Pest&Crop

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In This Issue

Insects, Mites, and Nematodes

Abbreviated Rootworm Management Guidelines for Indiana's First-Year Corn - (*John Obermeyer, Rich Edwards, and Larry Bledsoe*)

- The perceived risk of rootworm damage for first-year corn are given below in two risk categories, highest and lowest, by areas of Indiana
- Rootworm beetle numbers in 1999 were highest in northwestern counties, a mixed bag in other northern counties
- Rootworm beetle observations from 1999 soybean fields should be used to assess risk for damage to 2000's corn
- Producers and field personnel should be prepared to sample soybean fields this coming August for rootworm beetles

The following are the "bulleted" management guidelines for western corn rootworm (WCR) in first-year corn by perceived risk area. These risk areas were determined by random soybean sweeps at the peak population of WCR beetles and from pest manager's comments. Remember, the beetle numbers vary not only in states and counties but fields as well. It is no longer possible to determine rootworm risk to the 2000 corn. Sampling the WCR beetles in soybeans during this coming August will help one make informed decisions for the 2001 growing season. More on WCR beetle sampling in later issues.

Highest Risk - Northern Indiana:

- A soil insecticide is not needed for rootworm larval control in a field where *no, or very few, WCR beetles* were observed in 1999 soybean.
- Where *WCR beetles were consistently observed* in 1999 soybean, the application of a soil insecticide is probably justified in corn in 2000.
- In areas where rootworms have caused problems in first-year corn and one *did not monitor for WCR beetles* in 1999, a soil insecticide is probably needed in 2000.
- If planting after May 1, applying a reduced rate (75% rate) of some rootworm insecticides is probably a cost-savings, yet efficacious, option*.

Lowest Risk - Southern Indiana:

- A soil insecticide is not needed for rootworm larval control in 2000 first-year corn except in fields where WCR beetles were consistently observed in 1999 soybeans.

*For more information on WCR management guidelines on first-year corn, refer to the fact sheet *Managing Corn Rootworms – 2000*, which can be obtained from your county extension office or viewed on the web (http://www.entm.purdue.edu/Entomology/ext/targets/publicat.htm).

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Rootworm Insecticide Classifications and Consistency of Performance - (*John Obermeyer Rich Edwards, and Larry Bledsoe*) -

- Below are registered rootworm soil insecticides by chemistry class
- Follow label uses and restrictions
- Many factors should be considered before selecting a product

See table below.

Regent Soil Insecticide - (*John Obermeyer Rich Edwards, and Larry Bledsoe*) -

- Regent marketing efforts have created many questions
- The chemistry shows promise, the efficacy is suspect
- Convenient delivery system may sway some producers in low rootworm damage areas
- Formulation may have some first generation European corn borer efficacy

Many questions have arisen concerning Regent over the winter months. Aventis has done a good job peaking producer's curiosity with the prospect of a "free" in-furrow, application system ("OnePass") for their planter when agreeing to purchase 300 acres or more of product. The targeted marketing area seems to be the counties that have begun to see first-year corn rootworm damage. Obviously, this relatively new rootworm phenomenon found many producers without insecticide boxes on their planters. Also, producers contemplating a new planter purchase, but wanting to reduce costs such as granular insecticide applicators, are seriously considering this product.

Fipronil, the active ingredient of Regent, has shown to be a very active and effective insecticide in many crop and non-crop uses. However, equally important to a

	Organophosphates				Pyrethroid	Phenylpyrazol
Factors	chlorethoxyphos (Fortress 5G)	chlorpyrifos (Lorsban 15G & others)	tebupirimphos and cyfluthrin (Aztec 2.1G)	terbufos (Counter CR)	tefluthrin (Force 3G)	fipronil (Regent 4 SC)
Performance in test plots-band application						
Root damage rating[1,2]	2.8b	2.7b	2.3a	2.1a	2.3a	n/a
Consistency of performance (%)[3]	83	90	94	95	100	n/a
Performance in test plots - infurrow application						
Root damage rating [1,2]	2.7b	2.5ab	2.3a	2.2a	2.2a	–[4]
Consistency of performance (%)[3]	92	93	92	92	100	–[4]

1 Average root damage rating (Iowa 1-6 scale) in 12-20 tests over five years, where damage in the untreated plots exceeded 3.5, the damage level above which economic losses are likely to occur. All insecticides had less damage than the untreated plots, which averaged 4.67.

2 Values followed by the same letter are not significantly different according to Ryan-Einot-Gabriel-Welsch-Q test ($P<0.10$).

3 Percentage of tests where average damage rating was less than 3.5 when the untreated equaled or exceeded 3.5. Tests from 1993-1999.

4 Not enough data are available to rate the performance of this product.

good chemistry, is the need for proper formulation and placement of the product. This has been fipronil's difficulty through the year's of testing it as a soil applied rootworm insecticide. Year's ago in university trials, it showed great promise as a granular rootworm insecticide. Then in 1998, it was labeled and commercially available as a 80WG (wettable granular). This formulation had a tendency to clog the microtubes that delivered the product in-furrow and it readily settled out of suspension. After that fiasco, the company switched to a 4 SC for the 1999 season. With few user complaints, this appears to be the formulation they will now stay with.

University trials throughout the corn belt has shown erratic results with Regent in protecting the roots from rootworm. With little root rating data on the 4 SC formulation to compare, Regent usually protects roots better than the untreated check but provides less rootworm control than most labeled granular soil insecticides. Because of this trend, our suggestion is that this product may provide acceptable control for moderate to low populations of rootworm. At this time, we cannot recommend this product where high rootworm pressure may exist. Because fipronil is systemic in the plant, there is some control / suppression of low to moderate levels of first-generation European corn borer. How this product performs on secondary soil pests like white grub, wireworm or cutworm etc. has yet to be seen.

Regent must be applied in-furrow with the seed. Researchers believe the more gallons of carrier used at application, the better the efficacy. Do not apply Regent in less than 1 gallon of carrier per acre. It can be mixed or injected into the furrow (not 2X2) with "pop-up" fertilizer (not starter). Regent has a tendency to settle out and clog the lower hoses once the agitation system has been turned off for several hours. The 4 SC formulation supposedly reduces this problem, but it hasn't eliminated it. Do not allow any Regent to remain in the OnePass system once planting is done or significant line clogging will be likely for next year.

1999 Regent 4 SC Root Rating Performance[1]
Purdue University Trials

Location	Best^ Rating	Regent 4 SC	Check
Farmland, IN	1.15*	1.90*	3.10
Columbia City, IN	1.35*	2.10*	2.85*
Wanatah, IN	1.55*	3.25*	5.35
Wanatah, IN	1.68	3.12	5.12
Lafayette, IN	2.20*	3.25*	5.85
Lafayette, IN	1.70	2.90*	3.42*
Butlerville, IN	1.10*	1.20*	1.12*

[1]Iowa St. root rating (1-6 scale) 1 = none to little damage, 6 = severe root pruning, 3.5 or greater = economic damage likely

^The "Best Rating" is the least amount of rootworm damage for any soil insecticide in the plot.

*Means in the same row followed by an asterisk (*) do not significantly differ (P=0.05).

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ProShield Seed Treatment - (*John Obermeyer Rich Edwards, and Larry Bledsoe*) -

- ProShield is available in limited quantities for 2000
- Rootworm efficacy may be marginal
- More data is needed to evaluate its performance

Late last summer, Zeneca Ag Products and Novartis Seeds (now Syngenta) announced a new product called ProShield; a concentrate of Force insecticide (tefluthrin) attached to corn seed. Very limited supplies of NK brand seed with ProShield will be available for the 2000 growing season. The label states that "Force ST insecticide, when used at labeled rates, will protect germinating seeds and seedlings against injury by cutworm, Northern corn rootworm, seedcorn maggot, Southern corn rootworm, Western corn rootworm, white grub, and wireworms." It is labeled for field corn, popcorn, seed corn, and sweet corn. Force ST is applied to the seed during processing and placed in sealed plastic seed bags.

Efficacy data supplied by Novartis shows promise for this seed delivered insecticide control. Our skepticism comes from the fact that universities have had little time to test the product. We cannot recommend a product on one year's performance in independent trials. Those trials suggest that ProShield offers marginal corn rootworm larval control. Because tefluthrin is not systemic and insecticides generally have little horizontal movement in the soil, one cannot but wonder how a seed applied insecticide will protect the roots several inches away. The company explanation is that the patented process of micro-encapsulation and polymers gets it there. Seed treated with tefluthrin will probably be well protected from secondary insects, though there is little to no data to support this.

We are excited about the possibility of getting soil insect control using 40% of the active ingredient in a granular insecticide. As well, producers will likely welcome the convenience of applying a soil insecticide in this fashion. We look forward to sharing more information about this product from the 2000 growing season in future issues of the *Pest&Crop*.

Weeds

New Corn and Soybean Herbicides for Year 2000 - *(Case Medlin and Tom Bauman)* **-** Federal approval of the following herbicides is anticipated before the start of the growing season.

American Cyanamid

Backdraft – (labeled for 2000)
- Common name(s) – glyphosate and imazaquin (active ingredient in Scepter)
- Formulation – 1.5 lb ai / gal – 1.25 lb glyphosate & 0.25 lb imazaquin
- Use –preplant burndown, and postemergence in **Roundup Ready Soybean Only**
- Rates – 1.5-2.0 qt / A, equivalent to 0.468-0.625 lb glyphosate and 8-10.7 oz Scepter 1.5L
- Restrictions - apply postemergence only in **Roundup Ready Soybean**
- Weeds controlled – most annual grasses and broadleaves
- Rotation Restrictions – 3 months for wheat, 9.5 months for non-IMI corn and 18 months for legumes and other small grains

Extreme – (labeled for 2000)
- Common name(s) – glyphosate and imazethapyr (active ingredient in Pursuit)
- Formulation – 2.17 lb ai / gal – 2 lb glyphosate & 0.17 lb imazethapyr
- Use –preplant burndown, and postemergence in **Roundup Ready Soybean Only**
- Rates – 3 pt / A, equivalent to 0.75 lb glyphosate and 0.25 pt Pursuit 2L
- Restrictions - apply postemergence only in **Roundup Ready Soybean**
- Weeds controlled – most annual grasses and broadleaves
- Rotation Restrictions – 4 months for wheat and alfalfa, 8.5 months for non-IMI corn

Bayer

Axiom AT – (labeled for 2000)
- Common name(s) – flufenacet, metribuzin, and atrazine
- Formulation – 75% dry flowable; 19.6% flufenacet, 4.9% metribuzin, & 50.5% atrazine
- Use – pleplant surface, preplant incorporated, and preemergence in corn
- Rates – 9 to 16 oz / a
- Weeds controlled – pigweed, lambsquarters, common ragweed and most annual grasses
- Rotation restrictions
  – don't plant small grains, clover, or alfalfa the same year
  – don't plant soybean the following year if a calcareous soil
  – none for corn or grain sorghum

Domain – (labeled for 2000)
- Common name(s) – flufenacet and metribuzin
- Formulation – 60% dry flowable; 24% flufenacet & 36% metribuzin
- Use – preplant surface, preplant incorporated, and preemergence in soybean
- Rates – 9 to 16 oz / a (3 to 6 weeks of control)
- Precautions – avoid use on calcareous soils with pH 7.5 or higher
  – must plant a metribuzin tolerant variety
- Weeds controlled – pigweed, lambsquarters, common ragweed and most annual grasses
- Rotation Restrictions – may plant small grains and legumes the following year

Dow AgroSciences

Pendimax – (labeled for 2000)
- Same active ingredient and formulation as Prowl 3.3 EC

Monsanto

Degree – (labeled for 2000)
- Common name(s) – acetochlor (same active ingredient as Harness)
- Formulation – 3.8 lb ai / gal acetochlor
- The acetochlor is microencapsulated in a thermo-activated polymer which will not release the acetochlor until soil temperature reach 50°F
- Use – preplant incorporated, preemergence, or postemergence
- Rates – 2.25 to 6.25 pt / A
- Restrictions - do not apply postemergence after corn is 11 inches tall
- Weeds controlled – pigweed, lambsquarters, and most annual grasses
- Rotation Restrictions – 12 month for soybean, 4 months for wheat, 12 months for grain sorghum, and 24 months for other small grains and legumes

Degree Extra – (labeled for 2000)
- Common name(s) – atrazine and acetochlor (same active ingredient as Harness)
- Formulation – 4.04 lb ai / gal – 1.34 lb atrazine & 2.70 lb acetochlor
- The acetochlor is microencapsulated in a thermo-activated polymer which will not release the acetochlor until soil temperature reach 50°F
- Use – preplant incorporated, preemergence, or postemergence prior to 11-inch corn
- Rates – 2.9 to 3.7 qt / A
- Restrictions - do not apply postemergence after corn is 11 inches tall
- Weeds controlled – pigweed, lambsquarters, and most annual grasses

- Rotation Restrictions – 12 month for soybean, 4 months for wheat, 12 months for grain sorghum, and 24 months for other small grains and legumes

Ready Master ATZ – (anticipated label in 2000)
- Common name(s) – glyphosate and atrazine
- Formulation - 4.02 lb ai / gal - 2.02 lb ai glyphosate & 2.0 lb ai atrazine
- Use - postemergence for Roundup Ready Corn Only
- Rates - 1.5 qt / A will be equivalent to 24 oz Roundup + 0.75 lb ai / A atrazine
  - 2.0 qt / A will be equivalent to: 32 oz Roundup + 1 lb ai / A atrazine
- Restrictions – do not apply postemergence after corn is 12 inches tall
- Weeds controlled – most annual grasses and broadleaves
- Rotation restrictions – don't plant small grains, clover, or alfalfa the same year
  – don't plant soybean the following year if a calcareous soil

Novartis

Boundary
- Common name(s) – metolachlor and metribuzin
- Formulation – 6.3 lb / gal s-metolachlor and 1.5 lb / gal metribuzin
- Use –preplant incorporated and preemergence soybean
- Rates – 1 to 2.5 pt / A
  – 1.5 pt / A is equivalent to 1.24 pt / A Dual II Magnum & 6 oz / A Sencor DF
- Precautions – avoid use on calcareous soils with pH 7.5 or higher
  – must plant a metribuzin tolerant variety
- Weeds controlled – pigweed, lambsquarters, common ragweed and most annual grasses
- Rotation Restrictions – 4 months for corn and alfalfa, 4.5 months for wheat, and 12 months for other small grains and legumes

Glyphosate Formulations for Use in Roundup Ready Soybean
Read the label for restrictions and adjuvant requirements

Company	New Product	Old Active Ingredient	Similar To
Dow AgroSciences	Glyphomax	glyphosate	Roundup Original
	Glyphomax Plus	glyphosate	Roundup Ultra
Nufarm	Credit	glyphosate	Roundup Original
	Debit	glyphosate	Rodeo
Zeneca	Touchdown 5	glyphosate	Roundup Ultra

Agronomy Tips

Planter Maintenance: There's Still Time! – *(Bob Nielsen)* - Uniform stands of corn are important for achieving full yield potential from those bags of expensive seed corn that you buy and plant. Uneven plant-to-plant spacing and / or emergence can reduce yield potential by seven to 15 bushels per acre, with little hope of ever recovering that difference by the end of the growing season.

Be sure to inspect your planter now while there's still time to replace worn parts and make adjustments. If you don't have the time or skills, then make arrangements for your dealer to service your planter. Here are some tips and guidelines for planter maintenance items. More specific help is available from your friendly, neighborhood planter dealer.

After planting is completed...

Hopefully, you already completed these items shortly after you finished planting last spring. Put them on your "to-do" list for the end of the coming planting season.

- One of the most important strategies for avoiding excessive "weathering" of your planter is to protect the planter from the elements in the off-season. Ideally, store the planter indoors. If this is not possible, then at least store it under cover outside.
- Thoroughly lubricate all chains and bearings. Clean disc openers and coulters; apply rust preventive "paint" to avoid rust buildup. If practical, remove the planter chains and soak in oil until the next planting season.

Pre-season maintenance

Take advantage of spring fever (or cabin fever!) during the winter and go over your planter with the proverbial fine-toothed comb. A precursor to this activity is to locate the planter's operations manual and browse through it to refresh yourself on important pre-season maintenance activities.

- Check and replace all worn out parts.
- Ensure that coulters and disc openers are aligned accurately to ensure accurate furrow opening and seed placement.
- On Case™ planters, replace any worn seals and check the trueness of fit of the seed drum to ensure uniform air pressure and accurate seed metering.
- Adjust or replace worn disc openers. Worn openers cut "W"-shaped furrows rather than "V" and may interfere with accurate seed positioning and seed firming. Adjust the shims of the openers so that bottoms of the openers just touch. Replace the openers when it is no longer possible to adjust their closeness.
- Replace worn planter chains or rusty, stiff chain links. Less than smooth operation of planter chains decreases seeding accuracy.
- Inflate tires to their proper air pressure. Under- or over-inflated drive tires influence the accuracy of the planter transmission settings for seed drop.
- Clean seed tubes and monitor sensors. Seed treatment residues interfere with accuracy of monitor sensors. Mouse nests have a bit of influence on uniformity of seed drop through the seed tubes.
- Check the bottom of each seed tube for wear that changes the shape of the tube opening and influence the final trajectory of the seed dropping from the seed tubes.
- For finger-pickup type planters, check the finger-pickup backplates for rust buildup and seed treatment residues. Excessive buildup of either rust or seed treatment residues may cause jerky movement of the finger mechanism. Excessive rust buildup can also scarify or damage the corn kernels, resulting in decreased seed quality the moment you plant the seed. Also,
  - Check for worn down 'dimples' on the backplates. If worn down, more double seed drops will occur.
  - Check and adjust the tension on the fingers. Misadjusted finger pressure directly affects the ability of the unit to accurately singulate seed.
  - Check the condition of seed conveyor belt. Age and lengthy exposure to seed treatment residues results in brittleness that interferes with the smooth travel of the belt. Remember that perfect singulation by the seed metering unit may be offset by interference with the seeds' travel to the furrow.
- Finally, CALIBRATE THE PLANTER!

Planter calibration

All the maintenance in the world is for naught if you head to the field without calibrating the planter. Difference among seed lots can influence planter calibration. Obviously, using a single planter for both corn and soybean planting influences calibration. Time spent calibrating a planter is time well spent.

- For pneumatic planters (air or vacuum), calculate the seed weight for each seed lot you will be seeding. Do this by simply dividing the number of seeds per bag by the weight of the bag. Both values are listed either on the seed tag or on the bag itself. For example, an 80,000 seed bag divided by 50 lbs equals 1600 seeds per lb. From the operations manual, identify the correct pressure (air or vacuum) for the calculated seed weight. Finally, identify the correct seed disc (or drum) for the calculated seed weight. Do this for

each seed lot you have purchased and record the results somewhere that will be easily accessible during planting.

- From the planter's operations manual, identify the correct transmission setting for your desired seeding rate.
- Calibrate actual seed drop with the planter transmission settings and the planter monitor readouts. Do the calibration at normal planting speeds and seeding rates under as close to field conditions as possible (not simply down the farm lane!). One trick to simplify locating seed in the furrow without a lot of digging is to temporarily tie up the closing wheels on one or more units during the calibration operation.
- While you're at it, calibrate any pesticide and fertilizer planter attachments at same time. Application rates can easily change from year to year.
- Check that the planter toolbar is parallel to the soil surface when the planter is in the ground and running. The consequences of not being parallel with the ground affect disc opener depth, press wheel efficiency, and the adequacy of seed to soil contact.

Bottom line

A little attention and tender loving care paid to your planter now will pay big dividends later in terms of more uniform stands of corn and higher grain yields. The beauty of this advice is that most of the maintenance and adjustments necessary for bringing a planter into shape are relatively inexpensive, while the potential returns in yield can be quite large.

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Y2Dry? Should Indiana Farmers Plan for a 2000 Drought? – *(Bob Nielsen)* - Much of Indiana has received less than normal rainfall since mid-summer 1999. Soil moisture reserves are currently very low, especially in the northern half of Indiana. Some forecasters are predicting widespread drought for this coming growing season. What plans, if any, should Indiana corn and soybean farmers develop to manage the effects of a possible drought in 2000?

Yes, we are dry ...

As of 22 February, the National Drought Mitigation Center (http://enso.unl.edu/monitor/monitor.html) characterized much of the northern half of Indiana as being in a **Level 2** or severe drought stage (level 4 being the worst). Numerous reports have been received (post hole digging, grave digging, tile repair) testifying to the dryness of the subsurface soils throughout much of the area. Precipitation for the past nine to twelve months has been below normal.

But, the outlook is not exactly droughty ...

Fortunately, current long-range weather forecasts from the NOAA Climate Prediction Center (http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page3.gif) are not particularly dry in their predictions for precipitation for our area of the Corn Belt through early to mid-summer. Granted, none of the monthly forecasts are predicting above normal rainfall, but few are calling for significant chances of below normal rainfall either. Nonetheless, some private forecasters are predicting strong probabilities for a major drought occurring somewhere in the Corn Belt this coming crop season. Those forecasts plus the current dry subsoil situation throughout northern Indiana are making quite a few farmers nervous about the prospects for drought stress on corn and soybeans in 2000.

Planning for drought ...

Planning for drought stress is not necessarily a smart move for Indiana corn and soybean growers. Historically, the odds are in our favor for sufficient rainfall to grow crops. Planning for drought is somewhat like planning to fail. Nonetheless, there are a few agronomic options available for those bent on planning for a drought.

Tillage operations ...

Minimize the number of tillage operations you plan on performing on your fields yet this spring. Reducing tillage trips will lessen the opportunity for further evaporative soil moisture loss. An added benefit is that your overall fuel expense will also decrease. Where soils are suitable or adaptable (moderate- to well-drained), consider foregoing tillage altogether and implementing a no-till cropping system instead. Crops will benefit later in the season from conserved soil moisture.

Variety selection ...

By now you should have been working closely with your seed dealer to identify high-yielding varieties with excellent drought tolerance, early season vigor and stable yield performance. High population tolerance is often related to drought tolerance and thus can be used as an indirect indication of drought tolerance in a hybrid. Early season vigor is important for encouraging healthy, vigorous stands of corn or soybean that will better tolerate stresses later in the season. Stable yielding ability means the ability to yield at a relatively constant level no matter the growing conditions. Corn hybrids that are bin-busters in excellent weather, but fall apart under stress are not the hybrids of choice if drought is looming in your future.

Seeding rate selection …

Many factors influence the choice of the "correct" seeding rate for corn hybrids. Generally speaking, hybrids with small crop canopies, good to excellent stalk health characteristics and little ear size flexibility perform best at higher seeding rates. Conversely, hybrids with large crop canopies, average to poor stalk health characteristics and significant ear size flexibility do not require as aggressive a seeding rate.

To a large degree, seeding rate selection can be based on the historical production level for a given field and / or hybrid. Where yields are consistently greater than about 125 bushels per acre, optimum seeding rates range from about 28,000 to 33,000 seeds per acre. For conditions where 100 to 125 bushels are the norm, optimum seeding rates are about 24,000 seeds per acre. Where historical yields are less than 100 bushels per acre, seeding rates should be closer to about 20,000 seeds per acre.

Obviously, if one is confident that a major drought will occur this year that will drop yields below 100 bushels per acre, then one may consider dropping the seeding rate to 20,000 seeds per acre in anticipation thereof. HOWEVER, if your historical yields are greater than 125 bushels per acre and the drought does not develop, then you have pretty well guaranteed that you will not attain the maximum yield potential of that field if you drop your seeding rates.

Furthermore, most of today's hybrids are much more tolerant of stresses in general than the hybrids of ten to fifteen years ago. Hybrids that perform well with final stands in the upper 20's will likely perform well at the same populations under dry conditions. So, my advice is to not stray far from your usual choice of seeding rates even if you are concerned about a possible drought in 2000.

Seeding depth ...

If seedbed conditions are dry at planting time, then your main objective should be to place the seed in uniformly moist soil. If necessary, corn can be planted as deeply as 3 inches if that is the depth where seedbed moisture is uniform. Soybean, on the other hand, should not be planted much deeper than 1 inches deep because of the difficulty created for the emergence of the hypocotyl or "shepherd's crook" of the seedling.

Seeding into a dry seedbed ...

If soil is bone-dry at planting, but you anticipate rainfall in the near future, go ahead and plant. Recognize that seed stores as well in a dry seedbed as in a dry seedbag! Those of you that experienced the "Great Drought of 1988" should remember those fields planted in late April that finally germinated and emerged perfectly in late July once enough rainfall occurred. Insect and disease activity are generally less in dry soils. Having the seed already planted also avoids further planting delay after rain does occur.

Planting date ...

Early planting helps avoid the usual summer heat and dry stress conditions during flowering, especially for corn. In fact, this factor was one of several that helped the 1999 corn crop in Indiana yield as well as it did given the dryness and several hot spells that much of the state endured. So, be well prepared to head for the fields as soon as the soil is fit and temperatures are reasonable. Historically, those conditions occur from about early April in southern Indiana to late April in northern Indiana.

Fertilizer N decisions ...

If you feel strongly that a major drought is imminent and your corn crop will suffer severely, then consider hedging your nitrogen bets by foregoing pre-plant nitrogen fertilizer in favor of sidedress N applications. Apply 20 to 40 lbs. N in your starter fertilizer. Assess crop condition prior to sidedress time. If the crop is struggling with drought stress, you may opt to apply less N at sidedressing if you anticipate significant yield decreases due to drought. In the worst case scenario, you may opt to not apply any further N if the crop is heading toward total disaster. On the other hand, remember that a rainy June may create problems for you in terms of covering all of your corn ground at sidedressing time.

Irrigation issues …

Corn requires from 16 to 25 inches of water (rain, irrigation, & soil) to produce a crop of grain. Critical times for avoiding water deficits are stand establishment (emergence to knee-high), determination of potential ear size (knee-high to shoulder-high), pollination and the grain filling period. Of these time periods, drought stress at pollination can impact grain yield the most. Maximize irrigation efficiency by matching irrigation use with rainfall and crop demands. Minimize costs and maximize yields by implementing formal irrigation scheduling procedures. A comprehensive Web site on numerous irrigation issues is available at the University of Nebraska-Lincoln (http://www.ianr.unl.edu/pubs/irrigation/).

Summary …

Historically, drought is not something folks should generally plan for in the eastern Corn Belt. Implement sound agronomic strategies to encourage a vigorous crop and aim for "normal" yields, but adjust for soil and crop conditions where feasible.

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Welcome to the 2000 Season of the *Pest&Crop* Newsletter. This is the fourteenth year of this interdisciplinary offering. The *Pest&Crop* is divided into several sections: Insects, Mites and Nematodes; Weeds; Plant Diseases; Vertebrates; Agronomy Tips; Bits and Pieces; Pest Management Tips; Gleaning the Fields of Agriculture; Sightings From The Field; and Weather Update. Appropriate information on research results, pesticide certification training, pest management and crop production workshops / meetings, field diagnostic training, etc., will also be included. We anticipate that approximately 30 *Pest&Crop*'s will be produced in 2000.

As in the past, each *Pest&Crop* article will include the name(s) of the individual(s) responsible for the article. As before, these individuals stand ready to assist you if questions arise. In this issue, we have included a listing of all the specialists in the supporting departments. You will want to keep this in a handy place for future reference. In a future issue, you will find the primary contributor's pictures, telephone and fax numbers, and e-mail addresses.

If your mailing address changes or you are not receiving the *Pest&Crop* on a timely basis, be sure to let me know! We wouldn't want you to miss a single issue! We hope that this year's *Pest&Crop* will be of great value to you and your operation.

Remember, the *Pest&Crop* can be viewed at the following Web address: *http://www.entm.purdue.edu/entomology/ext/targets/newslett.htm* THANKS!!

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