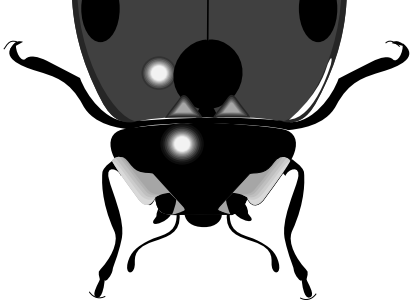

PEST MANAGEMENT & CROP DEVELOPMENT

BULLETIN

FOR IMMEDIATE RELEASE
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Executive editor: Kevin Steffey, Extension Entomologist

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Also in This Issue

INSECTS

They're on Their Way: Black Cutworms Arrive in Southern Illinois Traps

It's that time of year when black cutworm pheromone traps are swinging in the wind, the synthetic sex pheromone calling out to the unsuspecting males of the species. We used to have a relatively large network of black cutworm pheromone traps monitored by willing cooperators throughout Illinois. The results from those efforts gave us a reasonable idea of the intensities and localities of black cutworm flights from year to year. Unfortunately, we had to discontinue the network because we depleted our funding for the program. So now we rely on the kindness of strangers (and friends) to send us information voluntarily. If you have set up black cutworm pheromone traps this spring, don't hesitate to send us your moth-capture data. We'll be happy to share it with others.

Ron Hines, senior research specialist at the University of Illinois Dixon Springs Agricultural Center, has been vigilant this spring, and he already has observed an intense capture of black cutworm males in one of his traps. An intense capture is defined as nine or more moths captured in a 1- to 2-day period. On April 7, Ron found 19 black cutworm moths in a pheromone trap in Pulaski County. He checked the traps on the morning of April 7, after the storms that passed through the preceding weekend. The trap in Pulaski County captured a total of 24 moths during the week of April 1 through April 8 (counts are accumulated every Tuesday). You can obtain more particulars about Ron's trapping efforts from the "Hines Report" on our IPM Web site—http://www.ipm.uiuc.edu/pubs/hines_report/index.html.

Jeff Staley, with Wabash Service Company in Ridgway (Gallatin County), also provided information from the black cutworm pheromone traps that he is monitoring. Like Ron Hines, Jeff reported an intense capture from two of his traps after the April 5–6 weekend. He captured 12 black cutworm males in one trap and 11 in another trap. So the traps in southern Illinois are picking up the leading edge of the migration of this pest from the South.

We use the dates of intense captures to run a degree-day-driven model that projects when the first signs of cutting of corn seedlings might occur. We anticipate cutting of corn plants by black cutworms about 300 degree-days (base 50°) after an intense capture. Obviously, the occurrence of cutting injury depends on many other factors, including the presence of larvae in the field, prevailing weather conditions, and conditions of the field. For example, a field that has been tilled and planted before black cutworm moths arrive in the area usually escapes black cutworm damage. On the other hand, a field that has not been tilled and planted and is full of weeds that are attractive to egg-laying black cutworm females may be a good candidate for black cutworm damage. We provide the output from the degree-day model as an early warning for people scouting for black cutworms and signs of their presence. Only with legwork will you be able to determine whether black cutworms pose a threat in any given field.

Some field cultivation and planting occurred in some areas of Illinois early in the week of March 31, but cold, wet weather slowed down that activity. If fieldwork resumes soon, a lot of growers will be able to plant early enough to avoid concern about black cutworms. If fieldwork is delayed by rains and black cutworm moths continue their migration into Illinois, the potential for black cutworm damage increases.

We continue to encourage most growers to rely on timely field scouting and application of an insecticide only if the level of cutworm damage exceeds published thresholds. The application of insecticides before or at planting to prevent black cutworm damage often does not pay off economically, especially if corn is planted relatively early. Some growers, however, have had a history of black cutworm problems in certain fields, so the application of preventive insecticide might be justified. Table 1 shows the preventive insecticides that might provide adequate control of black cutworms in the event of an infestation. The information in Table 1 was extracted from the labels. Please consult the insecticide labels for additional information, including directions for use and precautionary statements.

Another product that may prevent substantial black cutworm damage is a corn hybrid with Herculex I Insect Protection. Herculex I transgenic hybrids contain a different protein (Cry1F) than YieldGard Corn Borer hybrids, which contain the Cry1Ab protein. Both proteins, however, were derived from the soil bacterium *Bacillus thuringiensis*. Herculex I and YieldGard Corn Borer are equivalent in their efficacy against European and southwestern corn borers. Other pest Lepidoptera controlled by Herculex I include black cutworm, corn earworm (suppression), and fall armyworm. The efficacy of Herculex I hybrids against black cutworms is essentially equivalent to the efficacy of insecticides applied at planting for control of black cutworms. Refer to the article "New Products for Insect Control" in issue no. 1 (March 21, 2003) of the *Bulletin* for more information about Herculex I products.

Please keep us posted regarding black cutworm activity in your area. Black cutworms seem to appear and cause damage rather suddenly, so early warnings are really helpful.—*Kevin Steffey*

Table 1. Preventive insecticides suggested for control of black cutworms in Illinois.

Product	*Amount of product*	*Placement/timing*
*Ambush	0.5 to 1.0 oz per 1,000 ft of row	Band at planting
*Asana XL	5.8 to 9.6 oz	Preemergence
*Aztec 2.1G	6.7 oz per 1,000 ft of row	Band at planting
*Aztec 4.67G (available only in SmartBox)	3 oz per 1,000 ft of row	Band at planting
*Capture 1.15G	6.4 to 8 oz per 1,000 ft of row	Band at planting
*Capture 2EC	0.15 to 0.3 oz per 1,000 ft of row	Band at planting
*Empower	6.4 to 8 oz per 1,000 ft of row	Band at planting
*Force 3G	4 to 5 oz per 1,000 ft of row	Band at planting
*Fortress 2.5G	6 to 7.5 oz per 1,000 ft of row	Band at planting
*Fortress 5G (available only in SmartBox)	3 to 3.75 oz per 1,000 ft of row	Band at planting
*Lorsban 4E	2 to 4 pt	Broadcast, preplant incorporated
*Lorsban 4E	1 to 2 pt	Preemergence
*Lorsban 4E	2.4 oz per 1,000 ft of row	Band at planting
Lorsban 15G	8 oz per 1,000 ft of row	Band at planting
*Mustang Max	0.16 oz per 1,000 ft of row	Band at planting
*Pounce 1.5G	8 to 16 oz per 1,000 ft of row	Band at planting
*Pounce 3.2EC	4 to 8 oz	Preemergence
*Pounce 3.2EC	0.3 to 0.6 oz per 1,000 ft of row	Band at planting
*Warrior	0.66 oz per 1,000 ft of row	Band at planting
*Warrior	3.2 oz	Preemergence

* Use restricted to certified applicators.

Legs Are the Giveaway: Black Cutworm and Crane Fly Larvae

It's often very difficult to identify insect larvae in the field, especially when they're covered with mud. Unfortunately, one of these larvae, the crane fly, which is not a pest of corn, is often confused with the black cutworm. Crane fly larvae, also known as "leatherjackets," are occasionally found in the spring in crop fields and pastures. Ron Hines, senior research specialist at the University of Illinois Dixon Springs Agricultural Center, found one of these creatures as he dug in their wireworm bait traps in Pope and Massac counties the first week in April. Crane fly larvae are found along or just below the soil surface. They prefer moist conditions, such as poorly drained fields, and feed on decaying matter, fungi, and moss.

Approximately the same color and size of a fourth-instar black cutworm, crane fly larvae are dark colored, with poorly developed heads and fleshy projections around the tail end of the body. The distinct difference between crane fly and black cutworm larvae is the legs. Crane fly larvae are legless, whereas a black cutworm larva has three pairs of true legs on the thorax behind the head and fleshy prolegs on the abdominal segments. Black cutworm larvae also have a well-developed head and no tail-end projections. Once again, it's important to remember that correct identification of insects and accurate diagnosis of potential insect problems save time and money in the long run.—*Kelly Cook*

A Note Regarding Soybean Aphids

David Voegtlin, a research entomologist in the Center for Economic Entomology in the Natural History Survey, reported on March 28 that first instars of soybean aphids were present on partially open buds of buckthorn plants (*Rhamnus cathartica* and *R. alnifolia*) in experimental cages in Champaign County. At that time, David seemed to think that the eggs had survived the winter quite well. Recent cold, wet weather, however, slowed their development and may have caused some mortality. Those that survived will produce the second generation very soon.

David will watch these aphids closely to report the progress of their development this spring. In addition, suction traps that capture flying aphids will begin operation at several locations in early May. Although soybean aphids caused little concern among soybean growers in Illinois in 2002, we want to keep our eyes on them, just in case the potential for dramatic increases in their numbers occurs.—*Kevin Steffey*

Development of Alfalfa Weevils Proceeds, Despite Colder Temperatures

Although the recent cold temperatures have slowed down development of alfalfa weevils, the preceding warmer temperatures had them chugging along just fine. An onset of warmer temperatures will speed up their development again. Thus far we have received no confirmed reports of alfalfa weevil activity, although accumulated degree-days (base 48°F) from January 1 through April 7 suggest that larvae probably have hatched in alfalfa fields in the southern one-fourth to one-third of Illinois (Figure 1). We expect larval hatch when about 200 degree-days accumulate. As we have stated in the past, check alfalfa fields on south-facing slopes or lighter soils first. These fields tend to warm up more quickly in the spring, so the presence of alfalfa weevil larvae in these fields might provide an early warning for other fields in the vicinity.

Figure 2 shows projected degree-day accumulations (base 48°F) from January 1 through April 21. By the third week in April, we can expect larval hatch in fields throughout much of

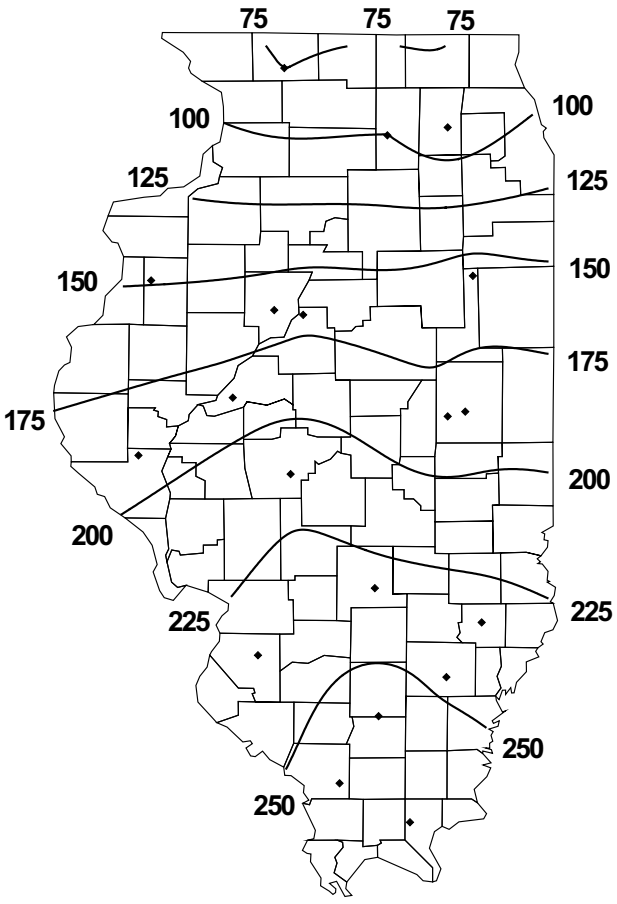

Figure 1. Actual degree-day accumulations (base 48˚F) from January 1 through April 7, 2003. (Map courtesy of Bob Scott, Illinois State Water Survey.)

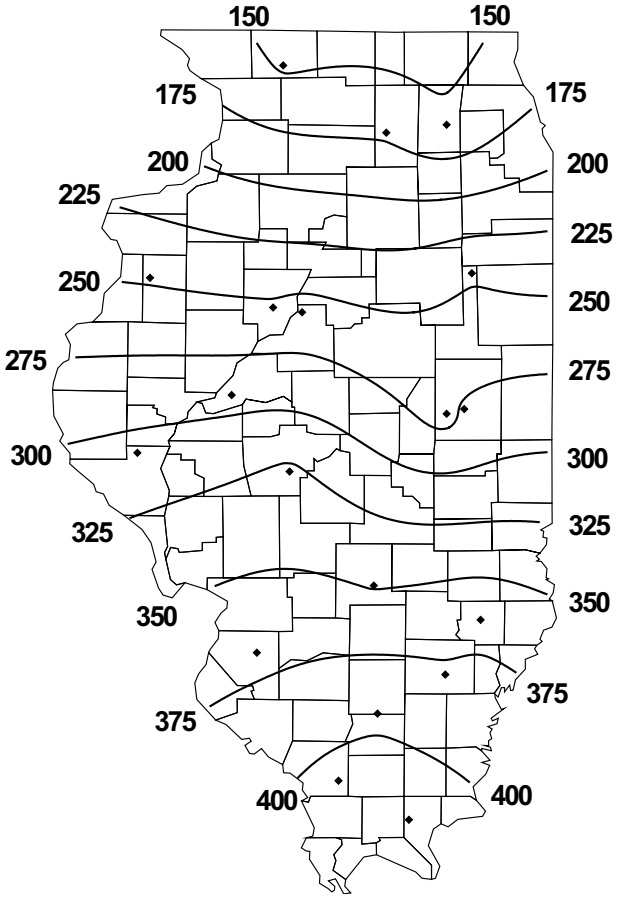

Figure 2. Projected degree-day accumulations (base 48˚F) from January 1 through April 21, 2003. (Map courtesy of Bob Scott, Illinois State Water Survey.)

Illinois. Remember, these projections are based on historical weather data. Unusually warm or cold temperatures could speed up or slow down weevil development, respectively. If the temperatures warm up and stay warm, alfalfa weevil activity could be in full swing in a couple of weeks in the southern half of the state.

Keep watching, and let us know what you find.—*Kevin Steffey*

Mistaken Identity: Alfalfa Weevil or Clover Leaf Weevil?

As scouting begins for the alfalfa weevil, be advised that the clover leaf weevil may be lurking in your alfalfa fields, as well. These two alfalfa pests commonly cause some confusion in identification at this time of year. Matt Montgomery, Extension unit educator in Springfield, found what he thinks are clover leaf weevil larvae in an alfalfa field in Sangamon County during the week of March 31. Although it's possible that alfalfa weevil larvae have hatched in Sangamon County (refer to the article "Development of Alfalfa Weevils Proceeds, Despite Colder Temperatures" in this issue of the *Bulletin*, it's probably a bit too early for alfalfa weevils in central Illinois.

The alfalfa weevil and clover leaf weevil are similar in appearance but can be distinguished on closer inspection. Most important, the clover leaf weevil is a light green larva, with a white stripe down its back and a tan head. As the larvae get older, the white stripe develops a pink border. The alfalfa weevil is a smaller larva, also pale green, with a white stripe and a dark brown to black head. Clover leaf weevil larvae are larger (1/2 inch) than the alfalfa weevil larvae (3/8 inch). Alfalfa weevil larvae remain on the plant most of the time and prefer to feed at or near the tops of the plants. Clover leaf weevil larvae feed on the lower leaves of the plant, primarily at night. During the day, clover leaf weevil larvae can be found in the soil around the crowns of the plant or in debris. An adult clover leaf weevil is light brown with a wide, dark brown stripe on its back. The adult alfalfa weevil is about half the size of the clover leaf weevil adult and brown, with a dark, narrow stripe along the center of the wing covers.

Clover leaf weevils generally overwinter as larvae. Very early feeding on alfalfa leaves generally is caused by the clover leaf weevil. The amount of injury associated with the clover leaf weevil usually is insignificant in Illinois, compared with the amount of injury caused by the alfalfa weevil. Fungal organisms generally keep clover leaf weevil populations in check. It is important to differentiate between these two pests to correctly assess the problems at hand and to avoid spraying insecticides when they are not needed. As always, we're interested in what's going on in the fields. Keep us posted on any interesting findings.—*Kelly Cook*

PLANT DISEASES

Winter Wheat Disease Situation

Reports of viruses are that they are mild and scattered this season. Primary symptoms are light mottling of the leaves accompanied by an overall light yellowish to lime green discoloration of affected areas. Although these symptoms, particularly if they wane in the next week or so, are characteristic of soilborne wheat mosaic virus infection, the only way to know with certainty is to have the live tissue tested for virus.

Early-Season Wheat Virus Disease

Varietal characteristics, nutrient imbalances, and viral diseases can all be causes of leaf discoloration this time of the year. If viruses are going to be a problem, then symptoms should be evident by now. The most common virus diseases early in the spring are barley yellow dwarf virus (BYDV), wheat streak mosaic virus (WSMV), and soilborne wheat mosaic virus (SBWMV). Each virus can cause damage to the plants, with BYDV being the most damaging in Illinois.

Barley yellow dwarf virus: Aphids spread BYD disease. Aphids carrying the virus transmit the virus to wheat plants through their saliva when they feed. The most serious yield loss results from fall infection by viruliferous aphids feeding on wheat seedlings. Fall infections typically result in stunted plants and fewer tillers when spring growth resumes. Leaf discoloration is usually the most notable early-season symptom. Leaves may be varying shades of red to purple, pinkish yellow to brown. As the plant continues to grow, older leaves typically begin to die back from the tip and may feel somewhat leathery, while the new leaves begin to discolor. Spring infections occur as well but commonly only discolor the flag leaf and do not cause significant yield reductions.

Soilborne wheat mosaic virus: The other most common disease causing leaf discoloration this time of the year is SBWMV. It is usually one of the first plant diseases reported in the spring. An unusual aspect of this disease is the mode of transmission to wheat plants. The virus is transmitted to the plant by a soilborne fungus. The virus is carried in the fungus, and when the fungus enters wheat roots it transmits the virus. The fungus is a water mold and favors low, wet areas of the field, which is where the disease is usually first seen.

Plants infected with SBWMV can show two types of symptoms. The first is leaf mottling, which appears as a light green and light yellow mosaic on the leaves. The mottling will only be seen very early in the season. The second symptom is stunting to the point where the wheat plant looks like a rosette when growth begins in the spring. Under good growing conditions the infected plants may recover somewhat. SBWMV is not commonly a yield-reducing disease because higher spring temperatures inactivate

the virus and then symptoms do not appear on new leaves. Yield reductions with SBWMV are uncommon except where extremely susceptible plants are present. Most wheat varieties are resistant to this pathogen, although that can vary.

Wheat streak mosaic virus: Initial foliar symptoms of wheat streak mosaic virus, also known as yellow mosaic virus, typically show up in the spring, too. The pattern of the disease in the field is tied to the distribution of its vector, the wheat curl mite (*Aceria tulipae*). Affected wheat plants are typically stunted, with mottled, streaked leaves. The streaks consist of yellow discontinuous dashes running parallel to the veins. We did see the "leaf rolling" symptom in Illinois in 2000 as well. Leaves that are heavily infested with mites tend to remain upright, and the margins of the leaf may roll inward. Symptoms tend to get worse as the weather warms up, and severely infected plants may produce sterile heads or die. Yield loss is related to when infection took place. Fall infected plants can experience severe yield loss; early-spring infection, light to moderate losses; and infection after jointing, minimal losses.

Life Cycle

Viral diseases of wheat usually produce symptoms in newer growth. Viruses typically cause stunting of plants as well as a discoloration of leaves, with the most common color either red or yellow. In some viruses, streaking of the leaves or a mosaic pattern also can be seen. Viruses are unusual pathogens because they neither require a food source nor do they have the typical physiological processes associated with other biotic pathogens. Viruses are vectored to plant cells, release their genetic material, and cause the plant cell to replicate more copies of the virus. Most viruses consist of only a genetic and a protective protein outer coat. Once inside plant cells, the virus sheds the protein coat, and the genetic material begins replicating the virus.

Management

The most common method of virus management is to plant resistant wheat varieties. These varieties do not allow virus replication to occur, and the infection is stopped early. Other control measures are directed at reducing the time the plants are in the field when vectors are active, which explains the recommendation to plant after the fly-free date when insect activity is reduced. Systemic insecticide seed treatments have also shown some success.

Diagnosis

So which virus may be in the field? First, rule out any other problem that may have caused the symptoms, such as winterkill, nutrient imbalances, or herbicide carryover. This is an important step. Next find out what virus resistance the variety is supposed to express. Most of our varieties have good resistance to SBWMV, whereas good resistance to BYDV is lacking. If those things don't help, then the pattern may help you decide. BYDV usually first shows up in a typical insect-type pattern. Infected patches occur randomly in the field or are associated with areas in which viruliferous aphids may have been feeding, such as grassy areas on field edges. Also, BYDV infection is completely dependent on aphid movement, and symptoms can continue to spread throughout the season. SBWMV, on the other hand, most typically will be associated only with low, wet areas of a field, and symptoms will not continue to spread throughout the season.

The Plant Clinic at the University of Illinois or our Digital Diagnostic System can make only a visual estimation of the presence of a virus in a wheat plant. We cannot tell you which virus is actually present based on the visible symptoms. To have a virus positively identified, it is necessary to send virus-infected tissue to a lab such as AgDia (http://www.agdia.com) for serological testing. Fresh plant material is needed for serological analysis because the tests use fresh plant sap.—*Suzanne Bissonnette*

REGIONAL REPORTS

Extension center educators, unit educators, and unit assistants in northern, west-central, east-central, and southern Illinois prepare regional reports to provide more localized insight into pest situations and crop conditions in Illinois. The reports will keep you up to date on situations in field and forage crops as they develop throughout the season. The regions have been defined broadly to include the agricultural statistics districts as designated by the Illinois Agricultural Statistics Service, with slight modifications:

North (Northwest and Northeast districts, plus Stark and Marshall counties)

West central (West and West Southwest districts, and Peoria, Woodford, Tazewell, Mason, Menard, and Logan counties from the Central district)

East central (East and East Southeast districts [except Marion, Clay, Richland, and Lawrence counties], McLean, DeWitt, and Macon counties from the Central district)

South (Southwest and Southeast districts, and Marion, Clay, Richland, and Lawrence counties from the East Southeast district)

We hope these reports will provide additional benefits for staying current as the season progresses.

Northern Illinois

Most of the region received .5 to .7 inch of rain April 3 through April 5. Some areas in northwest Illinois received several inches of snowfall on April 7, with other areas receiving freezing rain and some snowfall. Cold, wet conditions have limited nearly all field activity since April 3.

Some nitrogen application, oat seeding, and alfalfa seeding occurred early last week, prior to the precipitation.

Southern Illinois

Warm, dry weather during much of last week allowed producers to begin applying anhydrous ammonia and start seedbed preparation in many areas of the south. Some corn is being planted in Gallatin and White counties in the southeast, and Monroe and Randolph counties in the southwest.

Ron Hines (Dixon Springs Ag Center) reported 19 BCW moths caught in the Pulaski County trap on April 7 following the weekend storms. Ron also found wireworm, annual white grubs, and crane fly larvae in a number of wireworm bait trap holes that he was preparing last week. Wireworms and annual white grub are already near the soil surface ready for the planted seed and seedlings, especially in fields containing volunteer wheat. Early dry weather has allowed a significant buildup of voles in no-till upland. Farmers should be scouting the dark green areas of fields for vole colonies.

The wheat crop looks good to excellent in most areas, and the final applications of nitrogen and/or Harmony Extra have been applied. Some isolated, low-lying areas of fields are showing signs of yellowing, which may be caused by either viral disease or saturated soil conditions from earlier rains.

The prolonged cold winter slowed the early development of winter annual weeds, but with the return of warmer weather they are now doing quite well. Henbit and purple deadnettle are beginning their usual showy purple display. Fields with heavy infestations will be attractive for black cutworm egg laying if fieldwork is delayed due to the passage of storm fronts.

Alfalfa is 3 to 5 inches tall. So far, we have received no reports of serious alfalfa weevil problems, although the pest has been found at low levels in some areas of the southwest.

The passage of the storm front over the past weekend brought .5 to 1.5 inches of rain across much of the south and brought fieldwork to a screeching halt. With temperatures predicted to reach 70˚ by next weekend, progress should resume quickly.

West-Central Illinois

After ideal soil conditions earlier last week, fieldwork was brought to a halt late last week by rain, sleet, and even snow in some areas. Currently, most producers are waiting for things to dry out a bit before resuming field activities. Some corn has been planted in most all parts of the region, with as much as 15% completed in the southeastern part of the region.

Some field staff have placed cutworm moth bait stations out in different locations, and many have reported their first captures within the past week. However, none of the captures to date have been what we would consider intense (a capture is considered “intense” when there are 8 to 10 moths captured in a 48-hour period).

Wheat appears to have survived the winter well and really has begun to grow during the past weeks. We have received some reports of moderate infestations of winter annual weeds in many local wheat fields.

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