Srivastav, Chairman, CLFMA and Managing Director – South Central Asia, Novus Animal Nutrition (India) Pvt Ltd. Was the Chief Guest for the programme. In his presentation, he mentioned about the great glory of India

in Livestock and Agriculture sector, namely, No.1 in milk production (188 MMTs), No.1 in pulse production (23 MMTs), No.1 in Millet production (11 MMTs), No.1 in Fresh Water Aquaculture, No.2 in rice production (112MMTs), No.2 in wheat production (23 MMTs), No.3 in egg production (108 billion eggs) and No.4 in Broiler Production (4.5 MMTs). He further stressed the need of large quantity of protein requirement for the population of 1.3 billion people which is estimated to be 25 to 30 MMTs of protein per year. This signifies the role of livestock sector in contributing protein for the human population. He congratulated Team CPDO&TI for bringing out app and appreciated professional conduct of online training programmes over the years.

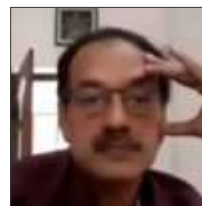


Dr. Rama Rao, Principal Scientist, Directorate of Poultry Research, Hyderabad spoke on “Trends in Broiler Feeding”. In his address, he requested the sector to make a huge claim of the revolution in poultry in India similar to Green Revolution and White Revolution

putting the facts of achievement in broiler sector which has grown 1825 times and layer sector 55 times since independence. He illustrated phenomenal achievement of development in broiler nutrition attaining 2 kg body wt. with efficient FCRs of 1.4 to 1.5 in 32 days. He advised precision feeding for the broilers with more critical analysis of formulations mainly focused on digestible amino acids. In his summary of the presentation, he advised scope of dietary phytase in comparison to inorganic Phosphorus (DCP). The concept of maximum response by phytase super dose (1500 – 2500 fyt/kg). Usage of low calcium and high D3 in the diet can save dietary phosphorus to a large extent. Further he advised to reduce the NPP requirement to 0.2% in broiler breeders. The innovative ideas of use of hydrolyzed protein, emulsifier, fiber, papain and bacteriophage to improve the feed utilization are being adopted for better feed utilization in Broilers. The present over dependency on corn and soya is compelling to explore alternates for the same. In this regard,

Dr. Rama Rao advised the great potential of wheat as an energy source in broiler diets in the future days. He presented various trial reports about the concepts mentioned above. Concludingly, he advised change of floor from mud floor to concrete and better sanitation instead of Feed AGP which is not beneficial according to Dr. Rama Rao.

Dr. Nataraja H.B., expert Nutritionist and Managing Director of Higain Feeds presented in detail about basic concepts of “Broiler Breeder Nutrition”. He remarked major mistakes carried by many breeders focusing on egg number output, least cost formulations, altering feed formulations according to the market. These are some of the errors committed by breeders with a skewed approach. He suggested to consider breeder nutrition as an “Investment” for the future broiler chicks rather than expenditure for the present breeder farm. He nicely narrated about cost economics and future gain by way of critical analysis in the present investment. In his one slide he illustrated nicely the correct logic of reduction of energy based on “egg mass output” rather than “egg number”. Generally farmers reduce 5% of energy with respect to 5% reduction in egg production. Whereas according to egg mass calculation, it should be just 1.4% reduction. In his presentation he emphasized need of pre-breeder precise ration, focus on energy for the breeders rather than focus on protein since they are adults and they need 70 – 80% of ration for maintenance. He suggested to invest on vitamins, minerals D3, Carotenoids for better hatchability as well as better chick quality. Calcium particular size and a correct use of calcium feeding will benefit breeder hatching egg quality and hatchability. Need of updating of matrix values frequently with best cost feed over least cost feed was also recommended. Finally he advised to take advantage of phytase for extra phosphoric effect for better performance as also recommended by Dr. Rama Rao.



Prof. Natarajan. A., is an expert in the area of layer nutrition from Namakkal. His team has developed 100% self financing laboratory - Animal Feed Analytical and Quality Assurance Lab since 1996. This is a unique facility in the country servicing

not only layer farmers of Namakkal with a capacity of 5 crore layers in the district but also extending services across the country. In his presentation he nicely narrated impact of

production. He advised feed intake of more than 100gm pre summer for the growers with uniform body wt. in the flock can influence to get optimum performance with egg weights over and above 55 gm in the layers in comparison to reduction in production for the birds which are fed less than 100gm with un-uniform body weights in the flock. He also narrated the availability of maize and soya presently with 30 MMTs and 8 MMTs respectively in India. Keeping in view of the growth of broilers and layers he suggested additional 2 - 3 MMTs of maize and 1 MMTs of soya requirement for the next year which sounds alarming and scary for the poultry sector. The sector has to resolve to find alternate source of energy and protein as an essentiality in the future. The layer nutrition has to cope up with the highest potential of the bird and the performance in the field. In order to do this, the need of the layer industry is to focus on better uniformity and better body wt. before the laying period, early egg start in egg size and egg percentage, touching the peak in time and sustaining it and sustain post peak maintenance without much egg shell problems. He presented a slide on distribution of modern layers across India with 8.5 crore in Andhra and Telangana, 5 crore in Tamilnadu, 4 crores in Punjab and Haryana, 2 crores in Odisha, 1.4 crore in Karnataka followed by Maharashtra 1 crore, West Bengal 80 lakhs, totally 25.5 crore population including the rest of the states.

Dr. Sudipto Haldar, Director, Agrovvet Consultancy pvt. Ltd.,

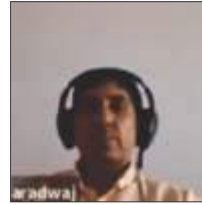


Kolkata presented about new approaches for sustainable poultry production with disease free status. He summarized very nicely predictable and unpredictable stress factors causing "oxidative stress" by release of Reactive Oxygen Species (ROS) which can impact

performance, gut health, liver function and immunity of the bird. He illustrated the danger of "Feeding Excess" over "Feeding Less" in a slide by pointing out under feeding during starters and over feeding during grower and finisher stage with respect to energy. Similarly, overfeeding during starter, optimum feeding during grower stage and under feeding during finisher with respect to proteins. This he said that need to change and farmers are advised to follow precision feeding i.e., apt feeding as per the requirement. Further he said about a new truth of birds adoptability for high density

rations very efficiently over the earlier belief of natural downgrading by the birds. He suggested calculation of Feed Price Ratio (FPR) (cost of 1kg feed to 1kg poultry product) as a new focus Area over mere calculation of body wt. and FCR.

Dr. S.K. Bhardwaj, Nutritional Expert from North India (Jind, Haryana) illustrated increase of



consumption pattern of animal protein in recent times by way of 18.4% (chicken), 10.6% eggs, 5% fish and 1.5% milk. The consumer choice is leaned towards animal protein and it has reduced by about 2% in the choice of protein. In his

presentation, he gave an example of altering the ideal dietary protein contribution from 42% in the production cost to 30% in order to balance the cost of the feed due to hike in prices of protein sources. This he advised should not be followed for efficient productivity. However, he emphasized the choices of alternatives in detail about rapeseed, cottonseed, sunflower, sesame, groundnut, maize gluten meal, DDGS (Rice / Corn origin) and Rice gluten to use as alternate protein source for poultry.

Prof. Ajit S. Ranade conducted Q&A session from the panel and all the queries were answered. Dr. Mahesh P.S., Joint Commissioner & Director, CPDO&TI mentioned that Team CPDO&TI would conduct many such programmes in the coming months during the next academic year 2021-22. The programme was conducted live on zoom, youtube channel of CPDO&TI and Hybiz TV along with recordings posted on facebook: cpdoti.bangalore and on youtube: CPDO&TI TRAINING. All are requested to download "Latest App of CPDO&TI" from Google Playstore by typing "CPDO&TI" for Android Version.

Sri. Anwar Basha, Senior faculty of CPDO&TI executed the job of admin of conducting Discussion Forum very effectively. The other team members of CPDO&TI worked hard in making this programme successful. Team CPDO&TI thank all the viewers participated in Zoom, Youtube and Hybiz TV. It is also acknowledged that Print Media extends great support by wide coverage of all online events of CPDO&TI across the country.



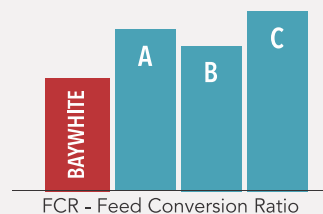
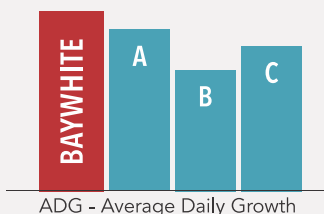
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Govt mulls Rs 43,500-cr corpus for poultry, dairy sectors

The Centre plans to create a \$6-billion corpus (Rs 43,500 crore) to strengthen logistics in animal husbandry, dairy and food processing sectors as part of its efforts to connect the farmgate to newer markets, a senior government official said today.

Ministry of Agriculture's National Rainfed Area Authority (NRAA) Chief Executive Officer (CEO) Ashok Dalwai, addressing the Global Castor Conference 2021 organised by the Solvent Extractors' Association of India (SEA), the Union government's agricultural policies to create free and open markets supported by measures to strengthen the farmers hand.

"Our focus is to simultaneously provide an environment for every stakeholder including corporate to strengthen agri-logistics. For the first time, we are now realising the importance of agri-logistics," said Dalwai.

Warehousing reforms

He highlighted the new avenues that the government has created for farmers in terms of electronic national warehouse receipt system (eNWRs) enabling farmers to store agri produce in authorised warehouses and access the institutional credit at a concessional rate of interest.

"So, the farmer would be able to wait for the glut in the market to get over and sell after two or three months when the markets are likely to be more buoyant. Our focus is to offer the farmer post harvest loans at a concessional rate of interest so that he is able to strengthen himself as an equal partner or equal stakeholder vis-a-vis private or corporate player," the NRAA CEO said. He said the Centre was keen on making India the agri producer for the world. With an agricultural area of 141 million hectares and diverse agro-climatic conditions with diverse soil systems, India enjoyed an advantage.

Hinting that the Government was keen to encourage farm production with a targeted markets of consumer segment as well as industries, Dalwai said that the government was working on an improved/ liberalised export policy with ease of doing business and harmonised standards to meet global standards for different commodities.

Process of change

Admitting that Indian agriculture was undergoing a basic foundational change and that during the process of change, there would be disruptions, and therefore some resistance. "The cosy comfort of many stakeholders will be disturbed. So, we would need to adopt change management as efficiently as possible," added Dalwai.

India's agriculture policies were focused on post-harvest management, the NRAA CEO said. As part of this, the Centre will spend Rs 1-lakh crore or (approx \$13 billion) over the

next four years as part of its efforts to provide impetus to post-harvest management logistics capacities in the country, he said.

India- Blue Economy is going to be an important source of Atma nirbhar Bharat: PM

The Prime Minister, Narendra Modi on Tuesday said that the Blue Economy is going to be an important source of Atma Nirbhar India.

He said this speaking after dedicating Kochi - Mangaluru Natural Gas Pipeline to the Nation through a video conference.

Modi said that the development of the coastal areas and welfare of hardworking fishermen is one of the important priorities of the Government. He outlined a multi-pronged plan for coastal area development comprising transforming the blue economy, improvement of coastal infrastructure and protecting the marine ecosystem.

As the Prime Minister was speaking to the two coastal states of Kerala and Karnataka, he spoke at length about his vision of fast and balanced coastal area development. He said that a comprehensive plan for the development of the blue economy in the coastal states like Karnataka, Kerala and other South Indian states is under implementation.

'Blue Economy is going to be an important source of Atma Nirbhar India. Ports and coastal roads are being connected with a focus on multi-modal connectivity. We are working with an aim to turn our coastal region into a role model of ease of living and ease of doing business,' said the Prime Minister.

Modi touched upon the fisherman communities in the coastal areas who are not only dependent on the ocean wealth but also are the guardians of the same. For this, the Government has taken many steps to protect and enrich the coastal ecosystem.

'Coastal infrastructure is being improved to meet the demand of the rising needs and aspirations. Steps like helping fishermen with deep sea fishing, separate fisheries departments, providing affordable loans and Kisan Credit Cards to the people engaged in aquaculture are helping both entrepreneurs and general fishermen,' he added.

The Prime Minister also talked of the recently launched 20 thousand crore Matsya Samapada Yojna which will directly benefit lakhs of fishermen in Kerala and Karnataka.

'India is progressing rapidly in the fishery related exports. All steps are being taken to turn India into a quality processed sea-food hub. India can play a major role in fulfilling the growing demand of seaweed, as farmers are being encouraged for seaweed farming,' he added.

Maize prices may continue to falter despite smaller crop view

Prospects of a smaller rabi crop, coupled with an impressive run-up in exports, may fail to lift prices of maize over the next two months as back home, bulk demand continues to slide and carryover stocks build up, say traders. Wholesale prices of maize, currently at 1,400-1,450 rupees per 100 kg, are seen plunging to 1,300 rupees in the near term.

Rabi maize production is seen at 8.75 mln tn in the current crop year as against 9.34 mln tn in 2019-20 (Jul-Jun), the government's second advance estimate shows. Area under rabi maize in the 2020-21 (Jul-Jun) crop year fell 3.1% on year to 1.7 mln ha, data shows.

There has been no let-up in the pressure on prices of maize since January, when the bird flu outbreak crippled demand for the feed-grade variety. Feed-grade maize is mainly used to manufacture feed for livestock like broiler chicken.

A rise in arrivals from the late-kharif produce dragged the grain's prices lower, while bulk demand continued to shrink.

Even as exports to major buyers like Bangladesh, Myanmar and China have picked up over the past few weeks, prices continue to slide.

Demand from bulk buyers is, in fact, expected to shrink further as they await the fresh crop, Nizamabad-based trader Amrutlal Kataria said.

"The fresh rabi crop will hit the markets of Bihar and some southern states by mid-April. Prices are seen declining in the next few weeks ahead of the fresh crop hitting the markets."

The crop from Uttar Pradesh will hit the markets in mid-May, following arrivals from Bihar, the country's largest maize producer, and other major growers like Karnataka, Maharashtra and Tamil Nadu.

"The continued supply pressure during the next two months will keep the prices depressed," an official with a multi-national trading firm said. "The prices may decline to 1,300-1,350 rupees per 100 kg during this period."

The build-up in maize stocks has significantly hit demand from top buyers.

"Currently bulk demand is very low as most millers and stockists have already built up their inventories," Purnea-based trader Sehdev Jaiswal said. "They may not immediately come back to start purchasing in bulk."

Carryover stocks in the crop year ended June was estimated at 2 mln tn, up 30-40%, traders said.

Retail buyers, too, continue to stay away given poultry purchases and bulk demand from restaurants have diminished on rumours that broilers may carry coronavirus.

Bulk demand in domestic markets is yet to return to pre-pandemic levels, an official with an international food chain said.

Even strong exports, it is worth noting, are not expected to

spark a recovery in maize prices in the next few days.

"It seems the pace of exports is weakening now as much has been shipped out and further demand from overseas markets is unlikely during the next few weeks to support domestic prices," Niket Chheda, director of P.V. Sons Corn Milling Co, said.

During Apr-Dec, India exported over 1.42 mln tn maize, as against 221,675 tn in the corresponding period a year ago, according to Agricultural and Processed Food Products Export Development Authority.

This year, India's maize exports have skyrocketed with the average export price remaining competitive amid weak domestic demand, traders said.

The average export price of Indian maize is \$200-\$210 per tn free-on-board, as against \$230-\$240 a tn for maize from Ukraine. In the corresponding period a year ago, Indian maize was sold for \$240-\$250 a tn free-on-board.

Though these exports have kept some traders optimistic, the price lag looks here to stay.

Poultry sector eyes recovery on rising demand, birds shortage

After facing the double whammy of Covid pandemic and bird flu over the past one year, the poultry sector is eyeing a recovery on rising prices fuelled by pick-up in demand and shortage of birds in the market. Industry players such as Godrej Agrovet and Suguna expect prices to rule firm for next few months on shortage of both live birds and broiler chicks.

"Demand has definitely picked up, but it is still around 75-80 per cent of the pre-Covid levels. The segments which consume in large quantities such as marriages, parties, hotels and restaurants are yet to come back to normal levels. My sense is that the demand will come back only when adequate vaccination takes place," said Balram Singh Yadav, Managing Director of Godrej Agrovet Ltd.

Prices rise

Yadav said poultry prices, which have skyrocketed in the past few days will remain high for next few months as well.

Farm-gate prices of live birds are hovering between ₹85 and ₹100 per kg across various parts of the country, against a low of ₹45-50 about a month ago. Also, the prices of broiler chicks are ruling high at around ₹45-48 as placement has picked up amidst a shortage.

"Consumption levels are coming back to normal," said B Soundararajan, Managing Director, Suguna Holdings, a large poultry player. He attributed the shortage of live birds to the drop in placements by farmers during the early part of the year, when fears of bird flu had surfaced across many States. Also, the prevailing shortage of chicks is due to the impact of sharp decline in breeder bird placements during February-April last year, when the spread of Covid had impacted the

poultry sector badly. "The shortage will get moderated in the next few months," he said.

"The bird flu scare is receding now as temperatures are on the rise," said Ramesh Khatri, President of the Poultry Federation of India.

"The demand is returning and prices could go up further as there is a huge shortage in the market as many players have suffered huge losses. The shortage is across many regions but felt more in North India," Khatri said.

During the pandemic, poultry consumption took a major beating in northern and western parts of the country, where the off-take dropped by 30-40 per cent, while eastern and southern regions witnessed a decline of 10-15 per cent.

Retail prices have increased in tandem with the farm-gate prices. There is a sharp increase in the chicken prices in Hyderabad. The price, which fell to ₹130/kg a month ago, has inched up to ₹215 now.

"Several small players had closed down their businesses as they suffered up to 40-50 per cent loss due to the bird flu fears. There has been a drop in production as many farms have cut down on the numbers," Suresh Chitturi, Vice-Chairman and Managing Director of Srinivasa Hatcheries, said. The prices of eggs, however, are still ruling low. At the farm-gate, the egg is quoted at ₹3.50 a piece, while the retailers are selling at ₹5.

Branded poultry

Normally, the poultry sector sees improved prices during April-May every year. However, this year, the price improvement has come in early during late February and March, said Soundararajan.

The Covid and bird flu scare are seen pushing consumers towards the branded poultry segment. "This year, the branded chicken segment, both value added and processed, will grow by about 20 per cent, even though the industry has shrunk by 5-7 per cent as consumers are seen shifting towards the brands," Yadav said.

Chairman of the Chhattisgarh-based IB Group, Bahadur Ali, said the industry has come out of the bird flu epidemic with prices of live poultry birds rising to about ₹80-95 per kg. As the prices of birds have increased, so have the prices of poultry feed derived from soyabean and corn.

"The cost of feed is higher by about 5-7 per cent compared with the third quarter," Yadav said.

National Dairy Development Board Introduces Android-Based Dairy Surveyor Software

The National Dairy Development Board (NDDB) has released an Android-based dairy surveyor framework that could help policymakers devise or revisit successful policies in the field.

According to NDDB, the Android application with a geographic information system (GIS) would support dairy cooperatives and producer-owned organisations in the sector by providing real-time information.

The Dairy Surveyor application can provide a comprehensive locational database that policymakers will use to devise or revisit appropriate dairy-related policies and programmes.

Varsha Joshi, joint secretary - cattle & dairy production, department of animal husbandry & dairying, Ministry of Fisheries, Animal Husbandry & Dairying of Government of India, said, 'It can capture real-time location-based information to improve decision-making.'

Joshi, speaking at an NDDB webinar on the new app, said it can geotag and map infrastructure, track field projects in real time, and control milk procurement and sale-related operations, all while increasing transparency and saving time, effort, and money.

The dairy board's data digitisation push via the app, according to Arun Raste, Executive Director, NDDB, would set targets and enable dairy institutions to follow and expand their use of digital platforms. 'An app like this would also allow the dairy industry to become more conscious and move toward a digital economy,' Raste continued.

According to Sudhir Kumar Singh, managing director of the Jharkhand Milk Federation (JMF), Ranchi, the app would be useful during the planning stage to extend marketing reach, track results, and increase market share, among other items.

CMFRI Develops New Breeding Technology for High-Quality Marine Fish

A new hatchery technology for Picnic Seabream (*Acanthopagrus berda*), a commercially valuable marine food species, was developed by the Central Marine Fisheries Research Institute (CMFRI), one of India's most prestigious research organizations.

Since the fish - Black Seabream and Gold silk Seabream - are noted for their excellent meat quality and high economic value, the breakthrough would aid in the diversification of the country's mariculture operations. With a price of about 450-500 per kg, it is in high demand in the domestic market.

The fish, known locally as Karutha Yeri, is an excellent species for mariculture because of its faster growth rate, high disease tolerance, and ability to cope with large variations.

The fish, known locally as Karutha Yeri, is an outstanding mariculture species due to its higher growth rate, high disease tolerance, and ability to cope with large variations in environmental parameters such as salinity and temperature.

According to CMFRI Director A Gopalakrishnan, the breeding

technologies established by the Karwar Research Centre would open up tremendous potential for the country's mariculture projects in the immediate future by species diversification.

Increased breeding: With the advancement in hatchery technologies for Picnic Seabream, he believes there may be a new boom in marine finfish demand. The institute's next challenge is to standardise the fish's farming procedure, as there is no record of this fish's breeding or aquaculture in the world.

Given the fish's characteristics, he believes Picnic Seabream aquaculture would be extremely promising in terms of attracting commercial benefits and satisfying growing seafood demand in the immediate future.

According to Gopalakrishnan, India plans to grow 4-5 million tonnes of fish from mariculture over the next ten years. Species diversification for mariculture is mainly aimed at achieving this goal by improving the country's coastal states' marine cage farming systems.

This is the CMFRI's seventh marine food fish for which it has evolved breeding technologies. The CMFRI scientists took three years to improve the seed production technologies for this fish.

Cobia, Silver Pompano, Indian Pompano, Orange-spotted Grouper, Pink Ear Emperor, and John's Snapper were among the fish whose brood stocks the institute had successfully established previously. CMFRI will be in charge of transferring the information.

Cobia, Silver Pompano, Indian Pompano, Orange-spotted Grouper, Pink Ear Emperor, and John's Snapper were among the fish whose brood stocks the institute had successfully established previously. He mentioned that CMFRI will pass these innovations to those involved in commercial seed processing.

India's mustard output set to hit record 10 million tonne this year

The country's mustard output is all set to be a record 10 million tonne this year after the sowing area under the crop is said to have reached an all time high of more than 25 lakh hectare as the government rolled out the oilseed mission as a pilot during 2020-21 rabi season. This achievement may help the government to launch the oilseed mission from upcoming kharif season across the country.

"The weather throughout the winter season was conducive for mustard. There was no report of any pest or disease, nor any weather disturbance. The production will be at least 10 million tonne this year," said PK Rai, director of Bharatpur-based Welcome to ICAR-Directorate of Rapeseed-Mustard

Research (DRMC).

The official production estimates of all rabi crops including mustard may be released this week. The country's mustard production in 2019-20 crop year (July-June) dropped 1.5% to 9.12 million tonne due to hailstorms in several areas of Rajasthan, the top producing state, just before the harvesting.

As the country's import dependence on edible oils was over 70% with an annual outgo of Rs 75,000 crore, the agriculture ministry had proposed a five-year plan of edible oil mission at an estimated expenditure of Rs 19,000-crore in the FY22 Budget.

The Mumbai-based Solvent Extractors' Association (SEA) of India has already expressed the industry's disappointment as no such announcement was made by the finance minister Nirmala Sitharaman. During FY20 Budget speech in July 2019, she had said: "I place my appreciation for our farmers who have made India self-sufficient in pulses. I am sure they will repeat such a success even in the production of oilseeds. Our import bill shall be reduced by their Seva." Since 2019, nothing has been heard from the government on raising oilseeds output.

The government was hesitant to make the pilot public due to the current farmers' agitation against the three contentious farm laws, sources said. A target of 8.5 million hectare sowing area under mustard was set for rabi 2020-21 season and it resulted in a record 7.39 million hectare coverage as of January 29, up by 7% from the year-ago period. The Rajasthan government expects the mustard acreage to be around 3 million hectare as it compiles district-wise data. The sowing area under the rabi oilseed crop was 2.71 million hectare last year in the state.

"The delayed withdrawal of monsoon helped in retaining the moisture content, and as usual farmers in Rajasthan have started harvesting the crop, which was sown around first week of October. Whereas as the harvesting in Madhya Pradesh and Haryana, two other leading mustard-growing states, will begin after 15-20 days," Rai of DRMC said.

He also said that the government's thrust is to take the mustard crop to states like Assam and Jharkhand where potential is high, part from increasing the areas in the traditionally growing states. As the crop needs at least two irrigation in the season, Rai said there are varieties which are suitable for Assam and other non-traditional states and can be grown after paddy harvest as those fields remain non-utilised to grow any winter crop. Besides, mustard can replace toria (a similar crop) in Assam as it will increase the yield 2-3 times to 10-12 quintal per hectare, he added.



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Effectiveness of Probiotics in Calf Health Management

Pramod Kumar, Kaushalendra Kumar* and R.R.K. Sinha

Department of Animal Nutrition and Department of LPM
Bihar Veterinary College, Bihar Animal Sciences University, Patna, India

Introduction

Presently, the application of probiotics increases in livestock rearing to mitigate the early calf mortality, because, calf mortality is considered to be an index of the general health status of any dairy farm. However, probiotics have the ability to modulate the balance and activities of the gastrointestinal microbiota thus, considered beneficial to the host animal and have been used as functional foods. Moreover, probiotic yeast strains may be administering with the aim of improving rumen fermentation efficiency by curbing microbial fermentation pathways. So, this article mainly focused on the benefits of probiotics in calf health and nutrition.

According to the food and agriculture organization of the united nations (FAO) and world health organization (WHO) working group defined probiotics as “live micro-organisms which when administered in adequate amounts confer a health benefit on the host” (FAO/WHO, 2001) and this definition is widely accepted and adopted by the International scientific association for probiotics and prebiotics (Hill et al., 2014). Several bacterial strains, species belonging to the genera *Lactobacillus*, *Bifidobacterium*, and *Enterococcus*, are considered beneficial to the host and thus, used as probiotics and included in several functional foods. Moreover, probiotics have the ability to enhance intestinal health by stimulating the development of a healthy microbiota (predominated by beneficial bacteria), preventing enteric pathogens from colonizing the intestine, increasing digestive capacity, lowering the pH, and improving mucosal immunity.

Classification of probiotics

There are ranges of micro-organisms used as probiotics and

can be classified as follows.

1. *Bacterial vs. Non-bacterial*: Except certain yeast and fungal origin probiotics, but majority of the micro-organisms used as probiotics are bacteria. The bacterial probiotics includes several species of *Lactobacillus* (Mookiah et al., 2014), *Bifidobacterium* (Pedroso et al., 2013), *Bacillus* (Irshaid and Al-Fataftah, 2013), and *Enterococcus* (Mountzouris et al., 2010). However, non-bacterial (yeast or fungal) probiotics include *Aspergillus oryzae* (Shim et al., 2012), *Candida pintoalopesii* (Daskiran et al., 2012), *Saccharomyces boulardii*, (Rahman et al., 2013), and *Saccharomyces cerevisiae* (Bai et al., 2013) are the major examples.

2. *Spore forming vs. Non-spore forming*: The non-spore forming *Lactobacillus* and *Bifidobacterium* strains predominated as probiotics source, however, spore forming bacteria are also now used such as *Bacillus subtilis* (Alexopoulos et al., 2004a) and *Bacillus amyloliquefaciens* (Ahmed et al., 2014).

3. *Multi-species vs. Single-species*: The microbial composition of probiotic products varies from a single strain to multi-strain or species compositions like combination of *Enterococcus faecium*, *Lactobacillus reuteri*, *L. salivarius* and *Pediococcus acidilactici*, *Bifidobacterium* and *Saccharomyces* (Giannenas et al., 2012), however, single-species probiotics includes *Saccharomyces servisia* (Abd-Allah and Hassanein, 2012).

4. *Allochthonous vs. Autochthonous*: The micro-organisms used as probiotics, which are normally unavailable in the GIT of animals are referred to as allochthonous (e.g. yeasts), while the micro-organisms generally available as inhabitants of the GI tract are denoted as autochthonous probiotics (e.g. *Lactobacillus* and *Bifidobacterium*).



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Some major micro-organisms used as probiotics in the animal diet

| S. No. | Micro-organisms | References |
|--------|---|--|
| 1. | <i>Aspergillus oryzae</i> and <i>A. niger</i> | Seo et al., 2010; Shim et al., 2012 |
| 2. | <i>Saccharomyces cerevisiae</i> , <i>S. boulardii</i> and <i>S. servisia</i> | Rahman et al., 2013; Abdel-Rahman et al., 2013 |
| 3. | <i>Bacillus amyloliquefaciens</i> , <i>B. licheniformis</i> , <i>B. subtilis</i> , <i>B. mesentericus</i> and <i>B. polymyxa</i> | Ortiz et al., 2013; Alexopoulos et al., 2004a; Rahman et al., 2013 |
| 4. | <i>Bifidobacterium bifidum</i> , <i>B. bifidus</i> , <i>B. thermophilus</i> and <i>B. animalis</i> | Mountzouris et al., 2010; Daskiran et al., 2012; Rahman et al., 2013 |
| 5. | <i>Enterococcus faecium</i> | Zhao et al., 2013 |
| 6. | <i>Lactobacillus thermophilus</i> , <i>L. acidophilus</i> , <i>L. brevis</i> , <i>L. bulgaricus</i> , <i>L. casei</i> , <i>L. fermentum</i> , <i>L. plantarum</i> , <i>L. reuteri</i> , <i>L. rhamnosus</i> , <i>L. lactis</i> , <i>L. salivarius</i> and <i>L. sobrius</i> | Mountzouris et al., 2010; Daskiran et al., 2012; Bai et al., 2013; Fajardo et al., 2012; Mookiah et al., 2014; Rahman et al., 2013 |
| 7. | <i>Megasphaera elsdenii</i> | Seo et al., 2010 |
| 8. | <i>Lactococcus lactis</i> | Fajardo et al., 2012 |
| 9. | <i>Pediococcus acidilactici</i> and <i>P. parvulus</i> | Pedroso et al., 2013; Biloni et al., 2013 |
| 10. | <i>Propionibacterium freudenreichii</i> , <i>P. acidipropionici</i> and <i>P. jensenii</i> | Seo et al., 2010 |
| 11. | <i>Streptococcus bovis</i> , <i>S. faecium</i> , <i>S. salivarius</i> subsp. <i>Thermophilus</i> and <i>S. gallolyticus</i> | Kumar et al., 2014; Rahman et al., 2013; Daskiran et al., 2012; Seo et al., 2010 |

Probable mechanisms of action of probiotics**1. Promoting favorable gastro-intestinal microflora:**

Probiotics may alter the microbial population of GIT which creates a more favorable population due to a shift in the balance of beneficial and harmful microbes (Mountzouris et al., 2009). However, the favorable microbial populations in the GIT are accompanying with enhanced animal performance, efficient digestion and improved immunity (Hung et al., 2012), whereas, reduction in pathogenic microbes in the GIT may be attributable to the production of antimicrobial substances like bacteriocins (Shim et al., 2012) and adhesion of the probiotic microbes to the intestinal epithelium, thus excluding pathogens competitively or by inducing immune system response. Therefore, we can say that the probiotics may increase the population of beneficial micro-organisms (like lactobacilli and bifidobacterial) which then inhibit growth of harmful micro-organisms by producing inhibiting substances (bacteriocins and/or organic acids) and by competitive exclusion.

2. Enhancement in nutrients digestion and absorption:

Probiotics can be accompanying with an increase in digestion and absorption of nutrients. Increased digestibility of nutrients in diet may be due to increased enzyme activity in the GIT, which could be due to either production of enzyme by

the probiotic itself or induced change in the microbial population. Probiotics also increased the height of intestinal villi and villus height: crypt ratio in poultry hence, increasing the surface area for nutrient absorption.

3. Production of antimicrobial substances: Probiotics may produce antimicrobial substances which may prevent growth of pathogenic micro-organisms in the GIT such as bacteriocin produced by lactobacilli inhibits the growth of pathogenic microbes by inhibiting cell wall synthesis, with the formation of pores in the bacterial surface (Hassan et al., 2012).

4. Modulation in microbial gene expression: Probiotics may affect quorum sensing (communication between bacteria and their host) in pathogenic bacteria, therefore influencing their pathogenicity (Hughes and Sperandio, 2008).

5. Immunomodulatory action: Probiotics supplementation can prevent chronic inflammation of the GIT through stimulation of innate immunity in the GI epithelium (Pagnini et al., 2010) whereas, improvement in intestinal barrier function by probiotics is due to a reduction in the permeability of the intestinal epithelium. However, the responses are complicated as they vary with the probiotic strain or species, with the dose level, and may differ in their effect pre- and post-weaning. Probiotics can affect the

expression of the anti-inflammatory cytokine or cell signaling proteins and also increase serum immunoglobulin levels.

Gastrointestinal tract microbial dynamics of calf

The GI tract of a newly born calf is sterile at the time of birth and colonization of the GI tract begins instantly after birth. Afterward, a complex and dynamic microbial ecosystem is established in the large intestine and the bacterial communities of calves revealed that it undergoes dynamic changes during the first 12 weeks of life (Uyeno et al. 2010). However, the changes occur in the GI microbiota of young calves are in accordance with the metabolic and physiological development of the GI tract (Dehority, 2003). Moreover, immature and fluctuating gut microbiota has to face a sudden change in diet, which leads to an increase in the susceptibility of young animals to pathogen colonization and consequently diarrhoea and respiratory diseases occurs.

Applicability of probiotic in calves

In ruminant calf, probiotics such as Lactobacilli or Bacillus species generally target the lower intestine and to stabilize the gut microbiota and decrease the risk of pathogen colonization. However, lactobacilli are well recognized probiotic supplement for young calves, and are started as applicable to consistent feeding practices. Diarrhoea is one of the major causes of morbidity and mortality in calves during their early life, thus, its prevention is important to promote the growth of calves (Timmerman et al., 2005) whereas, antibiotic therapy has been applied to maintain the performance of calves and reduce scours. Henceforth, the increasing safety concerns about the risks of antibiotic resistance due to the release of antibiotics into the environment and persistence of chemical residues in animal products, probiotics have been developed as an alternative to improve animal health and productivity (Berge et al., 2009).

The optimization of the enteric micro flora is considered effective for healthy calf rearing because it increases the

numbers of such beneficial microorganisms and supplementation of probiotic microbes together with feed from birth in a preventive manner, allows the assimilation and establishment of these probiotic strains together with the microbiota of calves. Therefore, the early colonization by lactobacilli in the GI tract may decrease the adherence of pathogenic microbes to the intestinal mucosa thus, improve weight gain and immunocompetence in young calves (Al-Saiady, 2010).

The efficacy of probiotic strains may vary according to their rearing conditions and under stressed conditions, probiotics may be used to reduce the risk or severity of scours mainly caused by disruption of the normal intestinal environment. Stress in young calves often leads to scours or diarrhoea and weight loss, and the stressors are weaning, vaccination, dehorning, castration, tagging, temperature variation etc. however, application of probiotics reducing the incidence of diarrhoea in young dairy calves (Jatkauskas and Vrotniakienė, 2010). However, the probiotic did prevent weight loss in the treated calves, while the control calves lost weight. Therefore, stress in calf causing dysbiosis or microbial imbalance in the GIT may be desirable for the probiotic to benefit calf health.

Conclusion

Finally, concluded that the application of probiotics in the diet of calves might have a great potential towards improvement of overall performance and health of calves, promoting gut development in early stage of life, reduces risk of infections, and provide immunity to fight with diseases.

Correspondence address: * Assistant Professor,
Department of Animal Nutrition,
Bihar Veterinary College,
Bihar animal Sciences University,
Patna- 800 014 (Bihar), India.
E-mail ID: drkaushalivri@gmail.com

References

References available with authors and will make available on demand.



A. Healthy calf



B. Sick calf

Nutrient Losses During Storage of Feed Ingredient used for Animal Feeding

Rashmi Kumari¹, Anjay², Brishketu Kumar³, P. K. Yadav⁴ and Dinesh Kumar*

¹Department of Agriculture, Gov of Bihar, Supaul, Bihar- 852131 • ²Assistant Professor, Bihar Veterinary College, BASU, Patna, Bihar • ³Assistant Professor, College of Agriculture, NAU, Bharuch, Gujarat

⁴Assistant Professor, Faculty of Veterinary Science, BHU, Varanasi, UP.

*Assistant Professor, College of Agriculture, Tikamgarh, JNKVV, Jabalpur, MP • *Corresponding author: Email- kr.dinesh7@gmail.com

Agricultural commodities produced on the farm fields have to undergo a series of operations such as harvesting, threshing, winnowing, bagging, transportation, storage, processing and exchange before they reach the consumer and there are appreciable losses in crop output at all these stages. A recent estimate by the Ministry of Food and Civil Supplies, Government of India, puts the total preventable post-harvest losses of food grains at 10 per cent of the total production or about 20 Mt, which is equivalent to the total food grains produced in Australia annually. In a country where 20 per cent of the population is undernourished, post-harvest losses of 20 Mt annually is a substantial avoidable waste. According to a World Bank study (1999), post-harvest losses of food grains in India are 7-10 per cent of the total production from farm to market level and 4-5 per cent at market and distribution levels. For the system as a whole, such losses have been worked out to be 11-15 Mt of food grains annually, which included 3-4 Mt of wheat and 5-7 million tonnes of rice. With an average per capita consumption of about 15 kg of food grains per month, these losses would be enough to feed about 70-100 million people, i.e. about 1/3rd of India's poor or the entire population of the states of the Bihar and Haryana together for about one year.

Losses of grain in storage due to insects are the final components of the struggle to limit insect losses in agricultural production. These losses can exceed those incurred while growing the crop. Losses caused by insects include not only the direct consumption of kernels, but also include accumulations of frass, exuviae, webbing, and insect cadavers. High levels of this insect detritus may result in grain that is unfit for human consumption. Insect-induced changes in the storage environment may cause warm, moist 'hotspots' that are suitable for the development of storage fungi that cause further losses. Worldwide losses in stored products, caused by insects, have been estimated to be between 5-10 percent. Heavier losses occurring in the tropics may reach

30%, and the net value of losses in storage in the United States has been placed at over \$200 million annually. Limiting insect infestation in grain storage must be a primary consideration beginning at the time of harvest. Economically speaking, storage insects and to a lesser degree, fungi reduce the quality and value of grain, while losses due to rodents and birds are typically quite infrequent and minor. Infestation on-farm may further proliferate to devastating losses throughout the grain storage and marketing ecosystem. It is essential that on farm storage should limit the infestation of grain from the onset of storage, to ensure the acceptance and marketability of grain in domestic and foreign channels.

While several procedures to manage pests are used at storage facilities before storage, those that minimize pest invasion into storage structures includes:

1. Cleaning bins, harvest and loading equipment prior to harvest and after bin emptying
2. Applying "empty-bin" insecticides to the inside of the structures
3. Sealing structures
4. Cleaning up grain spills on the grounds
5. Removing weeds close to structures

Since higher moisture can encourage mold and insect development, for that an additional management techniques are used which includes:

1. Storing sufficiently dry wheat (less than 13% moisture)
2. Aerating the stored grain with fans to cool the wheat thus slowing insect development
3. Close monitoring of grain temperature and insect populations

There are four major categories of losses occurring in feedstuffs during storage are

- A. Weight loss
- B. Quality loss
- C. Health risk
- D. Economic loss

These losses arise from the foraging activities of insects, micro-organisms and animals; improper handling; and physical and chemical changes, all of which are interrelated. Storage loss in a feed mill is primarily due to material eaten or destroyed by insect and animal pests and fungi. When serious infestation by these pests occurs there is extensive weight loss accompanied by damage to quality. Intense insect activity often results in mould growth, which not only completes the destruction of the feedstuffs but also poses serious health risks to animals or fish feeding on rations containing damaged feed ingredients.

The first three categories of storage loss are of primary concern to the compound feed manufacturer. Weight loss due to loss of moisture content or to the presence of a large insect population in stored feed is problematic in developing countries where post-harvest handling and processing are often improperly conducted. Ineffective enforcement of quality standards results in the production and supply of inadequately processed feed ingredients, which often are more susceptible to deteriorative processes. The lack of quality standards reflects the relative unimportance attached to aesthetic considerations in commercial transactions of feed commodities in these countries. Hence, economic loss i.e. the cost incurred in inspection, prevention, and control to maintain quality standards (although considered to be of overriding importance in most industrialized countries) is superseded by the other three major categories of storage losses in developing countries.

1. Losses due to Insect Attack

The best warning of serious weight loss is the presence of a large insect population. This is easily identifiable in sacked grain by the appearance on the sack surface of frass resulting from feeding activity of the insects. High temperature, high humidity, softness, and high nutritive value of the feedstuff and storage in small quantities are all conducive to insect damage, but are often unavoidable. Loss may be aggravated

by prolonged storage. Failure to keep the storage area clean and retention of infested sweepings will increase the liability of insect attack.

2. Weight loss

Weight loss in infested feed is not always evident unless it involves sacked grain or oil cakes when the appearance of frass on the surface of the sack points to the feeding activity of a large insect population.

3. Quality loss

For the feed manufacturer, one of the most important considerations of insect attack on feedstuffs is the loss of quality. The effects on quality are various. Most stored feed material undergoes some chemical changes that alter their flavour and nutritive value. As well as eating some of the feed, insect pests tend to accelerate these harmful chemical changes. Secretion of enzyme lipase by the insects themselves will enhance deteriorative chemical processes. Few stored feedstuffs are homogeneous and insects and mites are known to select those parts or particles of feed they prefer.

Many feedstuffs contain a high percentage of fat, which tends to break down during storage. This breakdown is accelerated by insect attack, especially when the insects break off small particles, introduce micro-organisms, or raise the temperature or moisture content. Evidently, the insects use the fat in the material they eat. The breakdown of fat causes an increase in free fatty acids, which cause off-flavours. The free fatty acid involved in product rancidity is assumed to be oleic acid, and the quantities released is a result of oxidation of fats in certain feedstuffs are quite substantial. Scavenging insects, such as cockroaches, may cause contamination with pathogenic bacteria such as Salmonella.

4. Detrimental Effects of Storage Fungi on Feedstuffs

The main effects of storage fungi on feedstuffs are:

- Mycotoxin production
- Heating
- Moisture increase
- Mustiness (staleness)

Mycotoxin production: Mycotoxins are compounds produced

by fungi growing in infested agricultural commodities. They are toxic to both humans and animals. The aflatoxins, a group of highly toxic and carcinogenic metabolites produced by *Aspergillus flavus* are perhaps the most important among mycotoxins contaminating the feedstuffs. Transmission of the toxin to milk, meat, and eggs through farm animals feeding on contaminated feed poses an increasing health hazard. Studies on the toxicity of aflatoxin to fish have not been extensive but toxicity to trout (oral LD50: 0.5 mg/kg body weight) is comparable to toxicity to ducklings, the latter recognized as the most susceptible animal to aflatoxin poisoning.

Feedstuffs known to be contaminated by *A. flavus* includes groundnut cakes, maize, sorghum, sunflower, cottonseed cakes, copra and cassava. To produce aflatoxin, however, *A. flavus* must be present alone in a practically pure culture. The presence of other fungi, yeast, or bacteria seems to interfere with aflatoxin production. Crops such as peanuts, cottonseed and copra are high aflatoxin risks precisely because *A. flavus* often infest them as a practically pure culture with few or no other microflora. In addition, the fungus produces the toxin in these crops at relatively low moisture levels, 9 to 10 percent, compared with 17 to 18 percent moisture for most feed grains. Feed grains such as maize and sorghum grown in the tropics, therefore, also pose high risk.

Staleness: Feedstuffs that are damaged by fungi tend to become lumpy. Feed grains suffer discoloration while damaged maize turns a dark brown with some blackened kernels being evident. The grain also exhibits a characteristic bluish sheen. Staleness or mustiness is another characteristic of commodities damaged by fungi.

Rancidity: Three major chemical processes give rise to rancidity like oxidation, hydrolysis, and ketone formation.

Lipid oxidation: Rancidity resulting from lipid oxidation is the most important deteriorative change occurring in stored feedstuffs. Feedstuffs containing lipids which are highly unsaturated (rice bran and fish meal), are especially susceptible to oxidation. The mechanism of lipid oxidation begins with auto-oxidation involving the direct reaction of lipids with molecular oxygen to form hydroperoxides. This is followed by secondary reactions yielding diperoxides if further oxidation takes place or ketoglycerides if the hydroperoxides are dehydrated. Fission of hydroperoxides yield products containing carbonyl and hydroxy groups,

which will react further to form other products. Oxidation of carbon-carbon double bonds in other molecules gives rise to epoxides and hydroxy glycerides. These products of secondary oxidation of lipids contribute to 'off flavour' and include toxic compounds frequently associated with rancidity. Furthermore, carbonyl groups produced by the fission of aldehydic hydroperoxides can react with the epsilon - amino group of lysine, thereby reducing the nutritive value of the protein.

Factors affecting lipid oxidation

The chief factors increasing the rate of lipid oxidation in stored feedstuffs are

- The presence of enzymes lipoxidase and perhaps other enzymes as well
- Hematin this factor is important in the storage of fish and meat meals
- Peroxides these compounds which are themselves products of auto-oxidation of lipids catalyze the oxidation of lipids
- Ultra violet light is involved in the photolysis of peroxides
- High temperature in general, the higher the storage temperature the more rapid the breakdown of lipids
- Trace metal catalysis many metals, as iron, copper, cobalt, and zinc accelerate lipid oxidation. Iron and copper does this by direct electron transfer in redox reactions, while zinc induces the breakdown of hydroperoxide to free radicals.

Lipid oxidation can be inhibited by adding compounds known as anti-oxidants. Two commonly used feed anti-oxidants are ethoxyquin and butylated hydroxytoluene, which sequester free radicals formed during oxidative processes. Cereal grains contain effective quantities of natural anti-oxidants (e.g. tocopherols) which impart considerable stability to their lipid contents, unless storage pests damage the kernels.

Feedstuffs especially susceptible to lipid oxidation

Fish lipids are especially susceptible to oxidation due to the greater chain lengths of the fatty acids and the greater number of unsaturated carbon-carbon bonds along the fatty

acid chains. Storage of fishmeal is problematical, due to the frequent occurrence of exothermic oxidation, which could lead to spontaneous combustion. The heat generated also leads to amino sugar reactions, which lower the digestibility of protein. Most fish meals marketed commercially contain added anti-oxidant to inhibit lipid oxidation and thus reduce the risk of fire during sea transit and prolonged storage under unfavorable ambient conditions.

Other feedstuffs, which have storage problems associated with high lipid content, are rice bran and expeller oil cakes with high residual oil content. Among the latter, the most susceptible are copra cake and palm oil cake. This is due to the significant levels of unsaturated fatty acids in coconut and palm oil. The lactose contained in milk powder has a tendency to react with loosely associated milk proteins to form melanoids in the Maillard reaction. These sugar-protein compounds have very low digestibility.

SILENT FEATURE OF STORING FEEDSTUFFS

Some weight loss of feedstuffs during storage is unavoidable. The extent of loss is affected by

1. The general hygiene of the store, because that determines whether or not insects can breed in the buildings away from the produce.
2. The turn-over of the goods, because they determine the length of storage.
3. The way in which waste and odd lots are handled which determines whether large foci of infestation can develop in neglected produce.
4. The size of stacks and the closeness of packing. Most insect species are confined, more or less, to the surfaces of a stack, and weight loss is usually highest at the periphery.

Sometimes, especially in the tropics and in imported produce, materials are infested before stacking. If the core of the stack is infested from the start of storage, then the heat of metabolism of the insects will raise the temperature in the core and, hence, the rate of increase of the insect population and the amount of damage done. If the stack is small and much of the heat is dissipated, the temperature will remain favourable for insects and weight loss will be very great. If the stack is large, the accumulated heat in the core will get too hot for the insects. After that, weight loss will occur only at the outside of the stack. For this reason, large stacks are advocated in the tropics. However, the high temperature has harmful effects that must be set against prevention of weight loss. Continuous high temperature accelerates chemical degradation, especially for vitamin destruction and the development of rancidity.

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At Kotla Function Hall A/C , Undi ,
West Godavari district, Andhra Pradesh
Contact: Kona Joseph

Chief Editor

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26-28 IPDL EXPO

Poultry Industry of North India
At New Grain Market, Karnal, Haryana
Contact: 9034366069

JUNE 2021

23-25 INDO LIVESTOCK

Jakarta, Indonesia

Website: www.indolivestock.merebo.com

JULY 2021

21-23 IIDEX VIETNAM

SECC, Ho Chi Minh City,

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Ph : +662 670 0900 Ext 204

Email: panadda@vnuexhibitionsap.com

Website: www.idex-vietnam.com

SEPTEMBER 2021

14-17 SPACE

Rennes, France

Contact: Cecile Berthier

Ph: +33 (0)2 23 48 28 79

Email: c.berthier@space.fr

Website: www.space.fr

SEPTEMBER – OCTOBER 2021

28-02 WORLD DAIRY EXPO

Madison, WI USA

Website: www.worlddairyexpo.com

OCTOBER 2021

08-10 FEED TECH EXPO 2021

Auto Cluster Exhibition Center, Pune

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Email: feedtechexpo@gmail.com

NOVEMBER 2021

23-26 14th POULTRY INDIA 2021

Indian Poultry Equipment Manufacture's
Association (IPEMA)

At Hyderabad International Convention Centre

HITEX Exhibition Centre, Izzat Nagar

Hyderabad - 500 084, A.P.

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Email: info@poultryindia.co.in

Website: www.poultryindia.co.in

JANUARY 2022

12-14 VIV ASIA

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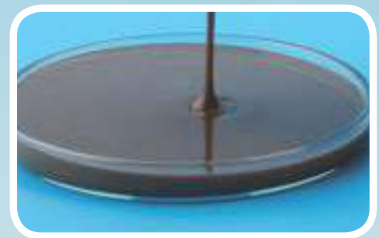
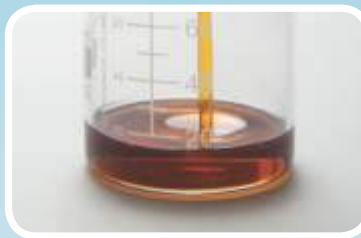
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