

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

SEPTEMBER 22, 2004



Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

✓ **Cole Crops – Downy mildew** can be a problem in fall cole crops (cabbage, collards, broccoli, cauliflower and kale). Infection begins as irregular yellow spots on leaves which later turn brown. A white fluffy growth develops on the underside of leaves during cool moist weather. When the disease first appears, apply a fungicide every 7 to 10 days. Bravo, maneb, Ridomil Gold Bravo and Aliette are labeled. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Cucurbits – ‘White speck’ of Pumpkin** – also known as **Microdochium** or **Plectosporium blight** causes small, distinct lesions on infected vines, petioles, leaves, handles and fruit. Symptoms include light tan to pure white ‘spindle-shaped’ lesions that have a dry, scabby appearance. These small ‘white specks’ often coalesce to form large, dry scabby whitish-tan areas on infected plant parts. Heavy vine infection can lead to complete defoliation and handle and fruit infection can ruin aesthetic fruit quality. Control of White speck begins with proper rotations with crops other than cucurbits. Maximum coverage with fungicide applications is necessary. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

Choanephora fruit rot – also known as **blossom blight** 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 live off of dead/dying plant tissue. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

Powdery mildew – Powdery mildew has now been identified in southern and northern New Jersey on a variety of winter squash and pumpkin. Powdery mildew typically occurs from mid-July until the end

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of the season. Powdery mildew can cause 100% defoliation very quickly if not controlled properly. The diagnostic characteristics of Powdery mildew are pure white 'fuzzy' growth on the upper and lower leaf surface, petioles and stems. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications. Fungicide resistance management of the fungus which causes Powdery mildew is critical. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2004 New Jersey Commercial Vegetable Production Recommendations Guide*.

Phytophthora fruit rot – Unfortunately, regular wet weather conditions throughout the summer have been ideal for development of crown rot phase of the disease and in some areas the fruit rot phase of the disease is beginning to show up. Symptoms on mature fruit appear as white, 'greasy' lesions which can extensively cover the fruit leading to its collapse. *Control of Phytophthora blight begins with proper crop rotations. Rotate with crops other than peppers, eggplants, tomatoes and other cucurbits and plant in well-drained fields.* Acrobat 50WP at 6.4 oz/A (must be tanked mixed with another fungicide active against Phytophthora blight on pumpkins and winter squash such as fixed copper) when conditions favor disease development. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Eggplant – Phomopsis blight** – can affect all above ground portions of the plant. Symptoms include well-defined circular lesions on infected leaves with *diagnostic black fruiting bodies* developing within the lesion. If disease progresses, infected leaves may turn yellow and die. Fruit lesions are similar to leaf infections, but lesions may become much larger causing fruit to become soft. Wet weather and high temperatures favor Phomopsis blight development. Control of Phomopsis blight begins with weekly preventative fungicide applications which may include Amistar or Quadris 80WDG at 2 to 5 oz/A, or Flint 50WDG at 2 to 4 oz/A, or Cabrio 20EG at 8 to 12 oz/A or, maneb 80WP at 1.5 to 2 lb/A or OLF.

✓ **Leeks – Purple Blotch** – Symptoms of Purple blotch include tannish-brown, elongated, concentric, circular lesions with chlorotic margins. Lesions run parallel with the leaf veins. Development of Purple blotch is favored by warm night temperatures. Fungicide applications should begin in the fall as soon as transplants are set out on 10-day intervals as long as night temperatures remain warm. There are a number of fungicides labeled for the control on Purple blotch. . For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Pepper – Anthracnose** - Symptoms of fruit infection include sunken, circular spots which develop blackish-tan to orange concentric rings as lesions develop. Lesions on stems and leaves appear as grayish-brown spots with dark margins and can easily be overlooked. Control of Anthracnose begins with using clean-free seed and/or transplants. A three-year crop rotation with non-solanaceous crops is recommended. After the harvest season, pepper fields should be disced and plowed under thoroughly to bury crop debris. At flowering, Maneb 74DF at 1.5 to 3.0 lbs/A should be alternated every 7 to 10 days with azoxystrobin (Amistar, Quadris 80 WDG) at 2 to 5 oz/A, or Cabrio 20 EG at 8 to 12 oz/A, or Flint 50 WDG at 3 to 4 oz/A. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Spinach – White Rust** – Symptoms of White rust include *irregular, chlorotic areas on the upper leaf surface with white, blister-like pustules developing on lower leaf surface*. Development of White rust is favored by cool nights and mild day temperatures with *prolonged periods of dew or fog which favor wet leaf surfaces*. Control of White rust begins with crop rotations of 2 or more years. Some varieties have partial resistance and should be used if possible. A preventative fungicide schedule should begin 2 to 3 weeks after planting, and/or *if weather conditions favor disease development*. There are a number of fungicides labeled for the control of White rust on spinach. For more information on the control of White rust on spinach please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Tomato – Anthracnose** – or **red fruit rot** is now showing up on mature tomato fruit. Symptoms of Anthracnose are easily diagnosed. Symptoms on ripe fruit appear as water-soaked circular lesions that often have a lighter colored tan center. Black fruiting bodies are often visible in the center of Anthracnose lesions. Control of Anthracnose begins with preventative fungicide applications. Fungicides labeled for other important foliar and fruit diseases of tomato will help control Anthracnose. If fruit-ripening agent has been used, additional fungicide applications may be necessary to help control Anthracnose. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

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 *2004 New Jersey Commercial Vegetable Production Recommendations*. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) activity is relatively low throughout most of the state. Exceptions to this are parts of Cumberland and Salem Counties, where moderate to high catches are still occurring (see ECB map). Larvae resulting from this flight will present a threat to host crops for much of the remainder of the season. As plantings progress to full tassel, it is still wise to treat for ECB if larvae are present. Silk spray schedules required for **corn earworm (CEW)** control should limit ECB injury as well. The highest average nightly **ECB** blacklight trap catches are:

Cohansey	10	Elmer	2	Sewell	2
Centerton	6	Folsom	2	Burlington	1
Shirley	6	Hopewell	2	Mannington	1
Downer	3	Seeley Lake	2	Pedricktown	1

Fall armyworm (FAW) continues to infest late season sweet corn plantings, and is a potential problem for silking corn. Corn earworm (CEW) adult catches increased somewhat in advance of the cold front that came through the state last weekend. Since then, cooler evening temperatures have suppressed CEW activity. This population still represents a threat to silking sweet corn, and growers should respond with appropriate silking spray schedules. The highest catches are in Salem and Cumberland Counties (see CEW map). The crosshatched area on the CEW map (green on the web) represents a population requiring a 3-4 day silk spray schedule. Silking spray schedules should protect against FAW infestations as well. The highest average nightly **CEW** blacklight trap catches are:

Shirley	7	Lawrenceville	8	Denville	5
Seeley Lake	14	Mannington	7	Downer	5
Tabernacle	9	Chapel Heights	6	Jones Island	5
Hopewell	8	Cohansey	6	Sergeantsville	4

General Sweet Corn Spray Schedule

Silking Corn:	North	3-4 days
	Central	3 days
	South	3 days

Tomatoes

Late blight remains an ongoing problem throughout northern New Jersey on fresh market tomatoes. Infections range from slight to severe, where they are occurring. It is critical that all tomatoes, regardless of how young, be on regular protectant fungicide programs now. If symptoms should appear in local fields including rapid defoliation of entire leaves (with or without obvious sporulation) or green fruit turning brown but remaining solid for some time, immediately include a fungicide that specifically targets the group of fungi to which late blight belongs. These materials are listed in the *2004 New Jersey Commercial Vegetable Recommendations Guide*. The presence of late blight only underscores the importance of proper field management this fall. It is critical that tomato plants be removed from the field or plowed in this fall. This will allow more complete decomposition of fruit and stems that may be infected with late blight or bacterial pathogens. Do not leave debris on the soil surface over the winter. This will permit greater survival of

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Damping-off of Spinach

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology

Damping-off can be a serious disease in newly seeded spinach causing reduced, irregular stands and yield. Damping-off can be caused by a number of soil-borne fungal pathogens, including *Fusarium*, *Rhizoctonia*, and *Pythium* spp. Damping-off may kill seedlings prior to emergence (pre-), or cause seedlings to suddenly collapse and die soon after they emerge from the soil (post-). Symptoms of post-emergence damping-off often include the sudden wilting seedlings with water-soaked areas developing on young stems and roots. Damping-off is favored by wet conditions in poor or slowly drained soils. Soil temperature may also influence the activity of soil-borne pathogens. *Rhizoctonia* typically prefers warmer soils and *Pythium* spp. typically prefer cooler soils.

Control begins with proper field selection and seedbed formation on well-drained soils; planting high-quality, treated seed; and preventative fungicide control measures. Apply Ridomil Gold 4E at 1 to 2 pt/A or Ultra Flourish 2E at 2 to 4 pt/A as a pre-plant incorporated or a soil surface spray after planting. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*. □

pathogens and may adversely affect the following season's crop.

Occasional **CEW** injury in tomatoes is showing up in some areas now. High CEW activity (approaching 20 per night in local traps) can result in significant fruit injury if protectant insecticide applications are not made. If catches are high, consider treating weekly to limit damage. Often CEW larvae may be found boring into fruit in the outer canopy of the plants.

Peppers

With **ECB** adult numbers still at potentially damaging levels in parts of the state, peppers need regular protectant insecticide treatments. On the ECB map, areas shaded in green (web version) or crosshatched (in the newsletter) indicate adult ECB populations that require weekly preventive sprays to minimize fruit injury. Monitor local ECB populations to determine when to begin regular preventive insecticide applications. Be aware that repeated use of synthetic pyrethroid materials are likely to result in increased **aphid** infestations. It is a good idea to rotate materials for ECB control to prevent this from happening.

Be aware that high CEW populations (greater than 10 moths per night consistently in local blacklight traps) can result in injury to peppers and tomatoes. If ECB adult catches decline to non-economic levels, it may still be necessary to treat peppers and tomatoes weekly to prevent CEW injury. Be sure to monitor local trap catches to see if CEW populations threaten these crops. Damaging populations would show up as black on the CEW map (red on the web version).

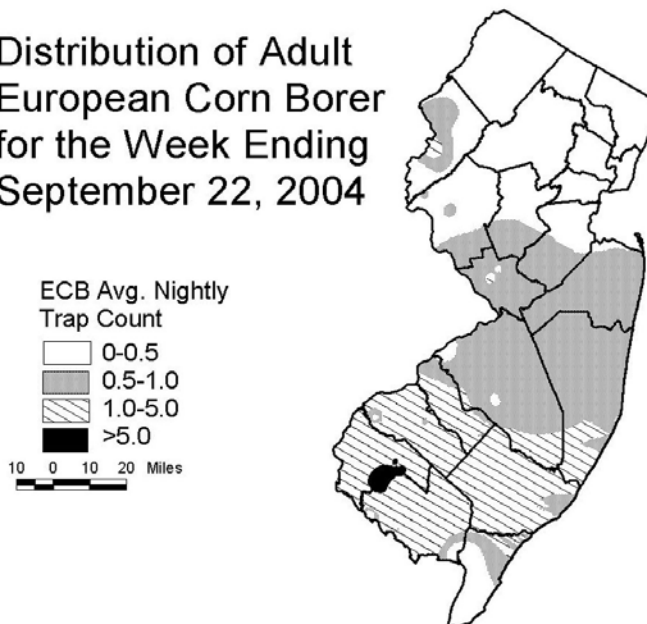
Beet armyworm (BAW) adults and larvae are present in parts of the southern counties. BAW is capable of causing significant injury to peppers and should be watched closely. Look for ragged feeding on leaves near the growing terminals on pepper plants. Young larvae will often feed there prior to infesting fruit. If this type of feeding is seen, and a preventive spray schedule is not already in place for ECB, growers should treat before fruit injury occurs.

Pumpkins

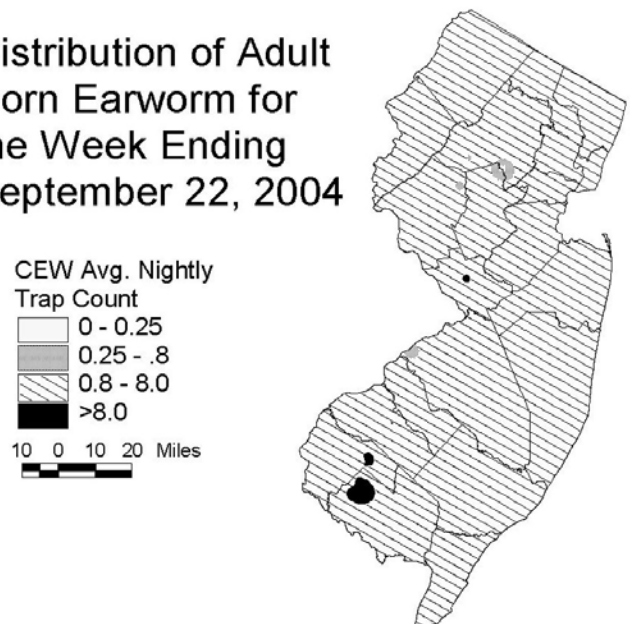
In a few fields in northern New Jersey, **striped cucumber beetles** have begun feeding on the skins of mature pumpkins. This injury results in scarring on the fruit surface, and may reduce the value of the fruit. Be sure to check fields at least weekly for the presence of cucumber beetles and the injury they cause. If either beetles or injury are found, consider treating at least the affected part of the field. If giant varieties such as 'Prize Winner' are in the field, be sure to check them often. These seem to be especially attractive to (and affected by) cucumber beetle.

At the present time, many fields contain mostly mature fruit. In these cases it is probably not necessary to continue to apply foliar fungicides, as the vines are in decline. However, it is important to move the fruit out of the field promptly to prevent loss from a variety of sources including **cucumber beetles**, **deer**, **phytophthora fruit rot** and **fusarium fruit rot**. The latter causes fruit to collapse without the obvious yeast-like growth on the surface that is characteristic of phytophthora. Fruit collapse from fusarium fruit rot is often preceded by the appearance of circular, oozing pits where there is fruit contact with the soil.

Distribution of Adult European Corn Borer for the Week Ending September 22, 2004



Distribution of Adult Corn Earworm for the Week Ending September 22, 2004



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

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Rutgers Cooperative Extension & Center for Remote Sensing

Fall Weed Management Advice

Rich Bonanno, UMass Extension Weed Specialist

Reprinted from Vegetable Notes, University of Massachusetts Extension, September 16, 2004, Volume 15, Number 21.

Weed management is still important at the end of the season. There are three main activities that need to be completed. They are: fall field scouting, preventing weed seed production, and controlling perennial weeds.

End of Year Weed Scouting

It is worthwhile to take the time to check fields for weed problems at this time of year. A quick scouting can identify problems that will be expensive to solve if they get out of control and can provide clues that will help in designing a weed management program for next year. Mapping weedy spots, and keeping some kind of permanent record of weed surveys, can help you evaluate your weed management over the years. Make a map of each field and fill in the following information:

How Many? How dense are the weeds? If weeds are very dense, they may be having an impact on yields. This is especially true if these weeds emerged early in the season, when competition is greatest. If weeds were actively growing during the period of greatest crop growth, consider changing the weed management program.

Which Weeds? Identifying weeds can help identify potential problems before they get out of hand, and can help you decide if you need to modify your weed control program. Weeds like **yellow nutsedge**, **field bindweed**, and **quackgrass** are spreading perennials, which have underground parts that enable them to spread throughout whole fields. Because these weeds can be very damaging, and are very difficult to control, they are worth "nipping in the bud". In addition, keep an eye out for annual weeds that are new to a field or are increasing in numbers. Some weeds can be very difficult to control in some or all of the crops in your rotation. **Galinsoga**, for example, is hard to control in cole crops, peppers, and squash. **Nightshades** are difficult to control in tomatoes for growers who rely on herbicides for control, because they are in the same family as tomatoes. **Velvetleaf** is hard to control in sweet corn.

What worked? It is also useful to look at the whole field and evaluate the effectiveness of your weed control efforts. If some weeds are generally escaping, identify them. They may point to weaknesses in your herbicide or cultivation program. If mostly grasses, or mostly broadleaves are escaping, it may require an adjustment of either the rates or the timing of grass or broadleaf herbicides.

Where are the weeds? Weeds in the rows or planting holes are much more damaging to crop yields than

between-row weeds. Weeds in rows may be an indication that cultivation equipment needs adjustment, or cultivation needs to be done earlier.

Preventing Weed Seed Production

Annual weeds produce incredible amounts of seeds. **Annual grasses** normally produce 3000 to 5000 seeds per plant, small seeded annual weeds such as **pigweed** and **lambsquarters** can produce 100,000 to 250,000 seeds per plant, and larger-seeded **broadleaf weeds** such as **velvetleaf** and **smartweed** can produce 5,000 or more seeds per plant. Perennial weeds can also produce seeds or other reproductive structures. For example, one yellow nutsedge plant can produce 2000 tubers. Perennial weed management is covered below.

Once fields are harvested, they should be tilled or disked as soon as possible to prevent seeds from maturing. Be especially concerned with weeds that are new to a field or are in abundant supply. If time is short, one alternative is to mow the weeds. This will remove the primary seed stalk but will also encourage lateral branching. Eventually, however, these branches will produce seeds and must be destroyed.

Perennial weed management

The best time to control perennial weeds is in the Fall. All perennial weeds have storage structures (tap roots or rhizomes) below ground that enable these plants to survive the winter and regenerate themselves the following year. Fall tillage of perennial weeds will kill top growth and fragment the storage organs but will not kill the weed. Frequent tillage will, over a long period of time, control perennial weeds but, in most cases, this is not practical.

Perhaps the best control technique for perennial weeds is an application of glyphosate (Roundup) before the plant goes dormant. Perennial broadleaf weeds such as bind-weed or dandelion should be sprayed while they are still actively growing which is usually before a hard frost. Perennial grasses, such as **quackgrass**, can be sprayed as late as mid-November. Use 10 to 20 gallons of water per acre when spraying Roundup. Two quarts of the herbicide will provide much better control at 10 gallons of water per acre than at 40 gallons of water per acre. Spraying on a mild afternoon following a cold or cool morning is best to encourage translocation of the herbicide to the below-ground storage structures. Disking or tilling two weeks after application will also improve control of the weeds.

Many growers fight perennial weeds such as quackgrass in corn fields year after year because their primary goal in the Fall is to plant a cover crop. This is usually followed by a Spring application of Roundup which provides top kill but does not kill the whole weed. Applying Roundup at the proper time is the only way to achieve good control. Delaying the seeding of a cover crop may be a necessary evil in the fight against perennial weeds.

In conclusion, remember to scout and map your fields, prevent weed seed production, and apply Roundup at the right time to control perennial weeds. □

Sustainable Agriculture Grants for Farmers Available

The Northeast Region Sustainable Agriculture Research and Education program (SARE) released updated application materials for its Farmer/Grower grant program. These grants support Northeast farmers who want to explore innovative and sustainable practices on their farms.

The Farmer/Grower Grant program, initiated in 1993, allows farmers to conduct experiments, try new approaches, and test emerging ideas about agricultural sustainability. The emphasis is on new ideas that advance good stewardship, improve farm profitability, and strengthen communities.

In 2004, grants ranged from \$1,121 to determine how an early planting of peas affects the nitrogen needs of pumpkins, to \$10,000 to see if chemical residues are contributing to health problems in honeybees. The average grant was about \$5,800; grants are capped at \$10,000.

Applicants must farm either full- or part-time in Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia, Vermont, or Washington, D.C.

The deadline for the 2005 grant round is December 7, 2004, and applications can be downloaded from the Northeast SARE web site at www.uvm.edu/~nesare. Farmers can also request a printed application by calling 802/656-0471 or by sending e-mail to nesare@uvm.edu.

Submitted by Michelle Infante-Casella, Gloucester County Agricultural Agent. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal, averaging 65 degrees north, 68 degrees central and 69 degrees south. Extremes were 89 degrees at Glassboro on the 14th, and 40 degrees at Charlotteburg on the 20th. Weekly rainfall averaged 3.90 inches north, 0.55 inches central, and 0.63 inches south. The heaviest 24 hour total reported was 6.32 inches at Belvidere on the 17th to 18th. Estimated soil moisture, in percent of field capacity, this past week averaged 93 percent north, 69 percent central and 48 percent south. Four inch soil temperatures averaged 67 degrees north, 68 degrees central and 69 degrees south.

Weather Summary for the Week Ending 8 am Monday 9/20/ 4

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	8.51	37.24	10.13	84	47	66.	4	2840	335	97
CANOE BROOK	2.02	33.75	5.28	86	47	66.	3	2906	390	97
CHARLOTTEBURG	2.56	31.82	3.07	81	40	64.	4	2661	664	98
FLEMINGTON	2.50	35.98	8.75	84	45	65.	2	2876	297	99
LONG VALLEY	missing									
NEWTON	missing									
FREEHOLD	1.39	27.61	1.14	84	44	66.	2	3065	329	96
LONG BRANCH	.51	27.88	1.08	81	54	69.	4	2910	230	69
NEW BRUNSWICK	1.06	28.91	2.03	85	44	67.	3	3065	194	92
PEMBERTON	.00	.00	.00	0	99	0.	0	0	0	0
TOMS RIVER	.10	27.91	.51	85	51	69.	4	3172	487	37
TRENTON	1.00	26.31	.86	85	47	68.	2	3140	158	85
CAPE MAY COURT HOUSE	.62	21.56	-2.19	82	50	68.	0	3035	327	42
DOWNSTOWN	.63	23.27	-1.68	85	49	68.	2	3232	238	55
GLASSBORO	1.21	38.09	11.89	89	52	69.	3	3270	307	84
HAMMONTON	.35	25.80	-.37	87	49	69.	3	3342	371	50
POMONA	.48	22.76	-1.06	85	48	69.	5	3201	430	53
SEABROOK	.46	28.13	4.13	86	48	69.	3	3540	527	49
SOUTH HARRISON	.98	28.84	3.27	86	55	70	NA	3381	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week	219 (Ending 9/13/04)									
This Week	198 (Ending 9/20/04)									

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