

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JUNE 6, 2007



Source: NRCS

## Cover Crops for Early Summer

*Thomas Björkman, Department of Horticultural Sciences,  
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*Reprinted from Vegetable Notes, University of Massachusetts  
Extension, May 31, 2007*

Summer may seem an odd time to use cover crops, because it is the time when the “real crops” are growing. But summer may be the right opportunity to improve fields with a cover crop. If the soil is wearing out, summer is when a soil-building crop can do a lot more work. Also, if the rotation leaves an opening in the summer, a short cycle cover crop will be much better than leaving the field open, to suffer erosion from rain and have weeds to go to seed. Buckwheat sown in late May or early June, can be used before vegetables such as pumpkins, broccoli, and late cucumbers. There is another opportunity for summer cover crops after lettuce, peas, early beans, spinach or small grains.

For planting in June, there are really only two choices. One is sudangrass, or sorghum-sudangrass, and the other is buckwheat. Both grow rapidly in the summer warmth.

The two cover crops have different properties, so the management goal and field condition will determine which is the right one.

Sudangrass is often chosen for improving soil organic matter. It produces a strong root system and lots of biomass. The deep root system is helpful for reducing subsurface hardness. It is also a good choice for reducing root-knot nematode pressure.

Buckwheat is best known for weed suppression and mellowing the soil. If weed suppression is the main purpose, buckwheat is preferred. It covers the ground earlier than sudangrass, especially in early June, and outcompetes weeds that may establish in sudangrass. Sudangrass requires a higher seeding rate for effective weed suppression.

The amount of time until the fall crop is to be planted is a significant decision factor. Buckwheat is in the ground for 35 to 40 days when used as a cover crop. It can be sown as early as May 20th. Sudangrass needs 60 to 70 days to be effective, and is best planted once June has become thoroughly warm. Both of these cover crops should be mowed after about 40 days. That is the end of the season for buckwheat, but the beginning of major root

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## Insurance Required for Farm Vehicles on Public Roads

New Jersey Law requires that all motor vehicles that travel upon public roads are required to be properly licensed and insured. General liability or farm liability insurance policies or a separate auto insurance policy must cover these farm vehicles. If anyone has questions on this or any other motor vehicle regulation, call Karen Kritz at the NJDA at 609-984-2506. □

### COVER CROPS FROM PAGE 1

growth for sudangrass. Sudangrass needs a final flail mowing and immediate incorporation to suppress nematodes.

The condition of the field will determine which crop is suitable. If the soil is hard, or the field is prone to standing water, sudangrass is a good choice, while buckwheat will do poorly. However, if the field is low in nitrogen and phosphorous, buckwheat will do well without additional fertilizer, while sudangrass needs about 40 lb of N to give satisfactory performance.

If the crop to follow needs a fine seedbed, that will be easier to produce after buckwheat. It mellows the soil for easy working, and decomposes quickly after incorporation. Sudangrass crowns take some time to break down, so the following crop needs to be one that can be sown in a somewhat lumpy field.

The main production risks with buckwheat are a failed stand and letting it go to seed. The failed stand usually follows a heavy rain around emergence. It will be obvious two weeks after planting. If the seedlings are not doing well then, till them in and plant again. To avoid volunteer buckwheat seed, kill the crop before there are filled green seeds on the plant. That takes about 40 days from a July planting or 50 days from a June planting.

The main production risk with sudangrass is that the crop gets too big to mow or to incorporate after frost has killed it. This crop grows very fast, so keep an eye on it. Mow the first time at about 3 feet and the second time while the flail mower can still chop it well. If sudangrass gets too big to control, it will be killed by frost and make a nice winter mulch. However the biofumigant effect will be lost.

Buckwheat is available from some local farm seed retailers. The variety does not matter, and many suppliers don't identify any variety. Regional (New York) suppliers include The Birkett Mills in Penn Yan, Ernst Conservation Seed in Meadville, PA, AgriCulver in Trumansburg, and Lakeview Organic Grain in Penn Yan. A short crop in 2006 has raised the seed cost for this season, with prices ranging from \$15 to \$25 per 50 lb bag. A bag is enough to seed an acre.

Sorghum and sorghum-sudangrass are widely available. Varieties suitable for cover crops must be selected carefully. Grain types are inappropriate and some new forage varieties, described as sweet or with brown midrib are low in dhurrin, which is the biofumigant in sudangrass. Piper sudangrass is readily available, and has a similar composition to Trudan 8, the classic sudangrass for biofumigation. Sorghum-sudangrass hybrids are more vigorous, and will produce more biomass than sudangrass, but the seed is also more expensive. Appropriate varieties that are available locally include Sordan 79, Green Grazer and Special Effort. With a modest seeding rate of 30 lb/ac, sudangrass can cost as little as \$10 to \$20 per acre. Weed suppression requires 50 lb/ac. Regional (New York) suppliers include Seedway in Hall, AgriCulver in Trumansburg and UAP in Sodus. □

## Pest Notes

Gerald M. Ghidiu, Ph.D., Specialist in Vegetable Entomology

✓ **Cucurbits: Cucumber beetle** populations have been rapidly expanding in young cucurbit plantings. As the plants begin to grow, beetles can not only cause significant feeding damage injury, but also can transmit and spread **bacterial wilt** to the plants. Most cucurbits are highly susceptible to this disease. It is suggested that you check at least 5 consecutive plants each in 10 random locations throughout the field (make sure to include border rows, the center of the field, etc). If the cucumber beetles are found at 5 or more of the sites in the field, control measures are recommended to minimize the threat to the crop. Even if an at-plant insecticide was used, monitor for cucumber beetles.

If foliar insecticides are used, apply before the beetles feed extensively on the cotyledons and first true leaves. Thus it may be necessary to spray shortly after plant emergence, and to repeat applications on a weekly basis if new beetles continue to invade the field. It may be necessary to treat for cucumber beetles until vines begin to run.

Foliar spray recommendations include Asana XL, Baythroid XL, bifenthrin (Capture and other generics), Danitol 2.4EC, Lannate LV, permethrin, Sevin 80S, or Thionex EC.

After application, check fields for effectiveness of spray. Monitor at least twice weekly for population increase of cucumber beetles.

✓ **Tomato, Potato, Eggplant:** The primary pest in the solanaceous crops at this time is the **Colorado potato beetle**. Adults, eggs, and small (1<sup>st</sup>-2<sup>nd</sup> instar) as well as large (3<sup>rd</sup> – 4<sup>th</sup>) instar larvae are present.

It is important to closely monitor fields for the build-up of these pests, indicating that the effectiveness of any at-plant insecticide application is beginning decrease. It is strongly suggested that, for the remainder of the season, growers **NO LONGER USE A NEONICOTINOID INSECTICIDE** for pest management in any solanaceous crop to reduce the development of insecticide resistance by the potato beetle to this class of insecticides. The object is to prevent exposure of the summer generation beetle to the neonicotinoid chemistry.

Many effective alternative chemistry control measures (materials other than Group 4) are available, including abamectin (Agri-Mek or generics), Avaunt + PBO, azadirachtin (neem-based), Bt's, cryolite, Imidan, Rimon, SpinTor (entrust), Thionex, or Vydate. Specialists at Virginia University (Painter Research Station) report that even the pyrethroids may be effective if they haven't been used for several years.

## Vegetable Diseases of the Week

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology



*Choanephora wet rot infecting yellow summer squash.*



*White mold infection of fresh-market tomato grown in bag culture in high tunnel production.*

Check each pesticide label before using as not all of these alternative materials are registered for all solanaceous crops. It is very important that, no matter what material is selected, growers monitor the fields 4-5 days after application to determine effectiveness of that material. □

# Vegetable Disease Update

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology and Wesley Kline, Ph.D., Cumberland County Agricultural Agent

✓ **Cucumber/Pickles – Angular leaf spot** - Symptoms are distinct and easily diagnosed. Small water-soaked **lesions** develop on leaves and expand until they are **delimited by larger secondary veins** in leaves resulting in angular lesions. After time these lesions turn brown and infected tissue drops-off resulting in ‘shotholes’. Angular leaf spot can be spread by splashing rain, insects, on the hands of workers and on farm machinery. Working in the field when the foliage is wet favors the spread of the disease. The disease can also be spread by blowing wind and in irrigation water. Best management of Angular leaf spot begins with clean-seed and planting in fields that has been out of cucurbit production for at least 2 years. Cultivating when foliage and soil are wet and irrigating with pond water should be avoided. There are cucurbit varieties with resistance. Add label rate of fixed copper + mancozeb to fungicide maintenance program and repeat applications every 7 days.

✓ **Cucurbits – Choanephora** - also known as Choanephora wet rot or blossom end rot is a disease which affects blossoms and young developing fruit. Infected female flowers may turn brown, ‘mushy’ and fall off prior to fruit set. Blossom infection can lead to fruit infection. Young fruit may turn a yellowish-brown with **masses of dense, white fungal growth with black ‘pinpoint’ spores developing on infected fruit**. Long periods of wet weather with excessive rainfall and high relative humidity favor the development and spread of Choanephora fruit rot. Unfortunately, control of Choanephora is difficult due to the constant development of new flowers and fruit, canopy production by the plant, and the ability of the fungus to survive saprophytically.

## ✓ **Pepper – Phytophthora blight**

For control of the crown rot phase of blight:

Apply 1 pt Ridomil Gold 4E/A or 1 qt Ultra Flourish 2E/A (mefenoxam, 4). Apply broadcast prior to planting or in a 12- to 16-inch band over the row before or after transplanting. **Make two additional post planting** directed applications with 1 pint Ridomil Gold 4E or 1 qt Ultra Flourish 2E per acre to 6 to 10 inches of soil on either side of the plants at 30-day intervals. Use formula in the “Calibration for Changing from Broadcast to Band Application” section of Calibrating Granular Application Equipment to determine amount of Ridomil Gold needed per acre when band applications are made.

When using polyethylene mulch, apply Ridomil Gold 4E at the above rates and timing by injection through the trickle irrigation system. Dilute Ridomil Gold 4E prior to injecting to prevent damage to injector pump.

✓ **Potato – Black Leg** – The aerial phase of Black leg, also known as aerial stem rot, has shown up over the past week. Black leg is caused by *Erwinia* spp., which also cause ‘soft rot’. The bacteria which lead to the aerial phase of Blackleg are soil-borne (originate from old crop debris) and are spread by rainfall, overhead irrigation and wind. The aerial phase of Blackleg does not originate from decaying seed pieces. The bacterium can enter the plant through wounds created by cultivation or through stems damaged by blowing wind, sand or hail. Dense canopies, warm weather and prolonged periods of leaf wetness favor the spread of aerial Blackleg. Fortunately, the disease rarely extends below ground and causes dieback of stems over time. Symptoms of the aerial phase of Blackleg first appear as an irregular, water-soaked ‘green’ decay on stems that turns light-brown to black over time. Hot, dry weather will cause infected areas to dry out and become brittle. To help suppress aerial Blackleg, avoid excessive overhead irrigation if possible. Do any cultivating when plants are dry. Cultivating in the presence of dew or wet plants may help to spread the bacterium around.

**Potato - Leak (*Pythium*) and Pink Rot (*Phytophthora*)** - Leak is a disease that usually enters the tubers through bruises occurring in conjunction with the harvesting of immature tubers during hot weather. Pink rot generally occurs in poorly drained areas. Apply one of the following fungicides with as much gallonage as possible. Make three applications of one of the following fungicides. The first application should be made at nickel size tubers. The second and third applications should occur 14 and 28 days later. Be sure to get some coverage of the soil surrounding plants for root uptake to occur.

Ridomil Gold Bravo, Fluoronil (mefenoxam + chlorothalonil, 4 + M5) at 2 lb 76WP/A, or

Ridomil Gold/Copper (mefenoxam + copper, 4 + M1) at 2 lb 70WP/A, or

Ridomil Gold MZ (mefenoxam + mancozeb, 4 + M3) at 2.5 lb 68WP/A

✓ **Tomato – Bacterial spot, speck and canker** – Bacterial diseases can cause serious problems in the field if infections are allowed to spread. Apply Actigard (P) at 0.33 oz 50 WG/A, or fixed copper (M1) at 1 lb a.i./A plus a mancozeb (Dithane, Manex II, Manzate, Penncozeb, M3) at 1.5 lb 75DF or OLF, or ManKocide (M1 + M3) at 2.5 to 5.0 lb 61WP/A, or Cuprofix MZ (M1 + M3) at 1.75 to 7.25 lb 52.5DF/A on a 7 day schedule.

✓ **Tomato - Stem Rot/Pith Necrosis** – Symptoms begin to develop as green fruit begins to mature. Bacteria are most likely ubiquitous to tomato fields and develop when weather conditions and cultural practices lead to favorable conditions for disease development. Symptoms include the development of irregular brown lesions on main stems and branches. Late pruning (suck-

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# IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

## Sweet Corn

**European corn borer (ECB)** adult numbers are fairly low in much of the state with areas of higher activity in parts of Burlington, Gloucester and Salem Counties (see ECB map). In the northern counties, catches are very sporadic. Despite lower adult numbers, feeding is increasing on whorl stage sweet corn in all areas. Within the past week, feeding percentages in the mid-teens have been recorded as far north as Warren County. In southern parts of the state, where sweet corn plants may have been nearly at pre-tassel stage when ECB infestations occurred, injury will show up as discoloration in the emerging tassels.

The highest nightly ECB catches for the previous week are as follows:

Tabernacle	5	Crosswicks	2	Chester	1
Elmer	3	Elm	2	Denville	1
Beckett	2	Georgetown	2	East Vineland	1
Centerton	12	Shirley	2	Newton	1

For sweet corn in the whorl stage, check 5 consecutive plants each in 10 random locations throughout the planting. Look for the presence of "shot-hole" type feeding that is characteristic of ECB larvae. On pre-tassel stage plants, look for discoloration or actual caterpillars in the emerging tassels. Consider treating if fresh damage is found on 12% or more plants. Be sure to treat again at the full tassel to first silk stage to protect the forming ears from ECB larvae that are leaving the tassel and traveling down the stalk.

**Corn earworm (CEW)** catches have occurred in a few areas indicating limited activity of this pest. Most of the catches were in the area around where Atlantic, Gloucester and Camden Counties share borders (see CEW map). If CEW adults are present when plantings go to silk, there is a threat of infestation. The shaded area on the map corresponds to a 5-day silk spray schedule.

The highest nightly CEW catches for the previous week are as follows:

Elm	2	Tabernacle	1
Beckett	2		
Elmer	1		
Hammonton	1		

## Cole Crops

**Imported cabbage worm (ICW)** infestations are increasing, and adults (the white cabbage butterfly) are visibly active in fields on warm days. Additionally, diamondback moth larvae (DBM) have now been found in the northern counties. In heading type cole crops like cabbage and broccoli, check 5 consecutive plants each in 10 random locations. Look on the undersides of leaves and on the youngest leaves at the center of the plant. Consider treating if 10% or more plants are infested while in the 0-9 true leaf stage. The threshold may increase to 20% from 9 true leaves to the early head stage. Once heads form, the threshold becomes a more conservative 5%, in order to protect the marketable portion of the plant.

While scouting for caterpillar pests, note the presence of **crucifer**

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## DISEASE UPDATE FROM PAGE 4

ering) can provide entry points for both bacterial diseases, especially during wet conditions. Internally, stems will become brown and mushy. High humidity is necessary for disease development in both cases. High nitrogen and low night temperatures are associated with Pith Necrosis development. Control of both begins with cultural practices such as avoiding working in fields with wet foliage, avoiding late pruning and watching the amount of N applied to plantings.

✓ **Tomato – Buckeye Rot** – Wet weather and wet soils favor the development of Buckeye rot. Symptoms of Buckeye Rot on green fruit include brownish-tan lesions that have a **definitive concentric appearance**. As lesions form the fruit will begin to soften up, this is quite different than Late blight which will cause a dark brownish/black lesion with the fruit remaining somewhat firm. Unlike Late blight, Buckeye rot won't attack the foliage. For more information on control please see the 2007 New Jersey Commercial Vegetable Production Recommendations.

✓ **Tomato – White mold** - Symptoms of white mold are commonly seen around first flowering. Stems and branches become dark with water-soaked lesions which eventually turn soft. **After time, lesions turn a light tannish-brown and are brittle**. During cool, moist weather a white cottony mycelium may develop on infected plants. **Large, black sclerotia may develop on the inside of lesions** and are diagnostic of white mold infections. A section 18 has been granted for the use of Topsin M WSB for the control of white mold (timber rot) in tomato for the 2007 production season in New Jersey. The section 18 label for Topsin M WSB (thiophanate-methyl, FRAC code 1) can be obtained through your county agricultural agent. The label must be in possession of the applicator at the time of application. □

**flea beetle**, especially on new transplants or recently emerged plants. This pest can be very destructive, particularly to newly emerged seedlings. Consider treating if 50% or more plants have flea beetles on them, and damage is visible. It is important to check these young fields at least weekly, as reinfestation can occur quickly after a foliar insecticide application.

### Tomatoes

In general, recently transplanted tomatoes have been unaffected by insect pests in the northern and central counties as yet. However, it is time to begin looking for several common pests including **aphids**, **mites** and **Colorado potato beetles (CPB)**.

Tomatoes are subject to infestation by aphids, even early in the season. Check 5 consecutive plants each in 10 random locations in the planting. Look at two complete leaves per plant. Aphid colonies may be tolerated on plants for a time as long as they are not numerous and heavy enough to result in honey dew (sticky droppings) on the surface of fruit. In most cases, there are no fruit present on plants yet. Aphids may be controlled by natural predators and parasites if broad spectrum insecticides are not used. Note whether colonies are increasing in number and note the presence of predators such as ladybird beetles/larvae, lacewing larvae, syrphid maggots and the presence of bloated, gold colored aphid mummies (indicating parasitism by aphidiid wasps). If aphid colonies are still present when fruit begin to size, and are heavy enough to result in honey dew deposition in several samples, consider a foliar insecticide application to control them.

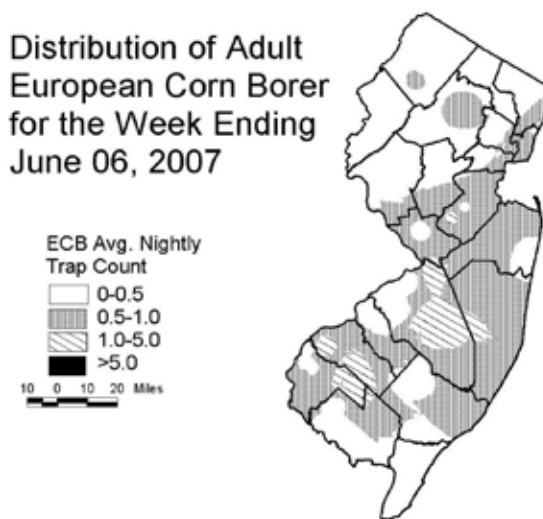
When scouting for aphids, note the presence of whitish "pin-spots" on the surface of lower leaves. Upon closer inspection, **two-spotted spider mites** may be found on the lower surface of leaves with the pin-spots. This pest is best dealt with before it becomes widespread in the field. Spot treatments with miticides may be sufficient to prevent larger infestations. Be sure to take several samples from field edges to account for potential mite migration into the field from grassy edges or other near by host crops.

**Colorado potato beetle (CPB)** adults are active at this time, and are a threat to new transplants that have not been treated with a neo-nicotinoid material like Admire Pro (see the 2007 NJ Commercial Vegetable Recommendations for materials). When scouting for pests, take some samples from areas closest to where CPB host crops (potatoes, tomatoes, eggplant) were the previous season. These may be areas of early infestation. If populations are localized, a spot treatment may be sufficient to prevent a greater infestation. Otherwise, consider treating if CPB adults average 15 per 10 plants throughout the field. Note also the presence of bright yellow CPB egg masses. If eggs are evident in numerous samples, it may be better to delay treatment until greater

than 50% of the eggs hatch. Treating at that time will control emerging larvae.

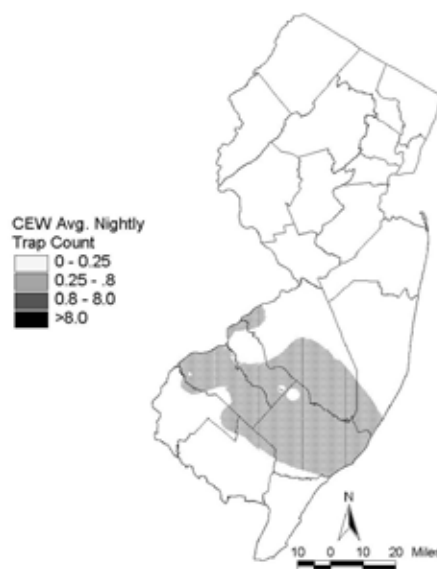
In Salem County, **tomato hornworm (THW)** adults have been captured this week in light traps, and the first eggs were found on tomato plants. THW larvae consume large quantities of foliage and can damage green fruit. Generally, they are not numerous enough to cause economic injury, but in some instances they have been a problem. Look for stems that have been stripped of leaflets. There will be obvious droppings on leaves and plastic mulch below. The caterpillar can be difficult to spot, even when large. If droppings are fresh, and injury is found in approximately half the sites, consider an insecticide treatment.

**Distribution of Adult European Corn Borer for the Week Ending June 06, 2007**



Data collected and processed by: Kris Holmstrom, Marilyn Hughes  
Rutgers Cooperative Extension & Center for Remote Sensing

**Distribution of Adult Corn Earworm for the Week Ending June 06, 2007**



Data collected and processed by: Kris Holmstrom, Sally Walker, Marilyn Hughes  
Rutgers Cooperative Extension & Center for Remote Sensing

# Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 72 degrees north, 72 degrees central and 73 degrees south. Extremes were 93 degrees at Canoe Brook, Flemington, and Freehold on the 1st, and 48 degrees at Flemington and Charlotteburg on the 30th. Weekly rainfall averaged 1.45 inches north, 1.50 inches central, and 1.28 inches south. The heaviest 24 hour total reported was 1.74 inches at Glassboro on the 3rd to 4th. Estimated soil moisture, in percent of field capacity, this past week averaged 76 percent north, 72 percent central and 61 percent south. Four inch soil temperatures averaged 70 degrees north, 71 degrees central and 72 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/4/07										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
CANOE BROOK	2.05	21.78	8.69	93	53	74.	9	638	273	100
CHARLOTTEBURG	1.55	16.53	3.58	88	48	71.	9	548	290	94
FLEMINGTON	1.44	20.35	7.95	93	48	72.	7	594	211	93
NEWTON	.76	11.71	.17	90	49	71.	8	514	210	77
FREEHOLD	1.75	16.10	3.76	93	51	72.	6	759	308	98
LONG BRANCH	1.36	15.97	3.29	87	50	70.	5	558	158	97
NEW BRUNSWICK	1.72	20.89	8.75	92	51	73.	6	655	171	99
TOMS RIVER	1.29	13.78	1.49	89	51	71.	7	615	199	100
TRENTON	1.39	17.41	6.24	91	54	73.	5	681	150	94
CAPE MAY COURT HOUSE	.96	8.76	-2.07	87	52	70.	4	593	120	79
DOWNSTOWN	1.02	14.09	3.00	91	51	73.	5	693	148	77
GLASSBORO	1.74	14.88	3.03	91	56	75.	7	796	271	100
HAMMONTON	.86	12.82	1.28	92	50	73.	5	716	199	71
POMONA	1.67	11.78	1.10	91	52	73.	7	673	225	100
SEABROOK	1.41	14.87	4.60	90	56	74.	6	805	255	96
SOUTH HARRISON	1.12	15.87	3.43	90	55	74	NA	758	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW										
LAST WEEK 194 (Ending 5/28/07)										
THIS WEEK 232 (Ending 6/4/07)										

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**Pesticide User Responsibility:** Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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