A research team is looking to develop a working prototype for field tests with other collaborators. R&D is required to enable field deployment of terahertz non-destructive imaging technology, which could be used by growers and agronomists to assist with their crop management and help minimize losses due to frost. According to Professor Able, this technology as it stands could also be used by plant breeders to make more rapid and informed selection decisions about the performance of one breeding line over many others. Further R&D is required to enable field deployment of terahertz non-destructive inspection for early frost damage and the research team is looking to develop a working prototype for field tests with other collaborators.

### Market News and Trends This Week

**BARLEY**—Idaho cash feed barley prices were unchanged to up $0.25 for the week ending October 28. Idaho cash malt barley prices were unchanged for the week. No net barley sales were reported by USDA FAS for the week of October 16-22. Exports of 1,300 MT to Japan (700 MT), South Korea (300 MT), and Taiwan (300 MT).

**Barley and Beer Industry News**—Agricultural scientists and engineers at the University of Adelaide have identified a potential new tool for screening cereal crops for frost damage. Their research, in the journal *Optics Express*, has shown they can successfully screen barley plants for frost damage non-destructively with imaging technology using terahertz waves (which lie between the microwave and infrared waves on the electromagnetic spectrum). Project leader Professor Jason Able, at the University’s School of Agriculture, Food and Wine. "To minimize significant economic loss, it is crucial that growers' decisions on whether to cut the crop for hay or continue to harvest are made soon after frost damage has occurred. However, analyzing the developing grains for frost damage is difficult, time-consuming and involves destructive sampling." Cereal crops like barley and wheat show a wide range of susceptibility to frost damage depending on the genetics, management practices, environmental conditions and their interactions. For example, one-degree difference in temperature could result in frost damage escalating from 10% to 90% in wheat. "This technology could possibly be developed into a field-based tool, which could be used by growers and agronomists to assist with their crop management and help minimize losses due to frost," says Professor Able. "The technology as it stands could also be used by plant breeders to make more rapid and more informed selection decisions about the performance of one breeding line over many others." Further R&D is required to enable field deployment of terahertz non-destructive inspection for early frost damage and the research team is looking to develop a working prototype for field tests with other collaborators.
**Market News and Trends This Week—continued**

**WHEAT**—Idaho cash wheat prices were mixed for the week ending October 28. SWW prices ranged from down $0.27 to up $0.10 from the previous week; HRW prices were down $0.61 to up $0.18; DNS prices were down $0.32 to up $0.07; and HWW prices were down $0.61 to up $0.18. USDA FAS reported net export sales for 2020/2021 for the period October 16-22 at 743,200 MT, were up noticeably from the prior week and up 54% percent from the previous 4 week average. Increases were to South Korea (195,000 MT), Mexico (111,400 MT), Japan (61,700 MT), the Philippines (60,000 MT), and China (60,000 MT). Exports of 442,500 MT, up noticeably from the prior week but down 14 percent from the previous 4 week average, were to Japan (105,400 MT), Guatemala (70,700 MT), Brazil (65,900 MT), Taiwan (53,200 MT), and Mexico (39,100 MT).

**Wheat News**—Due to COVID 19, the Idaho Wheat Commission has had to postpone their annual Pacific Northwest Export Tour that was scheduled for January 4-5 in Portland, Oregon. The annual event is held for approximately 20 people. Guests usually include Idaho wheat growers visiting a major Pacific Northwest grain elevator, a river barge operator, a food manufacturer, the Wheat Marketing Center and a Federal Grain Inspection Service site. Industry organizations give presentations. “This has been a very successful program and we were very reluctant to postpone it,” Idaho Wheat Commission Executive Director Casey Chumrau said. “But many of our tour stops are not accepting visitors at this time. The Idaho Wheat Commission is not considering a virtual option. The Tour gives a greater appreciation for where the wheat grown in Idaho goes in order to be exported,” Casey Chumrau said, “And it shows them why what they do in the field, and the quality that they produce, is important and why it matters for the overall grain industry.”

**CORN**—USDA FAS reported net export sales for 2020/2021 for period October 16-22 of 2,243,700 MT, increases were primarily to unknown destinations (763,700 MT), Mexico (496,80 MT), Japan (483,200 MT), Colombia (187,100 MT), and Israel (82,500 MT). Exports of 734,200 MT were to Mexico (253,200 MT), China (134,100 MT), Colombia (80,000 MT), Japan (71,400 MT), and Guatemala (62,300 MT).

**Ethanol Corn Usage**—DOE’s Energy Information Agency (EIA) reported ethanol production for the week ending October 23 averaged 941 thousand bbls/day --up 3.07 percent from the previous week and down 6.27 percent from last year. Total ethanol production for the week was 6.587 million barrels. Ethanol stocks were 19.601 million bbls on October 23, down 0.61 percent from last week and down 7.10 percent from last year. An estimated 93.48 million bu of corn was used in last week’s production bringing this crop year’s cumulative corn usage for ethanol production at 690.97 million bu. Corn used needs to average 97.799 million bu per week to meet USDA estimate of 5.05 millions bu for the crop year.

**Futures Market News and Trends—Week Ending October 29, 2020**

**FUTURES MARKET SETTLEMENT PRICES for the Week Ending Thursday, October 29, 2020:**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>December 2020</th>
<th>Week Change</th>
<th>March 2021</th>
<th>Week Change</th>
<th>May 2021</th>
<th>Week Change</th>
<th>July 2021</th>
<th>Week Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHI SRW</td>
<td>$6.03¼</td>
<td>-$0.16¼</td>
<td>$6.03</td>
<td>-$0.17¼</td>
<td>$6.01¼</td>
<td>-$0.17¼</td>
<td>$5.93</td>
<td>-$0.15¼</td>
</tr>
<tr>
<td>KC HRW</td>
<td>$5.42</td>
<td>-$0.10</td>
<td>$5.49</td>
<td>-$0.10½</td>
<td>$5.54¾</td>
<td>-$0.10½</td>
<td>$5.59½</td>
<td>-$0.09½</td>
</tr>
<tr>
<td>MGE DNS</td>
<td>$5.52¼</td>
<td>-$0.25¼</td>
<td>$5.64¼</td>
<td>-$0.22¾</td>
<td>$5.69¼</td>
<td>-$0.25¼</td>
<td>$5.74¾</td>
<td>-$0.20</td>
</tr>
<tr>
<td>CORN</td>
<td>$3.98½</td>
<td>-$0.19¼</td>
<td>$4.01½</td>
<td>-$0.17</td>
<td>$4.03¼</td>
<td>-$0.13</td>
<td>$4.04¼</td>
<td>-$0.15</td>
</tr>
</tbody>
</table>

**WHEAT FUTURES**—Wheat futures plummeted on uncertainty of the election as exports soared. *Wheat futures prices ranged from down $0.25¼ to down $0.09½ (per bu) over the previous week.*

**CORN FUTURES**—Corn futures prices plummeted on uncertainty of the election. *Corn futures prices ranged from down $0.19¼ to down $0.13 (per bu) over the previous week.*

**CRUDE OIL FUTURES**—Crude oil prices are down more than 5% following a significant build in commercial crude oil in storage in the U.S., a worrying sign that oil producers are set to face more pressure if the recent surge in COVID-19 cases around the world impacts economic activity and thus oil demand.

EIA reported U.S. crude oil refinery inputs averaged 13.4 million bbls/day during the week ending October 23, 2020 was 363 thousand bbls/day more than last week’s average. Refineries operated at 74.6% of capacity last week. As of October 23 there was an increase in Crude Oil stocks of 4.320 million bbls from last week to 492.427 million bbls, under the 5-year average of 450.636 million bbls. Distillate stocks decreased by 4.491 million bbls to a total of 156.228 million bbls, over the 5-year average of 133.261 million bbls; while gasoline stocks decreased by 0.892 million bbls to 226.124 million bbls, over the 219.645 million bbl 5-year average. The national average retail regular gasoline price was $2.143 per gallon on October 16, down $0.007 from last week’s price and $0.453 under a year ago. The national average retail diesel fuel price was $2.385 per gallon, down $0.003 per gallon from last week’s level and down $0.679 from a year ago.

**NYMEX Crude Oil Futures** finished the week ending Thursday, October 29, 2020 to close at $36.17/bbl (December contract), down $2.39 for the week.
### USDA Crop Progress/Condition Report—October 26, 2020

<table>
<thead>
<tr>
<th>Crop</th>
<th>% Progress</th>
<th>Previous Week</th>
<th>Previous Year</th>
<th>5-Year Average</th>
<th>Condition Rating % Good/Excellent</th>
<th>Previous Week</th>
<th>Previous Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Winter Wheat Planted</td>
<td>85%</td>
<td>77%</td>
<td>83%</td>
<td>80%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ID Winter Wheat Planted</td>
<td>98%</td>
<td>91%</td>
<td>92%</td>
<td>94%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>US Winter Wheat Emerged</td>
<td>62%</td>
<td>51%</td>
<td>60%</td>
<td>60%</td>
<td>41%</td>
<td>-</td>
<td>56%</td>
</tr>
<tr>
<td>ID Winter Wheat Emerged</td>
<td>61%</td>
<td>51%</td>
<td>66%</td>
<td>70%</td>
<td>65%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Corn Harvested</td>
<td>72%</td>
<td>60%</td>
<td>38%</td>
<td>56%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### USDA U.S. Crop Weather Highlights—October 29, 2020

**West**—Dry conditions with light wind is favorable for wildfire containment efforts. Winter wheat planting in the Northwest is ahead of schedule while the emergence is lagging the 5 year average. As of October 25, 85% or the intended winter wheat acreage in Oregon had been planted while only 29% of the crop had emerged.

**Plains**—Lingering rain across northern Oklahoma and southeastern Kansas. Recovery from an ice and snow storm is underway across the southern High Plains. Snow cover across the northwestern half of the Plains had begun to melt, bringing beneficial moisture to winter wheat.

**Corn Belt**—Cold, rainy conditions from Missouri to Ohio hindering fieldwork. Harvest activities slowly resuming in the Midwest. Harvest in the Midwest are favorable, 83% of the U.S. soybeans and 72% of the corn had been harvested as of October 25. Soybean harvest had been 90% complete in Illinois, Iowa, Minnesota, Nebraska, and the Dakotas as of October 25.

**South**—Tropical Storm Zeta is heading northeastward across the Appalachians bringing heavy winds and heavy rainfall. Morning temperatures have fallen below 50 degrees as far north as northern, western, and central Louisiana.

**Outlook for U.S.**— Mostly dry conditions will cover most of the country. A cold front farther north, some rain and snow showers form the Great Lakes Stated in to the Northeast. Scattered showers in the Pacific Northwest. Cold air will overspread the Midwest and Northeast during the weekend and early next week. The NWS 6-10 day weather outlook for November 3-7 calls for above normal temperatures and below normal precipitation across most of the country. Cooler than normal conditions in New England. Wetter than normal conditions in the southern tip of Florida and areas form the Pacific Northwest to Montana.

### International Crop Weather Highlights—October 27, 2020

**Europe**—Rainfall maintained good soil moisture for winter crop establishment in central and northern Europe. Heavy rainfall alleviated short term dryness in Spain and Portugal. Dry conditions favored fieldwork in southeastern Europe but was untimely for maturing cotton.

**Middle East**—Rainfall eased short term dryness in and improved moisture for winter grain planting and establishment in western Turkey.

**Asia**—Late season showers in the south. Moisture is benefiting immature kharif crops and boosted moisture but was unfavorable for mature cotton. Dry conditions were favorable for simmer crops harvesting crop sowing across eastern and southern China. Heavy rainfall and localized flooding in the Philippines. Excess moisture was unfavorable for mature summer corn and rice.

**Australia**—Dry conditions in the west boosted early wheat, barley, and canola harvesting. Rainfall in the south and east interrupted fieldwork but favored immature winter crops and boosted summer crop germination and emergence.

**South America**—Rainfall boosted moisture for germination of soybeans in major production areas of central Brazil. Heavy rainfall in Argentina boosted moisture for planting summer grains and oilseeds, moisture came too late to improve prospects of some winter grains.

**Mexico**—Warm, sunny conditions boosted late season development of maturing summer corn.

**FSU**—Rainfall in eastern Ukraine and western Russia brought much needed moisture. Much more rain is needed to end the areas extreme drought and improve winter wheat establishment prospects.
Northeast After several weeks of wet weather and some improvements, most of New England was dry this week as the rains were limited to western sections of the Northeast. Unfortunately, much of Pennsylvania was also dry, and had missed out on the surplus precipitation that New England had received earlier in October. As a result, D2 was slightly expanded eastward, D1 was redrawn in southwestern Pennsylvania to better line-up with the indices, and D0 was extended eastward into eastern Pennsylvania, and southward into the eastern Panhandle of West Virginia.

Southeast: Scattered light to moderate showers (0.5-2 inches) dampened portions of the Southeast, with the most widespread and highest totals measured in Alabama, northern Georgia, Florida Panhandle, western South Carolina, western and eastern North Carolina, and the southern two-thirds of Virginia. South Florida was drenched with heavy tropical downpours, locally to 10 inches. As a result, the small D0 area in west-central Alabama was erased, but the nearby D0 in southeastern Mississippi expanded slightly.

Midwest Storm in the Rockies and a stalled cold front produced moderate to heavy rains (1-3 inches, locally to 5) in the middle Mississippi and Ohio Valleys, and in the western Great Lakes region (eastern Iowa into Wisconsin and Michigan). Light precipitation, some of it in the form of snow in northern locales, fell across the remainder of the Midwest.

South A stalled front and the winter storm in the southern Rockies brought beneficial precipitation to portions of the south-central Plains and lower Missouri Valley. With temperatures dropping as the week progressed, light frozen precipitation (freezing rain, sleet, snow) coated parts of western Texas and Oklahoma and southern Kansas, with heavier rains (1.5-4 inches, locally higher) reported from southwestern Oklahoma northeastward into Missouri. Unfortunately, southern and eastern sections of Texas missed out on the rain, and short-term dryness (2-3 months) increased, with an expansion of D0 and D1 in southern and eastern sections, and D2 in south-central Texas.

High Plains A winter storm and frigid air dropped southeastward out of Canada and into the northern and central Rockies early in the period, bringing welcome snows to the mountains, and even at lower elevations of the northern and central Plains. Decent early mountain snows blanketed western and southern Montana, northwestern Wyoming, and parts of southeastern Wyoming, central Colorado, and northern New Mexico. Light to moderate precipitation (mostly snow) also fell on South Dakota and into Minnesota, and parts of western Nebraska.

West With precipitation limited to western Washington, northern Cascades, northern Idaho, and the Rockies (the Southwest and Intermountain West were dry), only some slight improvements were made. This included central Washington (very slight reduction of D0-D2 on west side), while some D0 was removed in northern Idaho and western Montana as underlying soils were moist, and impressive mountain snows have started the Water Year. No other improvements were done, except for some small D3 to D2 changes in central Colorado due to beneficial storm totals in Huerfano and Costilla counties, and near Ft. Collins and Boulder areas.