IOWA STATE UNIVERSITY
Extension and Outreach

CROP NOTES for April 18, 2016
Past issues of Crop Notes are posted at:
http://www.extension.iastate.edu/winneshiek/page/crop-notes-brian-lang

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CLIMATE

4-inch Soil Temperature

Current soil temperatures are in the mid-50's. The 6-10 day outlook is for 60% chance of warmer than normal weather and a 40% chance of wetter than normal weather. Soil temperatures and a short outlook forecast are posted at:
http://extension.agron.iastate.edu/NPKnowledge/

FERTILIZER

Anhydrous Ammonia - Those Most Commonly Asked Questions

The University of Minnesota just published a nice article on commonly asked questions about AA. How deep to knife it in? When can I plant? Does AA adversely affect soil structure or soil organisms? Go to: http://blog-crop-news.extension.umn.edu/2015/04/anhydrous-ammonia-applications.html

CORN

Recommended Plant Population

On average, maximum grain yields in Iowa occur between 34,500 and 37,000 plants per acre (ppa), although there is significant variation across locations and years. This population range is 2,000-3,000 ppa greater than what was found in plant population research 5 to 10 years ago. However, when does the yield responsiveness to increased seeding rates plateau or stop? If we consider net return, we arrive at this point once increased seeding rates no longer cover the additional seed cost. On average, the best net returns occur with plant populations at harvest between 30,000 and 35,000 ppa. Not every seed that is planted develops into a plant. Our recorded losses from seeding to plant survival range from 4 to 7%. So, on average, increasing seeding rates by 5% will insure that the proper plant population is achieved. We recognize that plant survival depends on many factors and may vary from field to field.

Seed Survival & Influence on Seeding Rate

A recent summary of research over the last 5 years from the University of Wisconsin commented on what percent you should increase corn seeding rates to obtain a desired population. The complete article is at: http://wisccorn.blogspot.com/2014/04/B050_3.html Their recommendation use to be to increase seeding rates 8 to 9%, and is now 5 to 8%, compared to Iowa's recommendations of 4 to 7%. For organic corn production where no seed treatments are used, their recommendations is 18%. Of course, there are numerous exceptions due to seed quality, planting date, tillage system and hybrid.

Corn Grain Planting Rate, Date, Depth, Row Space, etc.

Here is an article by Roger Elmore, ISU Extension Corn Production Specialist on FAQ for corn production. http://www.extension.iastate.edu/CropNews/2013/0419elmore.htm
Abbreviated answers:
Rate: 34,500 and 37,000 plants per acre. Adjust rate for % germ and other field attrition factors.
Date: calendar-wise we are in the planting window now for maximum yield potential.
Depth: about 2 inches.

Row space: 30-inch rows still work well, but there is nothing wrong with narrower rows.

Corn Silage Planting Rate, Date, Depth, Row Space, etc.

For corn silage production, 15's and 20's have averaged a 6 to 9% yield advantage in tonnage over 30's in University of Wisconsin trials. The following link is an article that discusses this and other factors important for corn silage production (planting date and rate, hybrid, cutting height, etc.). http://www.uwex.edu/ces/forage/wfc/proceedings2003/cornsilageyields.htm

Abbreviated answers:

Date and Depth are the same as for corn grain production.

Rate: Increase by 10% over that recommended for grain will often maximize silage yields.

Row space: As mentioned above, narrow rows generally provide a yield advantage over 30-inch rows for corn silage production.

Here is a little more reading on this issue to show just how variable these factors can be with regard to yield and quality in silage production. http://corn.agronomy.wisc.edu/AA/A062.aspx

SOYBEANS

Soybean Planting Rate, Date, Depth, Row Spacing, etc.

Rate: The general recommendation is to seed between 125,000 and 140,000 seeds per acre, regardless of row spacing and planting date, but usually including seed treatment especially with cooler soil conditions, with the goal to harvest 100,000+ plants per acre. Watch the % germ on the seed tags and increase the seeding rate accordingly for lower % germ. The following article discusses seed mortality factors that were considered when determining the seeding rate recommendation above: http://www.ipm.iastate.edu/ipm/icm/2007/4-9/seeds.html

Date: Late April through mid-May is best as long as the soil is fit.

Depth: 1 to 1.5 inches, and never deeper than 2 inches. The ability of the germinating soybean seedling to push through a crusted soil decreases with deeper planting. Adequate soil moisture is the most important factor controlling soybean germination. Soybean seed must imbibe 50% of its weight in moisture for germination to begin. Germination will be significantly reduced if moisture levels in the seed fall below 20% after the seed swells and the seed coat splits. This is why agronomists recommend placing soybean seed into at least 0.5 inches of moist soil at planting. Under dry soil conditions, this may not be possible without planting the seed too deep.

Row space: In general, ISU research shows an average yield increase of 4.5 bu/ac for narrow rows (15 or 20") compared to 30" rows.

Soybean Inoculant: When, Where, and Why

In general, we consider adding rhizobia inoculum to soybeans if:

1) The field has no previous history of soybeans, or were not grown within the last 3-5 years.
2) Environmental factors occurred in the field that could negatively impact the survival of bacteria such as flood or drought. Even just a week of flooded conditions could be a problem.
3) The soil type is sandy; not a loam or silt loam.
4) The soil pH is too low for good bacterial development.

The following article covers this subject in more detail. Go to: http://cropwatch.unl.edu/soybean-inoculation-2015

FORAGES

Baleage

The Iowa Beef Center released a new ISU Extension publication on, *Make the Switch to Baleage*. It is available at: http://www.extension.iastate.edu/article/new-iowa-beef-center-publication-helps-producers-make-switch-baleage

Foliar Fungicides on Alfalfa

This week I intend to treat my alfalfa research trial with foliar fungicides, targeting a 6 to 8-inch canopy height. I recently summarized data from the past 4 years of research trials at the Northeast ISU Research Farm near Nashua that includes over 150 treated vs. non-treated comparisons. The following table provides an economic assessment from these trials. Trends favor fungicide use on 1st crop alfalfa with good yield potential (~2 ton/ac) and good hay prices.

Yield, % yield response to fungicide, and net return to 3 difference hay prices for individual crops during 2012-2015.

Year	Crop	Avg. DM yield of untreated control	Avg. % yield increase with fungicide treatment	Assumed hay prices below ($/ton) result in avg. net return to fungicide treatment ($/ac)[1]		
				$80/ton	$140/ton	$200/ton
2012	1st	1.83	12.13	-4.68	+10.56	+25.80
	2nd	1.84	2.81	-19.46	-15.30	-11.14
	3rd	1.13	7.27	-18.09	-12.90	-7.71
	4th	1.21	5.32	-19.67	-15.67	-11.67
2013	1st	2.23	13.28	2.52	+23.16	+43.80
	2nd	1.62	10.64	-7.86	+5.00	+17.86
	3rd	1.50	9.47	-12.54	-3.20	+6.14
	4th	1.34	9.50	-13.80	-5.40	+3.00
2014	1st	2.29	6.58	-12.10	-2.43	+7.25
	2nd	2.06	7.14	-12.30	-2.78	+6.75
	3rd	1.57	7.54	-14.70	-6.98	+0.75
	4th	1.48	No treatments			
2015	1st	2.30	10.08	-3.53	+12.57	+28.67
	2nd	2.29	8.80	-7.40	+5.80	+19.00
	3rd	1.96	9.30	-8.87	+3.23	+15.33
	4th	1.41	No treatments			

[1] The net return calculations include the average cost of fungicide plus application.

INSECTS

Handy Bt Trait Table Updated for 2016

The very popular " Handy Bt Trait Table" updated for 2016 is available at: http://msuent.com/assets/pdf/28BtTraitTable2016.pdf

Alfalfa Weevil

Egg hatch is underway in southern IA, starting in central IA, and about a week away from starting in northeast IA. Important temperature benchmarks are 200 degree days in southern Iowa and 250 degree days in northern Iowa. The current DD map at:

http://mesonet.agron.iastate.edu/data/summary/gdd48_jan1.png still shows less than 250 in northeast Iowa. The following 2014 article provides photos, egg hatch, scouting and thresholds: http://www.extension.iastate.edu/CropNews/2015/0414Hodgson2.htm

Bean Leaf Beetle

Normally, with a very mild winter (improves BLB winter survival) and warm conditions in April, we could have potential issues Bean Leaf Beetle on early soybean development. However, the basically non-existent population of BLB last year doesn't provide for much of an increasing population threat by this spring. So the threat this spring in northeast Iowa should again be minor and not require an insecticide seed treatment for this pest.

Black Cutworm

No significant trap catches yet. BCW pheromone traps across Iowa have had only a few light catches so far. Once we get significant catches we will comment about scouting and thresholds.

Common Stalk Borer Control in Corn – Getting Late for Option 1

For those that lose corn plants in the first few rows along grassy field borders or grass-back terraces, you may have a problem with Common Stalk Borer.

There are 4 basic options for controlling this pest. Option 1 tends to be the most effective if it can be done safely.

1) Right now, the over-wintering stalk borer eggs are on the dead grass residue. A controlled burn of the grass will destroy most of the eggs. Take the proper precautions: (a) Don't burn if roadside crews have established native plantings in your road ditches. (b) Be aware of roadside utilities (gas, electrical, communications) that could be damaged and you would be held liable. (c) Pay attention to 'no-burn' orders if droughty conditions exist in the county. (d) Be careful of other trash in ditches (discarded oil or gas cans, broken glass, etc.).

2) Some Bt corn controls or suppresses stalk borer, and some do not. Check the " Handy Bt Trait Table" for those products: http://msuent.com/assets/pdf/28BtTraitTable2016.pdf

3) You could wait for egg hatch and then treat those grassy areas with an insecticide. Egg hatch starts ~575 DD base 41, Jan. 1. We are currently at about 300 DD for northeast Iowa http://mesonet.agron.iastate.edu/cgi-bin/oa-gdd.py?year1=2016&month1=1&day1=1&year2=2016&month2=4&day2=17&base=41&max=86 and adding about 17 DD per day, trending towards initial egg hatch starting May 1.

4) You could wait for larval migration from the grass to the corn at which to apply insecticide on the grass field border and the first few rows of corn. This begins around 1,300 DD base 41, Jan. 1. We will track degree days and let you know when we approach this window. It often occurs around mid-June.

Review of 3 Soil Insect Pests Associated with Spring Manure or Sod Rotation to Row Crop

1) Seedcorn Maggot: Seedcorn maggots are occasional pests of both corn and soybean seeds at germination. Yield reduction occurs because of stand loss, and damage is more likely in cool, wet springs when the seeds are slow to germinate but the insects are still actively feeding. The greatest potential for seedcorn maggot damage exists when sod, weeds or fresh animal manure are incorporated into the soil just before planting. Decaying material attracts the adult flies where the females lay eggs. If manure has been spread on the field in spring, or a cover crop or sod or considerable weed biomass was disked or plowed this spring, consider using an insecticide seed treatment. If using a rootworm insecticide in continuous corn, the seed treatments are not usually necessary for seedcorn maggot control, although an ISU study at Ames in 2000 showed some inconsistencies with Force 3G and Capture 2EC on control of seed corn maggot. See photo of pest and additional information at: http://www.ipm.iastate.edu/ipm/icm/2001/4-23-2001/sclove.html

2) Wireworm: If you have had recent problems in a field with Wireworms, consider using an insecticide seed treatment. Problems are more likely to occur in corn following sod or CRP, but wireworm problems have been found in some corn-soybean rotations. Since wireworms can take up to 8 years to complete their life cycle, if wireworms were a problem in a field 2, 4 or 6 years ago, there is a good chance they will still be there this year. Insecticide seed treatments offer effective control. If using a rootworm insecticide in continuous corn, the insecticide seed treatment is not necessary for wireworm control. See photos of this pest at: http://www.ent.iastate.edu/imagegal/coleoptera/click/

3) White Grubs: As with most soil insects, it is difficult to predict when and where true white grubs will be found. Problems can be expected in cornfields following grass sod (pasture, CRP, etc.). But stand loss has also occurred in both continuous and rotated corn. In Iowa, the problem is usually, but not always, found adjacent to areas bordered by cottonwood or willow trees. Sometimes true white grubs are found far from trees and the reason for their occurrence in a field remains a mystery. Since white grubs can take up to 3 years to complete their life cycle, if they were a problem last year, they still could be a problem this year. Manure grubs associated with spring manured fields are much less of a threat, but have caused some stand loss on rare occasions. See the article linked below for more on manure grubs. The Nicotinoid seed treatments are very effective on white grubs. If using a rootworm insecticide, *i.e.* in continuous corn, the insecticide seed treatment is not necessary for white grub control. Additional information on control and ID of this insect is at: http://www.ipm.iastate.edu/ipm/icm/2002/4-15-2002/whitegrubs.html

DISEASES

2015 Evaluation of Commercial Seed Treatments on Soybeans

13 currently available commercial seed treatments were evaluated at three locations in Iowa. Cool, wet conditions occurred during early seedling development, however, tables of results linked in the article show no advantage to population or yield. For a summary of the report, go to: http://crops.extension.iastate.edu/cropnews/2016/04/2015-evaluation-commercial-seed-treatments-soybean-three-locations-iowa Even though there was no significant response to the seed treatments, a basic fungicide seed treatment is still recommended for cooler spring

conditions; and an insecticide seed treatment is recommended when dealing with insect threats mentioned above under the topic "Review of 3 Soil Insect Pests Associated with Spring Manure or Sod Rotation to Row Crop".

PESTICIDE BUREAU

Sensitive Crops Directory – Changes Coming in Summer

For years, Iowa Department of Agriculture and Land Stewardship (IDALS) has maintained a registry for producers to list the locations of their pesticide sensitive crops and for beekeepers to list the locations of their apiaries. This registry is used by pesticide applicators to identify the locations of sensitive crops and apiaries and minimize the potential for pesticide drift damage. The web site is: http://www.iowaagriculture.gov/Horticulture_and_FarmersMarkets/sensitiveCropDirectory.asp .

Changes are coming later this summer, as mentioned in the following recent news release: DES MOINES – Iowa Secretary of Agriculture Bill Northey and representatives from the Agribusiness Association of Iowa (AAI) Foundation will announce $25,000 in financial support from the AAI Foundation to assist Iowa in joining FieldWatch, Inc., a non-profit company that operates driftwatch™ and beecheck™ – voluntary online sensitive (specialty) crop and apiary registry programs. The funds will cover an initial one-time license fee of $24,500 and the remaining $500 will be used to purchase signage. Ongoing annual maintenance fees to participate in the program will be covered by IDALS. ***When the site becomes operational later this summer it will replace the Sensitive Crop Directory currently operated by the Department.*** FieldWatch, Inc., is a non-profit company that operates driftwatch™ and beecheck™ – voluntary online sensitive (specialty) crop and apiary registry programs. Originally created by Purdue University's Agriculture and Biological Engineering Department in 2008, Purdue collaborated with other agricultural stakeholders to create FieldWatch, Inc., in December of 2012. The programs have been adopted by 13 state departments of agriculture and a Canadian province. The driftwatch™ program is used by producers of sensitive crops and also for any apiary sites they may have. The beecheck™ program is used by apiarists (beekeepers only), but entries from both programs are available as combined databases to pesticide applicators and other end users. More information can be found by visiting: http://www.fieldwatch.com/home.html

EVENTS

June 7-9, A.I. Training, Dairy Center, Calmar

Three day, intensive hands-on class for those who wish to artificially inseminate their own cattle or gain experience to work for others. Class offered in partnership with Accelerated Genetics. For more information, go to: https://nicc.augusoft.net/index.cfm?method=ClassInfo.ClassInformation&int_class_id=50583&int_category_id=0&int_sub_category_id=0&int_catalog_id=0&upid=10513646&ebid=11981069&ebslid=726640&eblid=165

June 15-16, Four-State Dairy Nutrition and Management Conference, Dubuque

This conference presents the latest research on issues concerning the dairy industry including feed efficiency, calves, and transition cows. For more information, go to:

http://www.extension.umn.edu/agriculture/dairy/learning-opportunities/four-state-dairy-conference/index.html

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