Purdue Cooperative Extension Service

September 2, 2005 - Issue 23

In This Issue

Insects, Mites, And Nematodes

Inspect Seed Production Soybean for Bean Leaf Beetle Pod Feeding - *(John Obermeyer, Christian Krupke, and Larry Bledsoe)*

- Inspect for bean leaf beetle feeding on pods.
- Pod damage may result in poor seed quality.
- Green pods are more attractive than yellow ones.
- Management threshold depends on several factors.

While sweeping soybean fields for western corn rootworm beetles over the past several weeks, we saw varying numbers of bean leaf beetles. Overall the bean leaf beetle numbers are low and of little concern to commercial production fields. Soybeans grown for **seed** should be monitored as leaves begin to yellow and pods remain green. Bean leaf beetles scar the surface of pods, but only occasionally feed through the pod to the developing beans. During pod maturation, this scar often cracks leaving an entry hole for air borne plant pathogens that may cause discolored, moldy, shriveled, and/or diseased beans.

Bean leaf beetle feeding on pods

It is important for pest managers to be able to predict whether economic damage will occur based on the types and numbers of beetles that are present and the stage of pod development (i.e., green, yellow, yellow-brown, or brown pods). Once the pods turn yellow to yellow-brown, they become less attractive and less susceptible to damage. Control is normally not warranted from this point on (see the following table).

Bean leaf beetle pod scarring

Randomly select 2 plants in each of 5 areas of the field and count the number of pods per plant and the number that show damage (10 total plants). Figure the percentage of damaged pods per plant for the field as a whole. Note if the pods are green, beginning to turn yellow, or are yellow/brown. Also determine the number of beetles per sweep using an insect sweep net. Take 5 sets of 20 sweeps in the field. Determine the number of bean leaf beetles per sweep. Additionally, note whether beetles are still actively feeding while surveying the field.

There has been considerable interest in bean leaf beetle and its association with bean pod mottle virus. Bean leaf beetle is one of major beetle-vectors of this disease. They spread the virus by feeding on infected plants, ingesting the virus with plant tissue, and then regurgitating gut content after moving to and feeding on an uninfected plant. Bean pod mottle virus symptoms at harvest include green stem and hilum bleeding. Treatment for bean leaf beetle to reduce bean pod mottle virus this time of the year is not recommended, as most disease transmission occurs early in the season.

Use the following table to determine when a treatment may be necessary.

	No. of Beetles Per Sweep in 30 Inch (7 Inch) Row Spacing		
Pod Injury Level	**Less Than 4(3)**	**4(3) to 7(5)**	**More Than 7(5)**
0 to 8%	Discontinue sampling	Sample again in 5 days	Control (preventive) if pods still green
8 to 12%	Sample again in 5 days	Control if pods are still green	Control if pods are green to yellow
Over 12%%	Control if pods are still green and beetles are present	Control unless pods are completely dry	Control unless pods are completely dry
Table modified from the University of Illinois.			

No Reports of Hessian Fly Damage in 2005 – (*Sue Cambron*)

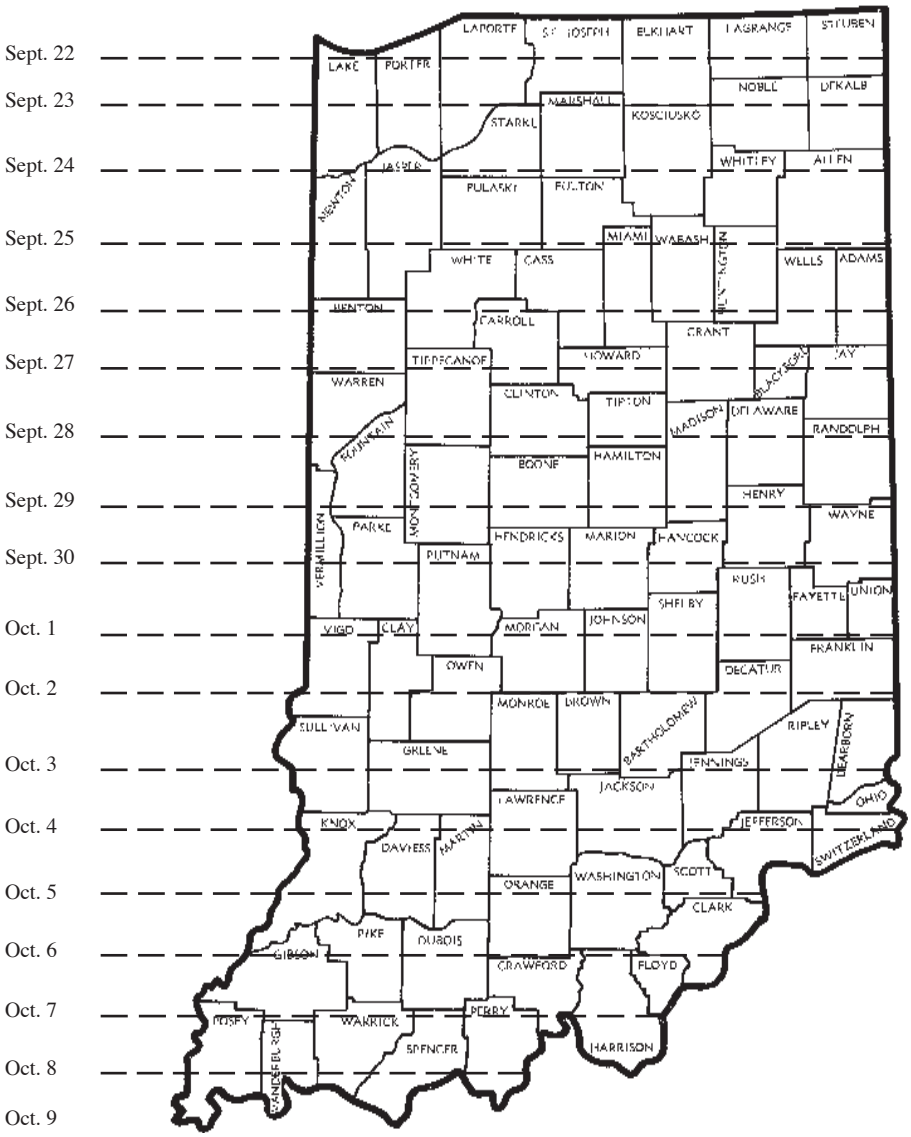
- Planting after the fly-free date is a key management strategy for reducing Hessian fly problems.
- Destruction of volunteer wheat helps reduce insect reservoir to avoid spring infestations.

The Hessian fly is present in wheat-growing areas throughout Indiana and often survives, although in lower numbers, in wheat stubble or grasses during the summer. No fly damage was reported in Indiana in 2005, however there is potential for rapid increase of fly populations as a result of weather conditions or cropping practices that favor survival of eggs and young larvae in the fall.

Much of the fall fly population can be avoided by planting after the fly-free date. This is key to avoiding subsequent infestation by the spring brood. Additionally, it has been shown that following the fly-free date will help reduce wheat disease problems and reduce winter-kill from excessive growth. Crop rotation, where wheat following wheat is avoided, also is one of the key management strategies for reducing Hessian fly problems.

The Hessian fly passes the summer in the stubble of the current wheat crop. Plowing the stubble results in the destruction of the pest. Volunteer wheat germinates and begins growing just in time for the fall emergence of the Hessian fly. These plants are readily infested resulting in a rapid build-up of the population. Removal of volunteer wheat before the emergence of the fall brood greatly reduces the insect reservoir for a spring infestation.

If weather conditions this fall are mild there could still be an infestation of flies that survive on surrounding grasses, so following the fly-free dates for planting is always recommended.



"FLY-FREE" DATES FOR SEEDING WHEAT

Black Light Trap Catch Report - (*John Obermeyer*)

	8/16/05 - 8/22/05							8/23/05 - 8/29/05						
County/Cooperator	**VC**	**BCW**	**ECB**	**SWCB**	**CEW**	**FAW**	**AW**	**VC**	**BCW**	**ECB**	**SWCB**	**CEW**	**FAW**	**AW**
Dubois/SIPAC Ag Center	0	3	9	0	3	0	9	1	12	56	0	32	0	56
Jennings/SEPAC Ag Center	0	1	21	0	13	0	10	0	0	148	0	14	0	7
Knox/SWPAC Ag Center	0	2	6	0	0	0	2	0	2	5	0	3	0	3
LaPorte/Pinney Ag Center	0	0	46	0	1	0	1	0	0	48	0	1	0	12
Lawrence/Feldun Ag Center	0	6	14	0	15	0	16	0	4	158	0	20	0	52
Randolph/Davis Ag Center	0	0	3	0	8	0	0	0	1	19	0	5	0	25
Tippecanoe/TPAC Ag Center	0	3	21	0	8	0	20							
Whitley/NEPAC Ag Center	0	6	40	0	2	0	28							

VC = Variegated Cutworm, BCW = Black Cutworm, ECB = European Corn Borer, SWCB = Southwestern Corn Borer, CEW = Corn Earworm, FAW = Fall Armyworm, AW = Armyworm

Weeds

Weeds to Look Out For – (*Bill Johnson and Glenn Nice*)

As we move into the latter part of the growing season, we wanted to take this opportunity to discuss a few perennial weed management issues pertinent to the 2005 growing season. As the crops mature and we begin to run the combines through the fields, we will have the opportunity to assess the effectiveness of this years weed management programs and plan fall activities to manage perennials.

Dandelion. Spring and in-season dandelion control in the northern and eastern parts of Indiana was a challenge in 2005. This was due primarily to the fact that 1) dandelion is tougher to control in the spring than in the fall and 2) we experienced dry weather in the early part of the spring and herbicide applications made in May and June were challenged by lack of adequate soil moisture and drought stressed plants. In several instances we observed severe stand loss in corn due to heavy dandelion infestations. The most effective treatments for reduce infestations of dandelion includes the use of fall treatments. Here are a few treatments to consider for fields with heavy dandelion infestations. If it is undecided on whether corn or soybean will be grown in a field, use 2,4-D (1 qt/A of 4 lb ai/gallon formulations) + glyphosate (0.38 to 0.56 lb ae/A). For fields going to soybean, Canopy EX or Synchrony + Express + 2.4-D or glyphosate has been very effective in our research plots. For fields going to corn, Simazine + 2,4-D or Basis + 2,4-D has also worked well in our plots. Apply all treatments when dandelion are at least 4 inches in diameter and after a light frost for best results. The optimal timing will likely occur sometime between mid October and mid November. There are a number of spring treatments that can provide good activity, but in general, we have had very consistent success with the fall treatments listed above on controlling dandelion.

Pokeweed. Pokeweed really appeared to take off in 2005 and was evident in more fields than I can remember in the recent past. As in 2004, we observed a large number of fields where the pokeweed really took off in early June and reach 3 to 5 feet tall before it was sprayed. Although, we now observe a lot of dead above ground tissue, keep in mind that this weed is a perennial, the root balls can be very large, and effective, long-term control with 1 herbicide application is unlikely. As you walk or combine soybean and corn fields, look for new pokeweed sprouts from the base of “dead” plants, particularly in areas where soybean canopy development is poor. After combining, if live actively growing leaf tissue is present and effective spray coverage can be achieved, consider a fall treatment of glyphosate (1.1 to 1.5 lb ae/A) + 2,4-D (0.5 to 0.75 lb ai/A) or dicamba in late September or early October, but before a frost. Since pokeweed is an erect herbaceous perennial, the above ground tissue will be damaged or killed by frost.

For fields that have both pokeweed and dandelion, the optimal herbicide timing will likely be prior to a frost. Treatments after a frost may not be effective on pokeweed, but will likely be effective on dandelion. Tree species such as sugar maples and cedars are occasionally problematic in our no-till systems. For fields that have both pokeweed and tree species such as maples, consider using dicamba + glyphosate rather than 2,4-D + glyphosate. Dicamba will be more effective on tree species than 2,4-D. These applications should be made before frost as well. A key consideration for maple control will be the ability to make applications when live leaf tissue is present. If tree leaf tissue is not present, the best option may be to aggressively till the areas where the trees are present. Typically the maple tree infestations are patches on the downwind side of established maple trees growing in years or along field edges.

Agronomy Tips

Take Time Now to Evaluate Hybrid Plots - (*Bob Nielsen*)

Even though the 2006 growing season is almost eight months away, growers are feeling the urge and, more importantly, the sales pressure to consider their hybrid purchasing decisions now. Obviously, the major objective of hybrid selection by growers should be to identify hybrids with consistent yield performance. The term "consistent performance" simply refers to a hybrid's ability to yield well across a range of growing conditions.

Identifying consistent hybrid performers requires comparative yield data from a number of locations and, ideally, across several years. Growers should routinely ask for and study such widespread yield performance data from their seed dealers as well as from other public sources of yield data (universities, county Extension plots, and other local trials) before selecting hybrids for next year.

In addition to yield data, growers should take advantage of the opportunities now to walk seed company or on-farm variety trials and evaluate other hybrid characteristics that may be of importance to their purchasing decisions. It seems like you see signed on-farm variety trials every other mile as you drive through the countryside this time of year. Seed corn company field days seem to be happening everywhere you look these last days of August and into early September and every one will highlight their lineup of hybrids with signed plots.

Just don't walk along the front of these plots, but take the time to walk into the plots and carefully evaluate hybrid characteristics like plant & ear height, late-season leaf & stalk health, standability, relative maturity, brace root development, husk coverage of the ear, and ear size. Just don't make mental notes, but rather take the effort to record the hybrid numbers and your observations about each. Such information plus that available from seed company literature plus comparative yield performance data will help growers make more informed hybrid purchasing decisions.

Remember that successful corn growers understand the difference between purchasing crop production inputs versus being sold crop production inputs.

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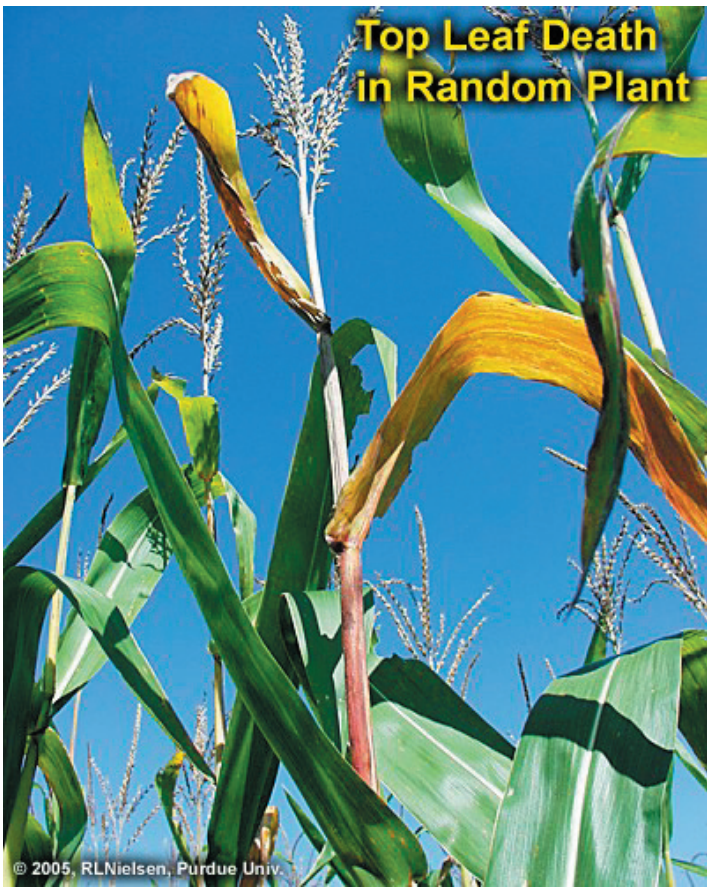
Top Leaf Death in Corn - (*Bob Nielsen*)

If you have been watching corn or popcorn fields lately as you drive through the countryside, you may have noticed what seems like an unusual pattern of leaf senescence (the natural age-related deterioration and ultimately death of plant tissue) as this year's crop nears the end of the season. Leaves in these fields are dying from both the top and the bottom of the plants, with green leaves remaining in the middle. In some fields, the death of the upper leaves prior to lower ones is very striking and gives the fields an unusual golden "glow" against the morning or evening sun.

Some of the guys down at the Chat 'n Chew Café say they remember that corn usually "dies" or "matures" beginning at the bottom of the plant and moving to the top, not both ends progressing toward the middle. What gives?

Death of top leaves may occur from one or more of several factors and may be partially distinguished by whether all plants are affected or only random plants throughout a field. The ultimate effect on grain yield obviously depends on how early in the grain-filling period the death of the upper leaves occurs.

- Interestingly, the **pattern of simultaneous upper and lower leaf senescence may not be that unusual from a physiological perspective**. Canadian researchers (Tollenaar & Daynard, 1978) documented this same pattern of senescence among ten adapted dent corn hybrids in trials conducted in the mid-1970's. Furthermore, a faster rate of leaf senescence during one of the years of the study was attributed to a warmer, drier weather pattern during the grain fill period that accelerated the rate of grain filling (sound familiar in 2005?). More recent research (Valentinuz & Tollenaar, 2004) suggested that this pattern was particularly evident in good grain yield growing conditions. For many Indiana cornfields in 2005, the top-bottom pattern seems to occur most frequently in fields experiencing moderate to severe drought stress since pollination. This "natural" pattern of upper leaf senescence usually affects all plants within a field or within areas of fields.
- Death of top leaves can also be a **direct result of severe drought stress** as plants struggle to maintain leaf health during periods of soil moisture deficits and high transpiration during the grain-filling period. Such leaf death is usually preceded by a gray-green color and wilting of the upper leaves. This drought-related pattern of upper leaf senescence often affects all plants within the drought-stressed areas of affected fields.
- Death of upper leaves and stalks can be the **result of infection by anthracnose** (Lipp & Mills, 2001; Munkvold, 2002). With anthracnose "die-back" or "top-kill", black lesions are visible on the outer stalk tissue behind the leaf sheaths (Munkvold, 2002). This fungal disease can be particularly damaging if it significantly shortens the grain-filling period resulting in premature kernel black layer development . Such disease-related pattern of upper leaf senescence usually occurs more randomly from plant to plant rather than affecting all plants within a field or area of field.
- Finally, death of top leaves can be the **result of European corn borer (ECB) or Southwestern corn borer (SWCB) tunneling damage to the upper stalk itself or girdling of the leaf sheath attachments at the stalk nodes**. Such damage to the upper corn plant from ECB is fairly common in many fields throughout the state. I've also seen SWCB damage in the upper corn stalk this year in my field research at the Southeast-Purdue Ag Center near Butlerville. Such insect-related pattern of upper leaf senescence usually occurs more randomly from plant to plant rather than affecting all plants within a field or area of field.



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For other Corny News Network articles, browse through the CNN Archives at <www.kingcorn.org/news/archive.html>.

For other information about corn, take a look at the Corn Growers' Guidebook at <www.kingcorn.org>.

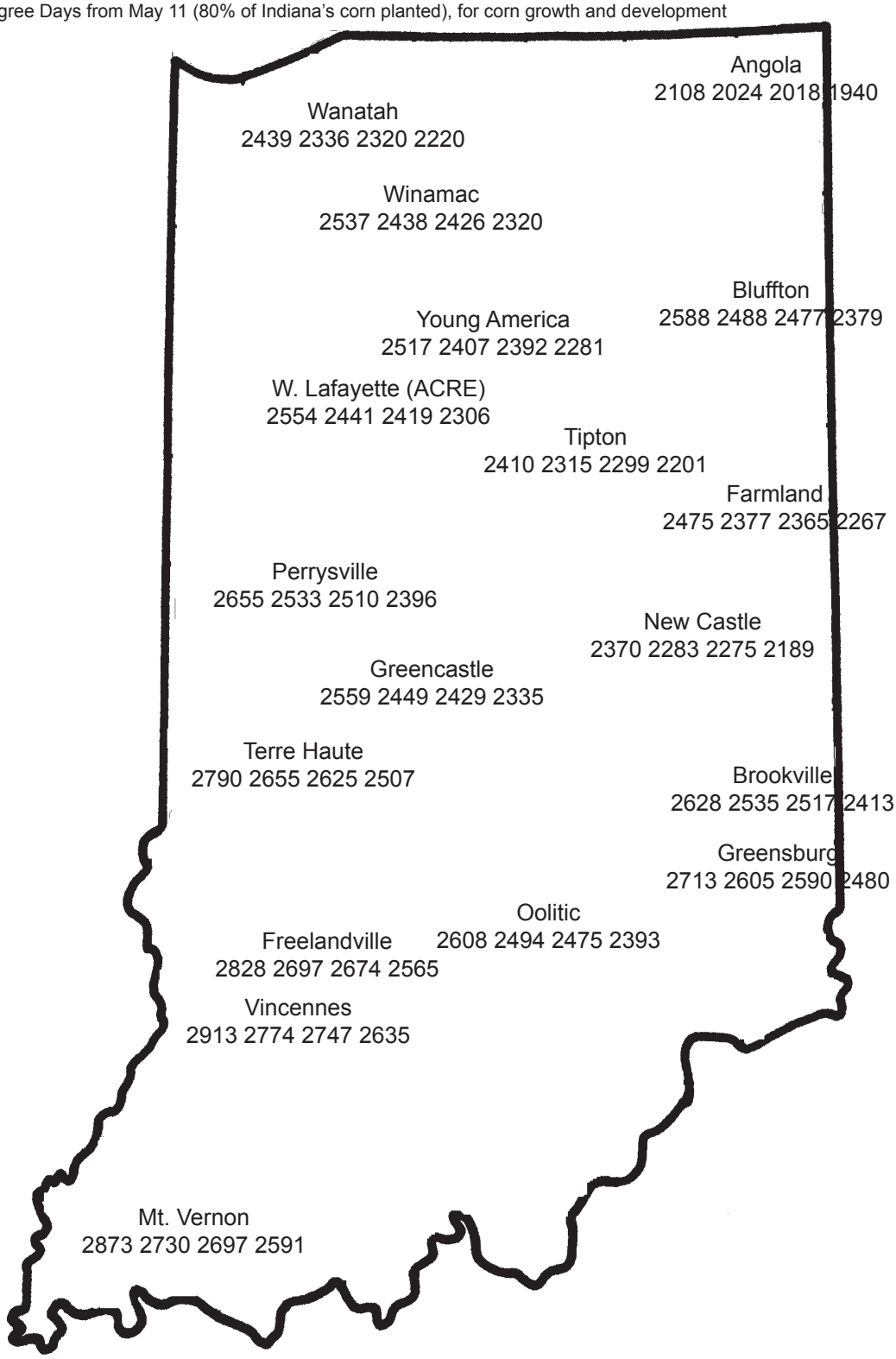
Weather Update

Temperatures as of August 31, 2005

MAP KEY

Location
GDD(10) GDD(35) GDD(55) GDD(80)

GDD(10) = Growing Degree Days from April 15 (10% of Indiana's corn planted), for corn growth and development
GDD(35) = Growing Degree Days from April 27 (35% of Indiana's corn planted), for corn growth and development
GDD(55) = Growing Degree Days from May 4 (55% of Indiana's corn planted), for corn growth and development
GDD(80) = Growing Degree Days from May 11 (80% of Indiana's corn planted), for corn growth and development



4" Bare Soil Temperatures 8/31/05

Location	Max.	Min.
Wanatah	86	69
Columbia City	80	68
W. Lafayette	87	70
Farmland	80	69
Butlerville	82	70
Vincennes	83	68