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Soybean harvest in full swing; low moisture beans, damage cause concern

The effect of pest and environmental pressures on this year’s soybean crop are becoming increasingly evident as producers haul their beans to the elevators. Higher than average numbers of bean leaf beetles and grasshoppers, viruses, lack of precipitation, and high temperatures all affected this year’s production costs and yields.

The Nebraska Agricultural Statistics Service reported Monday that 30% of the state’s soybean harvest was complete, compared with 18% last year and a 32% average. Virtually all of the state’s crop was dropping its leaves, slightly ahead of last year and the five-year average. Soybean condition was rated 1% very poor, 11% poor, 37% fair, 43% good, and 8% excellent.

Table 1. Potential loss from lower moisture soybeans.*

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*Assumes 50 bushels per acre yield.

This year’s soybean crop is drier than usual — sometimes in the range of 8-10% moisture — creating challenges for harvesters and cutting income for producers. The drier pods are more apt to shatter in the field, spilling beans to the ground and making them virtually unharvestable. In addition, the drier beans that are harvested are more apt to become damaged in the combine or during handling. If damage is extensive, elevators may dock prices.

Growers also may sustain a loss of potential income when selling the drier beans since soybeans are sold by weight at the elevator. Selling soybeans at 8% rather than 12% moisture reduces their weight and can mean a loss of almost $13 per acre with $6.00 soybeans, assuming 50 bushels/acre yield (see table).

While further rains might seem advantageous to increase moisture levels in the soybeans, further weathering and discoloration may lead to further discounts at the elevator. Harvest loss in the field will be increased by allowing further drying of the pods and the grain will suffer additional mechanical damage as it continues to lose moisture.

When possible, it would be advantageous to harvest soybeans before there is further moisture loss. Consider harvesting early mornings and in the evening hours when humidity levels are higher.

Mark Schroeder, Farm Operations Manager, Ag Research and Development Center
Larry Prentice
Laboratory Services Manager
Nebraska Crop Improvement Assn.
Roger Elmore, Extension Cropping Systems Specialist, South Central Research and Extension Center: There are many reports of bleeding hilums in soybeans in cultivars from a wide range of maturities. The hilum color on these beans ‘bleeds’ into the surrounding seed coat resulting in a “stained” appearance around the hilum. Sometimes the stains can cover almost the entire seed. This staining could be a symptom of soybean mosaic virus, but my guess is that it is more likely an environment-genotype interaction. We’ve had a few years where the problem was much worse than in other years and in those years certain cultivars have been affected more than others. Apparently some elevators are apprehensive about taking soybeans with bleeding hilums without docking them because it apparently affects oil color.

Jim Stack, Extension Plant Pathologist, South Central Research and Extension Center: We are seeing some pretty severe cases of stalk rot in central Nebraska. Also, in a tour of 30-40 sorghum fields in the southern tier of counties, all but two had sooty stripe at damaging levels.

Dewey Teel, Extension Educator in Antelope County: The past few days have been excellent for soybean harvest, which is about completed. Moisture is in the 9.5% range and irrigated yields are 65-69 bushels per acre. Dryland yields are quite variable (15-40 bushels per acre) depending on whether the fields caught any of the summer showers.

Corn harvest is just getting underway. Moisture contents have been reported to be as low as 15% in irrigated fields.

Ralph Anderson, Extension Educator in Buffalo County: Harvest is progressing fairly rapidly in the Platte Valley and south of here. It is much slower to the north. There is wide variation in crop moisture. Some corn last week was reported to be as low as 14.8% moisture, with a lot of it at 20% or less. Further north, it is hard to find anything under 25%. Dryland corn yields are quite variable, from 0 to 80-90 bushels per acre.

Soybean harvest is being slowed by green plants. Some plants that had about dried up, revived after the rain and started growing. While a lot of the moisture contents are under 10, plants are still too green to feed through the combine very well. Many soybean yields are in the 50-55 bushel range, with a few in the 70 bushel range.

Some small areas in corn fields appear to be yielding up to 200 bushels, but 170-180 bushels per

(Continued on page 185)
Tricks of the eye or maybe the light

A field along north 84th St. in Lincoln displays a pattern of semi-circular still-green soybean plants within a field of mature plants ready to be harvested. Paul Jasa, Extension Engineer, Lincoln, photographed the field this week and Roger Elmore, Cropping Systems Specialist, explains the seeming phenomenon: As day length increases from planting to the summer solstice, soybean vegetative development is promoted. After the summer solstice, photo periods begin to decrease and flowering begins. With plants like those on the left under the street lights 24 hours a day from planting through the growing season, flowering is not triggered. Apparently, a few main stem nodes may produce flowers and pods while the majority of nodes remain vegetative. There is no place for the sugars produced by photosynthesis to go and the plants will likely remain vegetative until a frost occurs.

Field reports  (Continued from page 174)

acre seems more typical. Poor irrigation-efficient areas are really showing up, although yield depressions may not be quite as bad as anticipated.

Although a lot of poor quality stalks are present, we are still getting most of the ears in the field. We certainly don’t need a hard wind.

Gary Hall, Extension Educator in Phelps and Gosper counties:
Wheat planting is complete in most areas and some fields have a great stand after some timely rains.

Moisture levels in corn are decreasing and harvest is progressing quickly. Feedlots wanting high moisture corn were adding water because the corn had dried down past optimum moisture levels.

Some fields are very dry (15%) and others still have a lot of moisture (25-30%) which is probably due to the fact we haven’t had a killing frost yet. Another factor affecting drydown is the difference in variety and corn’s ability to dry down quickly. Corn yields are running about 10 to 20 bushels below average on irrigated ground and even more in dryland fields. Irrigated corn is averaging about 170-180 bushels per acre. Stalk rot is evident in just about every field; however, producers seem to be getting the corn out well ahead of any harvest loss the rot may cause.

Some corn fields have been tilled, but fertilizer application hasn’t started.

After harvest, many soybean fields still look green since the stems are still alive, although the pods were dry and ready for harvest.

Paul Hay, Extension Educator in Gage County: Soybeans are 80% harvested and are almost too dry. Yields are ranging from 10 to 50 bushels per acre. A swath of hail which forced late planting is responsible for the poor yields in about 16% of the county. Dry weather in the worst fields on the eastern edge of the county contributed to yields of about 20 bushels per acre.

Milo yields ranged from 60 bushels per acre in the very driest areas to 100 bushels per acre in other areas, with about 65% of the harvest complete.

A lack of promised rail cars is resulting in outdoor piles.

With about 75% of the dryland corn harvested in Gage County, yields are ranging from 40 to 120 bushels per acre. With about 45% of the irrigated corn harvested, yields are ranging from 100 to 165 bushels per acre. Moisture content is ranging from 15 to 18%.

Andy Christiansen, Extension Educator in Hamilton County:

Quite a few soybean fields have problems which are slowing the combines to a crawl. Some plants have very green lower stems, yet the beans are as low as 10% moisture. (See story on page 186 for a further discussion of this situation.) The green stems have many single-bean pods.

Eric Kerr, Extension Plant Pathologist, Panhandle Research and Extension Center: Cercospora leaf spot severity increased significantly during the last three weeks of September. This was associated with several warm nights providing favorable environment for infection. Several fields of sugar beets in scattered areas of the Panhandle have lost most of the older leaves. Growth of new leaves from the crown may reduce the percentage of sugar in the roots. It is unusual to see this degree of injury from leaf spot developing this late in the season, but economic loss should be less than we expect from severe infection levels occurring in mid-August. Some of the earlier infected fields were sprayed with triphenyltin fungicide as late as the first week of October.

Powdery mildew developed to severe levels on sugar beets over a large portion of the North Platte Valley production area. Disease (Continued on page 187)
When soybeans butterfly and stems don’t mature: challenges of ‘97

Stay green soybeans

Roger Elmore, Extension Cropping Systems Specialist, South Central Research and Extension Center: It’s a confusing picture of soybeans in some parts of the state (See field updates, page 184). While pods and seeds are mature, brown and ready to harvest, the plant stem and in some cases, leaves, remains green. Many pivot corners and other dryland fields are quite a bit greener (with mature pods and seeds) than irrigated soybeans of the same cultivar. The dryland beans likely had some degree of stress during podding and seed formation which limited the number of seed produced.

Conditions improved in mid August and they had “more source than sink,” i.e. more nutrients to translocate than there was space for. Seed size is the only place soybeans can compensate at the end of the growing season, and there is a limit to how big seeds can get. Thus we get green stems (and in some cases leaves) and mature pods and seeds, complicating harvest. One farmer joked and wondered if he should irrigate more or harvest!

Jim Schild, Extension Educator in Scotts Bluff and Morrill counties: We see the same thing in pivot-irrigated dry beans in the Panhandle where irrigation speeds maturity. We had several on-farm dry bean variety trials. We planted three trials the same day but by harvest there was a three-week difference in maturity. When visiting with the growers the main thing that came out about the differences in maturity was when the first irrigation occurred. The later the first irrigation the later the maturity, so the more optimum the water conditions the quicker the maturity.

Bob Caldwell, Extension Cropping Systems Specialist, Lincoln: There are two kinds of maturity that we have to watch for here: physiological maturity — when the plants stop significant seed increases — and harvest maturity — when the moisture content of the plants is low enough to combine well.

When you observe that “irrigation will speed maturity” you are probably talking about harvest maturity. Stresses often make physiological maturity occur earlier, instead of later. The combination of early physiological maturity and late harvest maturity is the worst and leads to harvest problems.

Use of the desiccant, Gramoxone Extra, may still be an option for beans that are staying green — watch your pod color and seed moisture levels. (See CropWatch 97-23, page 174)

Butterfly beans

We have received reports of soybean seeds which have split apart (the cotyledons separated) while still inside the pod prior to harvest.

Any stress when the seed coat is being created could limit the number of cells created in the seed coat and thereby limit the ultimate seed size. Normally those cells are able to stretch during seed development to accommodate the growth of the cotyledons inside the seed. However, when stressful conditions are followed by good rainfall, as we had in several eastern locations, seed growth could outstrip the ability of the coat to stretch.

This problem would be even worse in cases where the total seed set was restricted. With fewer places to put seed dry matter, the plants would be more likely to “over fill” the seeds that are there. These split seeds will have a “butterfly” appearance and sometimes will have a darkened seed coat. It’s possible that this “off color” may contribute to some docking at the elevator, even though the color change from the damaged seed coat may not affect the bean.

Farmers facing this problem should check with their local elevator on possible dockage for the split seed. Anyone who receives a soybean grade at the elevator that they believe is too severe can request that a seed sample be submitted to a Federal Grain Inspection Office for a second opinion.

I would like to document cases of the split seed because it may illustrate how a stress during a narrow window of development can have a significant impact on the harvested seed. If you have experience with beans split in the pod, please contact me.

Bob Caldwell
Cropping Systems Specialist
Extension Agronomist, Lincoln
Manage harvest stress with a little laugh and a lot of care and patience

During the long hours of harvest, farmers take on many roles: agronomist, combine operator, grain hauler, mechanic, welder, market analyst, inventory manager, and weather forecaster, as well as being a family member, spouse or parent.

With multiple roles, one can easily be overwhelmed and feel frustrated. As a result, stress levels are high, tempers are shorter, patience may wear thin, and fatigue is likely to set in. Things may seem fine until you catch yourself nodding off a bit or are startled to find the combine off the row.

Sound familiar? University of Minnesota researchers studied individuals involved in agricultural production and evaluated the stressors that were dominant in their lives. Specifically, they studied custom applicators who worked for agricultural chemical dealers. The top three stressors for these individuals were:

1) lack of time with family,
2) demands by customers and
3) undone chores at home.

These custom operators and their long work hours have similarities to farmers in the midst of harvest.

It's important to recognize that stress is normal, can be positive, provides incentives and gives encouragement; but extra stress can lead to total exhaustion, muscle tension, anxiety, nervousness and sleeplessness.

And, if one has been dealt an overload of stress, additional symptoms of loss of appetite, dizziness, weakness, headaches, nausea and muscle pain can result.

So, what's one to do? How can you reduce your stress? While you can't take a vacation from your situation, you can take steps to manage the inherent stress. I didn't say "eliminate" stress, I said "manage." That's the key.

Laugh a little

One of the better approaches to managing stress is to use a sense of humor. Regardless of what happens, look for the brighter side. When the combine platform digs into the ground, tell yourself you didn't realize you were driving a bulldozer.

Take care of yourself

Take care of your body with regular balanced meals and plenty of fluids and sleep.

Keep your engine running smoothly in the field with sandwiches and an insulated container of soup. Skip the candy bars and salty bags of chips. For in-between meal snacks, try the high-energy bars. Several brands are on the market stuffed with energy, protein and carbohydrates with little fat. Apples will hit the spot, too.

Drink plenty of fluids. Water or sports drinks are best. Limit your intake of caffeine from coffee, tea and carbonated drinks.

Completing the harvest season safely and successfully is a bit like running a marathon, take care of your body and pace yourself. Don't overload your need for sleep. Plan for it, schedule it. You must use sleep to recover from the physical demands of the day. Sleep maintains alertness, decreases accidents and aids your resistance against illness.

Take a deep breath

The challenge of working with people — your hired hand, the trucker, the implement dealer, or the elevator operator — may become strained during harvest. Well, as simple as it may seem, remind yourself to count to 10 before you respond to situations. You'll keep your cool and have fewer accidents as well as have fewer fences to mend later.

Keep communicating

The last stress management technique may be the most important. Communicate. Communicate with your family and your friends. Broaden your support group. Tell them harvest season is a tough time for all. That includes you, your family AND your friends. Be up front with those who care for you. Tell them you have a lot of hard work to do. They are important to you. You'll need their help, too. They will respond and support you like you never anticipated.

Larry Schulze

Extension Pesticide Coordinator

Field reports

(Continued from page 175)

incidence and severity were greater than has occurred in that region for several years. Powdery mildew infection starting in August can reduce root and sugar yields; however, the disease did not develop in many of the fields until early October. Later infections have less economic effect on the crop. Floazable sulfur fungicides were applied to sugar beets in some fields through the first week of October. When application is delayed two weeks after first observation of symptoms, the sugar yield benefits are reduced by about 50%.

Ray Weed, Extension Educator

in Kimball and Banner counties: We are now in the full harvest period for sugar beets. This week's wet weather will slow the remainder of the dry edible bean harvest. Winter wheat is in fair to good condition. Some Setaria (foxtail) forage millet has not yet been swathed and now poses a potential source of wheat curl mites and the wheat streak mosaic virus to newly emerged wheat.

Ray Weed, Extension Educator
Safety first — you’re worth the effort

October is second only to July for the number of agricultural fatalities in Nebraska and ranks fifth for the number of injuries related to agriculture. Several factors contribute to this situation:

- Daylight hours are decreasing and harvest work hours are long. Physical and emotional stress often develops.
- Temperatures decrease at night, leading to morning and evening fog and reducing visibility.
- More farm equipment is sharing the road with other motorists, usually long after dark.

Harvest is a critical time for all Nebraska farmers. Develop an “accident prevention checklist” to avoid injury or death.

Here are a few suggestions for your checklist.

Machinery and equipment

Besides normal maintenance and repairs, make sure warning lights, SMV signs, reflectors and reflective paint and tape are functional, clean and visible — this lets others see you. Keep windows clean inside and out and ensure mirrors are clean and adjusted properly — this allows you to see others.

- Repair or replace defective or missing driveline shields on chains, belts and rotating shafts.
- Have the fire extinguishers on all harvest equipment checked and recharged before you need them.
- Carry extra pressurized water extinguishers in pickups or trucks — dry chemical extinguishers aren’t much good when the stubble catches fire.

Watch out for cats, dogs, kids and co-workers before starting and moving any equipment — do a walk around check before getting on the tractor or in the combine. Don’t allow riders.

Weather

You can’t do anything to change the weather. Use weather downtime to inspect and repair equipment — this will keep small problems from becoming big ones. Take a break, relax and plan for the next good day.

Remember that the most important component of the production agriculture system is you — if you are injured or killed, your jobs won’t get done. Take time to be safe.

Dave Morgan
Extension Safety Engineer

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Degree day accumulations for wheat, corn, soybeans and sorghum*

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*Growing degree days to maturity for early season (1), mid season (2) and late season (3) crops:

MC = maturity class
Corn: MC1 = 2400; MC2 = 2500; and MC3 = 2750
Wheat: MC1 = 1600; MC2 = 1840; and MC3 = 2000
Soybeans: MC1 = 1950; MC2 = 2360; and MC3 = 2450
Sorghum: MC1 = 2125; MC2 = 2200; and MC3 = 2369

None of these stations reported any precipitation for the previous week.