Tightening 2020 phosphate S/D drives prices higher; the CVD Petition was a catalyst

NOLA and India DAP
Published Spot Prices

- NOLA vs. India DAP average discount in 2019: $21/mt
- Prices are up $111/mt since the low in May
- Currently at a $22/mt premium to India DAP, which has narrowed from $52/mt at end of Aug

NOLA and Brazil MAP
Published Spot Prices

- NOLA vs. Brazil MAP average discount in 2019: $19/mt
- Prices are up $139/mt since the low in May
- Currently at a $53/mt premium to Brazil, narrowing only marginally from the high of $56/mt two weeks ago

Source: Argus, Green Markets

*weekly average reported spot pricing for prompt delivery

Data thru October 29, 2020
Regional phosphate updates through Q3: Strong demand and reduced availability

U.S. Q1-Q3 Imports

<table>
<thead>
<tr>
<th>Year</th>
<th>Mil Tonnes DAP/MAP/NPS/TSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2.4</td>
</tr>
<tr>
<td>2019</td>
<td>2.4</td>
</tr>
<tr>
<td>2020</td>
<td>1.6</td>
</tr>
</tbody>
</table>

U.S. imports through Sep 2020 were ~818,000 tonnes or 34% lower y-o-y

India Q1-Q3 Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Mil Tonnes DAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2.7</td>
</tr>
<tr>
<td>2019</td>
<td>3.5</td>
</tr>
<tr>
<td>2020</td>
<td>3.0</td>
</tr>
</tbody>
</table>

India DAP production through Sep 2020 was down ~450,000 tonnes or 13% y-o-y

China Q1-Q3 Exports

<table>
<thead>
<tr>
<th>Year</th>
<th>Mil Tonnes DAP/MAP/TSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>7.4</td>
</tr>
<tr>
<td>2019</td>
<td>7.8</td>
</tr>
<tr>
<td>2020</td>
<td>6.9</td>
</tr>
</tbody>
</table>

China exports through Sep 2020 were ~983,000 tonnes or 13% lower y-o-y

Brazil Q1-Q3 Imports

<table>
<thead>
<tr>
<th>Year</th>
<th>Mil Tonnes DAP/MAP/NPS/TSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>4.7</td>
</tr>
<tr>
<td>2019</td>
<td>5.5</td>
</tr>
<tr>
<td>2020</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Brazil imports through Sep 2020 were up ~480,000 tonnes or 9% y-o-y

Source: FAI, India Department of Fertilizer, Genscape, China Customs, Siaesp, GTIS, Mosaic
Global Phosphate Demand

- Our 2020 forecast point estimate has been revised higher to the top end of our previous 70-72 MMT range, primarily due to upward revisions to shipments in Brazil and India.
- Our forecast range for 2021 is unchanged at 72-74 MMT, though our point estimate is now solidly in the upper half of that range, as we anticipate moderate and broad-based growth.

Source: IFA, CRU, TFI and Mosaic

*NPS products included in this analysis are those with a combined N and P₂O₅ nutrient content of 45 units or greater.*
**Global Phosphate Shipment Forecasts by Region**

<table>
<thead>
<tr>
<th>Region</th>
<th>2019</th>
<th>2020</th>
<th>Low 2021F</th>
<th>High 2021F</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>17.6</td>
<td>17.4</td>
<td>17.2</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>10.4</td>
<td>10.4</td>
<td>10.3</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td>Other Asia/Oceania</td>
<td>10.0</td>
<td>10.2</td>
<td>10.5</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>Europe and FSU</td>
<td>6.3</td>
<td>6.4</td>
<td>6.4</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>8.5</td>
<td>9.2</td>
<td>9.3</td>
<td>9.5</td>
<td></td>
</tr>
<tr>
<td>Other Latin America</td>
<td>4.0</td>
<td>3.9</td>
<td>3.9</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>9.7</td>
<td>9.9</td>
<td>9.9</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71.1</td>
<td>72.0</td>
<td>72.2</td>
<td>74.3</td>
<td></td>
</tr>
</tbody>
</table>

* NPS products included in this analysis are those with a combined N and P₂O₅ nutrient content of 45 units or greater.

**Domestic phosphate shipments have indeed appeared to have stabilized, and may actually be poised to increase for the first time in over five years. Domestic production in 2020 remains subdued (-1.4mmt DAP/MAP from Jan-Sep as per the Chinese Phosphate Fertilizer Producers Association (CPFPA)), while producer DAP/MAP inventory has dropped 0.7mmt y-o-y at the end of September. DAP/MAP/TSP exports from Jan-Sep were nearly 1mmt lower y-o-y, and while higher international prices should have provided an impetus for a lift in export volume, September export volumes were lower than expected. In the face of strong domestic demand and moderate production rates, we expect full-year exports to be down ~700,000 tonnes y-o-y, a slightly larger decline than our previous forecast.**

**Our projection for 2020 shipments has again been revised higher on very positive farmer sentiment / farm economics following increases to minimum support prices, a good monsoon, and fertilizer affordability supporting demand. DAP Production remains ~450,000 tonnes lower y-o-y through Q3, while DAP imports surged in Q3 and y-t-y provide a nearly-equivalent offset at 440,000 tonnes higher y-o-y. The strong domestic sales pace (up over 20% y-o-y), however, has pushed company DAP stocks down by 1.3mmt y-o-y at end-Sep. We expect full-year 2020 DAP imports of over 6.0mmt, but stocks will end the year well below the five-year average (by perhaps as much as 0.5mmt). Looking ahead to 2021, strong import demand is expected to continue despite the higher prices prevailing today, with overall shipments flat to higher.**

**Farm economics remain solid, and the weather outlook continues to look conducive for a more pronounced rebound in fertilizer demand. Ag commodity prices (including palm oil) look attractive, but the reaction of fertilizer buyers has been slow in many countries due to continued labor shortages and restrictions on people movements. We believe this will be transitory, and sets the stage for more notable shipment growth in 2021 across nearly the entirety of the region. Pakistan also appears poised for a late-year demand recovery with the passage of a new fertilizer support program in late-October (failure to implement such a program earlier in the year has acted as a drag on shipments).**

**Shippers in Europe/FSU appear likely to increase fractionally in 2020 after a slight upward adjustment to our shipment estimate (and carry-over inventory) for 2019. Eastern Europe and the FSU continue to be the drivers of higher shipments going forward, offset by a continued push away from inorganic fertilizer use in Western Europe. Drought conditions have eased in part, but remain a notable concern in France/Germany.**

**We have revised our 2020 shipment forecast higher by ~300,000 tonnes, as the ag sector continues to outperform our expectations (still driven by weak FX and strong export demand). Strong current demand as well as forward input buying continues to characterize the market, which has led Jan-Sep DAP/MAP/NPS/TSP imports ~480,000 tonnes higher y-o-y, while channel stocks are estimated to have increased by less than 100,000 tonnes. We expect this robust demand pattern to persist through 2021.**

**Similar to Brazil, favorable farm economics have resulted in an upward revision to our demand forecast for 2020. Our forecast for 2021 shows modest demand growth, held back due to our flagging demand in Argentina as a risk due to both dry conditions and government policy.**

**Normal spring and fall weather and strong on-farm demand, coupled with a reduction in phosphate import volumes (down ~800,000 tonnes Jan-Sep versus last year) has pushed channel stocks to below average levels. Improved farmer balance sheets and the recent rally in ag prices, coupled with expectations of a depleted distribution pipeline as we exit the year set the stage for a more pronounced upturn in shipments in ‘21.**

**We have pushed our 2020 estimate to the top end of our previous range, though this now shows a y-o-y decline after rebasing our 2019 estimate higher and the somewhat tepid demand in the weaker macro environment this year. We expect a return to moderate growth in 2021.**

**Global shipments are expected to increase about 1.3% to 72.0 mmt in 2020. Our forecast range for 2021 is unchanged at 72-74mmt with a point estimate of 73.5mmt. This represents demand growth of 2.1% y-o-y.**

Source: IFA, CRU and Mosaic
(numbers may not sum to total due to rounding)
Despite lower imports, NA phosphate shipments were estimated up 3.5% y-o-y in 1H. Positive acreage prospects next year and strong farm economics are expected to result in healthy demand in the next 6 months.

India’s ag sector grew in the face of another good monsoon and higher sowings. Phosphates shipments are expected to continue to inch higher, supported by increased ag support prices and depleted channel inventories.

We believe the decline of phosphate demand in China has slowed (and could possibly reverse). Stable to higher domestic demand, due to favorable farm economics and higher acreage, could keep more supply home and constrict exports.

Total Brazil fertilizer shipments are estimated to grow 4% in 2020. Favorable farm economics, mainly due to weak FX, supports y-o-y increases in phosphate demand. This trend is expected to continue in 2021.
Phosphate: A more balanced S/D in 2021 hinges on availability of new supply

A more balanced S/D is expected in 2021 on the assumption of no major supply disruption (COVID-related or other curtailments) and significant additional output from several ramp-ups / expansion projects.

- Producer inventories are believed to have been pulled dramatically lower in 2020, prompting a restocking in 2021.

- Channel stocks have also been depleted in many major markets in 2020, and the analysis at right does not account for a rebuilding of those channels, which could drive shipments higher.

### Phosphate Supply / Demand Forecast

(Incremental Y-o-Y Change)

<table>
<thead>
<tr>
<th>Mil Tonnes DAP/MAP/NPS/TSP</th>
<th>2020E</th>
<th>2021F</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Projected Shipment Changes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.90</td>
<td>1.48</td>
<td></td>
</tr>
<tr>
<td>Percent Change</td>
<td>1.3%</td>
<td>2.1%</td>
<td></td>
</tr>
<tr>
<td><strong>Potential Supply Changes</strong></td>
<td>0.82</td>
<td>1.71</td>
<td></td>
</tr>
<tr>
<td>Producer Inventory Draw (+) or Build (-)</td>
<td>1.50</td>
<td>-1.25</td>
<td>Drawdowns in 2020; Rebuild in 2021 (but this assumes no dist. channel rebuild - likely to see a combination of the two)</td>
</tr>
<tr>
<td>OCP Line F Ramp-Up and Debottlenecking</td>
<td>0.27</td>
<td>0.72</td>
<td>Debottlenecking complete 2021; Line F full capacity in 2022</td>
</tr>
<tr>
<td>MWSPC Ramp-Up</td>
<td>-0.25</td>
<td>0.34</td>
<td>Production: ~2.2mmt ('20); ~2.5mmt ('21)</td>
</tr>
<tr>
<td>GCT M'dilla Commissioning / Ramp-up</td>
<td>0.00</td>
<td>0.18</td>
<td>New ~200ktpa P2O5 facility now under commissioning</td>
</tr>
<tr>
<td>Turkey/Egypt Greenfields</td>
<td>0.39</td>
<td>0.33</td>
<td>Continued ramp of NCIC (Egypt) and Mazidagi (Turkey)</td>
</tr>
<tr>
<td>Other Ramp-Ups / Closures</td>
<td>-0.13</td>
<td>0.39</td>
<td>NTR Redwater resid. ('20); Small CIL-India expansion ('20/21); Philphos restart ('21); Primarily: Production rebound IPL-Australia; reduced production GCT-Tunisia</td>
</tr>
<tr>
<td>Misc. Known Operational Changes</td>
<td>0.25</td>
<td>0.10</td>
<td>(Voluntary + COVID-19-related)</td>
</tr>
<tr>
<td>2020 Curtailments / 2021 Supply Recovery</td>
<td>-1.20</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

| S/D Surplus (+) / Deficit (-) (Excluding China Export Changes) | -0.07 | 0.23 |
| Base Case China Export Change | -0.70 | -0.20 | China exports of ~9.3mmt (2020) and ~9.1mmt (2021) |
| S/D Surplus (+) / Deficit (-) | -0.77 | 0.03 |

Source: Mosaic
India Phosphates: Q3 import surge to cover strong Rabi; stocks expected to end the year low

- **Strong demand** (coupled with reduced production and imports) kept stocks at low levels since the beginning of the fertilizer year.
- DAP imports surged in Q3 as expected with strong Rabi demand supported by positive on-farm economics.
- Annual DAP imports are forecast to increase 11% y-o-y (calendar year basis).

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Source: FAI, India Department of Fertilizer, Mosaic
China Phosphates: Tight S/D that has been limiting exports could persist into Spring 2021

- Structural change continues in China, with the closure of three facilities along the Yangtze in 2020.
- Phosphate demand prospects are expected to remain positive due to increases in corn and wheat planting and favorable farm economics.
- Exports likely peaked in August as producers shift their focus to domestic market.
- We expect the market to stay tight at least into Spring 2021, which could continue to limit export availability.

Source: China Customs
Brazil Phosphates: Favorable farm economics support y-o-y increase in phosphate demand

- Favorable farm economics, mainly due to weak FX, have supported y-o-y increases in fertilizer demand.
- Phosphate shipments were up 10% y-t-d through September and are expected to finish the year up ~11%.
- Strong demand expectations for the 2nd corn crop and next year’s summer season are expected to keep phosphate imports at elevated levels into the beginning of 2021.

Source: ANDA, Siacesp, Mosaic
Phosphate Outlook: Modest demand growth is forecast to outpace new supply and boost operating rates.

- We continue to project a steady uptick in the industry’s capacity utilization rate over the forecast period.

Source: IFA, CRU and Mosaic
Seasonal demand and tight supply support price recovery, starting in granular markets

- Granular prices have rebounded led by Brazil and then the US Midwest.
- Brazil prices have rebounded more than $30/mt from the decade-low level seen in April.
- US prices have also moved up $30/mt since mid-August.
- Standard prices in SE Asia started to inch up in mid-October.
- Prices ex-warehouse at Chinese ports have also moved steadily higher over the past 3 months — to US$230-60/mt, depending on the product specification (versus $200-220 at the beginning of August).

*weekly average reported spot pricing for prompt delivery

Source: Argus, Green Markets

Published MOP Prices

$ per tonne

Data thru October 29, 2020
Regional potash updates through Q3

U.S. MOP imports through Sep 2020 were ~265,000 tonnes or 19% lower y-o-y, helping channel stocks to clear.

India MOP imports through Sep 2020 were up ~334,000 tonnes or 10% y-o-y.

China net MOP imports through Sep 2020 were ~916,000 tonnes or 12% lower y-o-y.

Brazil MOP imports through Sep 2020 were up 1% y-o-y.

Source: FAI, India Department of Fertilizer, Genscape, China Customs, Siaesp, GTIS, Mosaic
Global Potash Demand: The shipment recovery journey is expected to continue in 2021

- Our 2020 forecast point estimate has been revised higher to the top end of our previous 64-66 MMT range, primarily due to upward revisions to shipments in Brazil, India and the U.S.
- Our forecast range for 2021 is unchanged at 66-68 MMT, though our point estimate is also in the upper half of that range as we anticipate meaningful and broad-based recovery of demand in almost all major markets.

Source: IFA, CRU, TFI and Mosaic
Global Potash Shipment Forecasts by Region

<table>
<thead>
<tr>
<th>Muriate of Potash Mil Tonnes KCl</th>
<th>2019</th>
<th>2020</th>
<th>Low 2021F</th>
<th>High 2021F</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>16.0</td>
<td>15.1</td>
<td>15.0</td>
<td>15.3</td>
<td>We have made an upward revision to our 2020 shipment forecast on a slightly higher import estimate (though still a notable reduction y-o-y). Reports suggest strong seasonal port off-take, resulting in stable port inventories despite heavy import arrivals in Q3. Strong market sentiment and healthy product movements have recently tightened the domestic S/D, and port inventories could drop below 3.0mmt by year-end based on projected Q4 in-country demand and imports. Our forecast calls for modest shipment growth in 2021, allowing inventories to fall y-o-y.</td>
</tr>
<tr>
<td>India</td>
<td>4.0</td>
<td>4.6</td>
<td>4.5</td>
<td>4.8</td>
<td>India MOP imports are now expected to rebound to over 4.6mmt, the 2nd highest level since 2010. Imports were up more than 10% through September while total stocks were reported down 6% y-o-y in late October. The Indian ag sector has been performing very well with high Kharif acreage, a good monsoon, higher minimum support prices and a positive Rabi outlook. A timely settlement of a new contract in early Q1 could help ensure supply to meet projected demand growth next year.</td>
</tr>
<tr>
<td>Indonesia &amp; Malaysia</td>
<td>3.9</td>
<td>4.1</td>
<td>4.4</td>
<td>4.6</td>
<td>We downgraded our forecast to the low-end of the range in 2020, with imports reported to be about 200,000t lower y-o-y through August (though we expect imports will recover somewhat in the last four months of the year). The resurgence of palm oil demand from China and India, which is expected to grow in 2021, along with government biodiesel mandates, should support CPO prices and therefore higher potash imports in 2021 despite on-going concerns over COVID-related labor movement restrictions in the region.</td>
</tr>
<tr>
<td>Other Asia</td>
<td>4.4</td>
<td>4.7</td>
<td>4.8</td>
<td>5.0</td>
<td>Our 2020 forecast is unchanged, with healthy demand in Vietnam (imports up ~33% Jan-Sep) and in Thailand and other smaller markets in the second half. We expect the recovery of demand to continue into 2021 on accommodative weather and solid farm economics.</td>
</tr>
<tr>
<td>W. Europe</td>
<td>4.8</td>
<td>4.7</td>
<td>4.6</td>
<td>4.8</td>
<td>We expect demand to stay flat next year after a small reduction in 2020.</td>
</tr>
<tr>
<td>E. Europe &amp; FSU</td>
<td>5.6</td>
<td>6.0</td>
<td>6.1</td>
<td>6.3</td>
<td>Reports suggested strong shipments from domestic producers continued well into Q3 in the FSU, and recent rains have eased the concerns over the prospects for 2021 crops caused by the dry spell earlier this year. Strong wheat and sunflower prices (coupled with a weaker Ruble) are expected to continue to support agricultural expansion in Russia and other countries in the region into 2021.</td>
</tr>
<tr>
<td>Brazil</td>
<td>10.5</td>
<td>10.7</td>
<td>10.8</td>
<td>11.1</td>
<td>We revised up our estimate for Brazil to 10.7mmt in 2020, and total fertilizer shipments were revised up to 37.8mmt (up 4% y-o-y) due to a stronger-than-expected pull from soybean and sugarcane acres. In addition, while delays to safrinha soybean planting would typically threaten the prospects for fertilizer use on safrinha corn, strong farmer economics (with &gt;$6/bu corn prices) are expected to provide an adequate offset. For similar reasons, we expect the Brazilian MOP market to grow another 2%-3% in 2021.</td>
</tr>
<tr>
<td>Other L. America</td>
<td>2.6</td>
<td>2.8</td>
<td>2.8</td>
<td>3.1</td>
<td>A modest demand recovery is expected this year, after solid H1 import volumes. Solid fundamentals bode well for continued growth in 2021.</td>
</tr>
<tr>
<td>North America</td>
<td>9.2</td>
<td>10.1</td>
<td>10.1</td>
<td>10.3</td>
<td>Normal spring and fall weather and strong on-farm demand, along with only average carry-over channel stocks (unlike phosphates, where stocks were well above normal to start the year) are expected to allow shipments to stage a sharper recovery in 2020. In the meantime, offshore potash import volumes are down ~265,000 tonnes Jan-Sep vs last year. We continue to see strong incentives to apply potash in 2021, with potash still very affordable from a historical perspective and higher corn acreage next spring supporting flat to higher shipments.</td>
</tr>
<tr>
<td>Other</td>
<td>2.8</td>
<td>2.9</td>
<td>3.0</td>
<td>3.2</td>
<td>Slow, steady demand growth continues in the region, and is again factored into the S/D in 2021.</td>
</tr>
<tr>
<td>Total</td>
<td>63.9</td>
<td>65.6</td>
<td>66.1</td>
<td>68.5</td>
<td>Global shipments are expected to rebound to an estimated 65.6mmt in 2020, an increase of 2.7%. We maintain our forecast range of 66-68mmt for 2021, with a point estimate of 67.5mmt, which would represent y-o-y demand growth of circa 2.0mmt or 3.0%.</td>
</tr>
</tbody>
</table>

Source: IFA, CRU and Mosaic

(numbers may not sum to total due to rounding)
2021 Potash Shipment Growth: Major Market Summary

Despite lower y-t-d imports, total NA MOP shipments rebounded to over 5.0mmt in H1. Demand remains healthy in the back half and likely will bring the year-end total to over 10mmt this year.

India's MOP imports are on-track to increase more than 15% this year. Less-than-average year-end inventories are expected to keep imports at a relatively high pace in H1 2021.

Total Brazil fertilizer shipments are estimated to grow 4% in 2020. Favorable farm economics, mainly due to weak FX, supports y-o-y increases in potash demand. This trend is expected to continue in 2021.

The revival of palm oil demand and production is expected to result in a more meaningful recovery of MOP import demand in Malaysia and Indonesia in 2021.

Source: CRU and Mosaic
Potash: Higher utilization at existing facilities needed to bridge anticipated S/D gap in 2021

2021 Expected MOP Supply and Demand Changes
(Million Tonnes KCl)

- Demand Recovery: -1.9
- SQM Production Adjustments: 0.2
- Bethune Ramp-Up: -0.5
- Eurochem Ramp-Up: 0.3
- Petrikovsky startup: 0.5
- Producer Inventory Draw: 0.2
- Other Changes: 0.2

Projected MOP Supply/Demand Changes

<table>
<thead>
<tr>
<th></th>
<th>Mil Tonnes KCl</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>2021</td>
</tr>
<tr>
<td>Projected Shipment Changes</td>
<td>1.71</td>
</tr>
<tr>
<td>Percent Change</td>
<td>2.7%</td>
</tr>
<tr>
<td>Projected Supply Changes</td>
<td>1.07</td>
</tr>
</tbody>
</table>

- Producer Inventory Draw: 0.30 → 0.20
- SQM Production Adjustments: 0.17 → 0.20 (≈1.5mmt)
- K+S Bethune Ramp-Up: 0.25 → 0.05 (≈1.9mmt)
- Eurochem Usolskiy Ramp-Up: 0.91 → 0.15 (≈2.2mmt)
- Eurochem Volgakaliy Ramp-Up: 0.00 → 0.15 (≈0.15mmt)
- Belaruskali Petrikovsky: 0.10 → 0.50 (≈0.6mmt)
- Other Changes: -1.50 → 0.23

Utilization of Existing Assets: 1.40

S/D Surplus (+) / Deficit (-): -0.09 (2020) → -0.49 (2021)

- Higher output from existing operations plus expected ramp-up of projects are needed to meet the projected demand growth in 2021.

Source: IFA, CRU, TFI and Mosaic
India Potash: Surge of imports to keep India S/D in balance through year-end

- Strong demand during the kharif season and low imports had put a lid on MOP inventories during the first half of the calendar year. At the end of September, total stocks were 427kt or 19% lower y-o-y, but recovered further in October.
- Imports are expected to stay within the 5-year range in Q4, covered primarily by existing contracts.
- The apparent necessity of fresh imports needed to start arriving at Indian ports in March supports the thesis of a new contract being settled relatively early in 2021.

Source: FAI, India Department of Fertilizer, Mosaic
Brazil Potash: Favorable farm economics supported y-o-y increase in shipments

- Favorable farm economics, mainly due to weak FX, have supported y-o-y increases in fertilizer demand.
- MOP shipments are up 7% y-t-d and expected to finish the year up ~5%.
- MOP imports this year have trended similarly to last year’s pace, keeping stocks at relatively comfortable levels, though in the face of record-high demand.

Source: ANDA, Siacesp, Mosaic
China Potash: Strong seasonal offtake makes room for surge of Q3 imports; port inventories stable

- Port inventories remained relatively stable at ~3.6mmt despite of the surge of MOP imports in Q3, implying healthy seasonal port offtakes in the past few months.
- Low prices in early summer had facilitated the refilling of the in-country pipeline. Positive market sentiment and healthy product movement helped pull port prices up in recent weeks.
- Our S/D suggests port inventories could drop below 3.0mmt by year-end based on projected in-country demand pull and imports during Q4.

Source: China Customs, Mosaic
Potash Outlook: New supply expected to slightly trail demand, leading to higher industry operating rates

- We expect a gradual, modest increase in global capacity utilization over the next couple of years, though this will depend on the timing of the commissioning and ramp-up of greenfield projects.

Source: IFA, CRU and Mosaic
Ag remains resilient during economic downturns

- World grain and oilseed demand has been relatively stable in 2020 despite the impacts of COVID-19 and the notable world economic downturn.

![World G&O Demand vs. World Real GDP](chart)

Source: USDA; World Bank; IMF Oct 2020 Forecast (World GDP)
U.S. ethanol remains a headwind, though production stabilized over the summer

- Ethanol production has recovered from the April/May lows hit during the peak of Covid-19 shutdowns and the subsequent drop off in fuel demand, however…
- …since mid-June, production levels have plateaued at around 90% of the 2019 average (43.2 million gallons per day), as driving demand has yet to fully recover.

Source: EIA

Data through 10/23/2020
2020 grain prices have recovered from summer lows on strong market fundamentals

- US grain and oilseed prices have recovered from big drops earlier in the year, on strong demand and downwardly-revised production expectations.
- For example, the derecho storm across a swath of the Cornbelt reduced corn and soybean yield expectations as well as harvested acres.
- This reduced production expectations, along with strengthening export demand, particularly from China, has boosted corn and soybean prices.

<table>
<thead>
<tr>
<th>Crop</th>
<th>YTD Change</th>
<th>Early Change</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>+2%</td>
<td>-21%</td>
<td>Reduced production expectations in the U.S., Brazil and Argentina, along with strong Chinese import demand offsetting reduced demand from ethanol; pricing is +2% y-o-y</td>
</tr>
<tr>
<td>Soybeans</td>
<td>+12%</td>
<td>-10%</td>
<td>Brazil planting delays / dry weather and strong global demand (including China); pricing is +15% y-o-y</td>
</tr>
<tr>
<td>Wheat</td>
<td>+12%</td>
<td>-15%</td>
<td>Global production concerns and solid demand; pricing is +29% y-o-y</td>
</tr>
</tbody>
</table>

Data through October 30, 2020
Chinese appetite for ag commodity imports continue to increase

- Monthly corn imports have thus far exceeded 1.0mmt twice this year and y-t-d imports have reached a record high of almost 6.7mmt (+73% y-t-d). The market continues to expect the Chinese government to significantly increase corn tariff rate quotas (TRQs) for the 2020/21 crop year.

- Soybean imports remained strong in September (9.8mmt) and are up 15% y-t-d. Wheat (1.1mmt) and barley (1.3mmt) imports in September also reached record or near-record monthly totals in recent history.

Source: China Customs
How might Chinese demand impact the U.S.: Corn takes center stage

China corn ~$9.7/bu vs. U.S. price of ~$4/bu

China’s corn imports to dramatically outperform USDA’s forecast & tighten the U.S. S/D

A month and a half into the new marketing year, U.S. corn exports to China (exports + booked export sales) have already reached 10.6mmt (as of 10/22/20), and exports have reached ~1.9mmt (98% of the total amount exported to China in 2019/20)

China & U.S. Corn Prices

- Dalian Nearby Corn
- CME Nearby Corn

U.S. 2020/21 Corn Carryout Scenarios

- U.S. Corn Carryout (bbu)
- S:U Ratio

* Assumes U.S. supplies 55%; 65%; 75% of additional China corn imports (which may prove conservative)

* Data through 10/30/2020
New Crop 2021 corn and soybean prices have also strengthened, just not as much as 2020 prices

<table>
<thead>
<tr>
<th></th>
<th>‘20</th>
<th>‘21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>3.99</td>
<td>3.87</td>
</tr>
<tr>
<td>Beans</td>
<td>10.57</td>
<td>9.71</td>
</tr>
<tr>
<td>Wheat*</td>
<td>4.38</td>
<td>5.58</td>
</tr>
</tbody>
</table>

*‘20 wheat is the close of the July contract

Data through October 30, 2020

Source: CME

Corn - Daily Close Dec 2021 Contract
Soybeans - Daily Close Nov 2021 Contract
HRW Wheat - Daily Close Jul 2021 Contract
Palm oil prices could find support from steady recovery of oil prices and government mandates

- Crude palm oil prices have largely recovered from the declines seen earlier in the year and are now up 35% y-o-y.
- CPO prices could decline from current levels, but should find support in the 2,500-2,700 Ringgits range that generally portends strong potash shipments, with the expectation that Covid-19 concerns will lessen and ease worker restrictions throughout 2021.
- CPO prices are supported by favorable domestic policies and modest expected improvement in world crude oil prices.
  - Indonesia remains committed to its increasing biodiesel mandate – set to increase from B30 to B40 in July of 2021.
  - EIA projects 2021 Brent crude oil prices to recover moderately: Gaining ~$10/barrel, primarily in H1 2021.
  - Better weather should also be supportive of improved farm economics.
Initial COVID-19 impacts on other ag commodities have also given way to fundamental drivers

- Rice prices retreated from the spike in April/May as fears of COVID-related supply disruptions faded and stockpiling abated, as well as on an improved weather outlook boosting production.

- Sugar prices have recovered from the initial drop following COVID induced demand reductions.

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Data through October 30, 2020
Ag commodity stocks remain below average

G&O demand has been largely immune to COVID-19 impacts, so despite increased production in 2020, global stocks remain below average.

Data through 10/9/2020 (October WASDE)
U.S. Farm economics holding up

• U.S. farmer income boosted by additional government payments, while crop/livestock receipts have also recovered.
Farm income elsewhere also quite robust

- China: Nearly $10/bu corn price!
- India: 5-6% higher minimum support prices for major crops
- Brazil: Weak FX drives the ag economy, as domestic corn and soybean prices are at record highs in local currency, and historically high levels on a US$ basis (Brazilian corn/bean prices are at a circa $2/bu premium to the CME prices).

**2020/21 % Change in India MSP Rates for Key Crops**

- Rice
- Wheat
- Lentils
- Cotton
- Soybeans
- Maize
- Rapeseed & Mustard

**Brazil Corn Prices**

- Source: CEPEA, CRB

**Brazil Soybean Prices**

- Source: CEPEA, CRB

*Data through October 30, 2020*
Preliminary view of 2021 acreage is supportive to fertilizer demand

- Preliminary indications for 2021 call for a similar level of corn plantings in the U.S. and potentially a big step up for soybeans.

Source: USDA & Mosaic