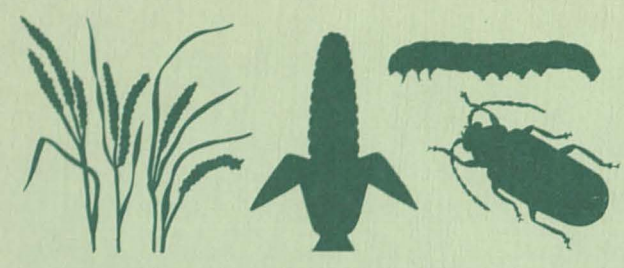

PLANT PEST Newsletter

MINNESOTA EXTENSION SERVICE UNIVERSITY OF MINNESOTA

PPST12 July 2, 1992

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POTATO

CHEMICAL CONTROL OF EARLY BLIGHT IN POTATOES—Cool temperatures have delayed potato development in much of the Red River Valley, however, spray programs for early blight should be underway in much of the Anoka Sand Plains at this time. Growers have a wide variety of materials available to choose from this season. For the past two seasons, research trials have shown a profitable response from spray schedules involving chlorothalonil (Bravo), Mancozeb (Dithane, Manex II, Manzate, and Penncozeb) and Triphenyl Tin Hydroxide (Super Tin).

Early blight causes losses when a significant proportion of the canopy is damaged prior to the bulking. Damage usually starts on the lower leaves (those closer to the ground) and moves up into the canopy during periods of extended leaf wetness (periods > 10 hours). Repeated infection is prevented by protecting leaves with fungicides during the critical months of July and August. To achieve desired results, coverage is essential. Growers should use full rates of registered products. Reductions in program costs, when desired, should be done by stretching intervals instead of by

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skimping on rates. Remember that the cost of application is a significant percentage of the total cost of a spray program.

Growers frequently include insecticides in their fungicide sprays. Most insecticides are compatible with the fungicides used to control early blight. The exception to this is that EC formulations of insecticides should not be combined with Super Tin. Phytotoxicity may result. This limitation is clearly described on the label.

Growers should avoid routinely including insecticides with their fungicides. Control decisions for Colorado potato beetles and potato leafhoppers should be based on threshold populations of these insects and not on a calendar schedule. When these threshold are present, however, tank mixing the products can save considerable money in application costs.

Roger K. Jones
Extension Plant Pathologist

COLORADO POTATO BEETLE—The first generation (from overwintering adults) in the Osseo to Big Lake region (Anoka Sand Plain) has a fair percent of larvae now burrowing to pupae sites. Adults present the week of June 22 were still from overwintering populations.

It is not at all unusual to find 1 to 2 larvae (certainly non economic) per plant throughout this area. In the two Anoka Sand Plain locations where we have insecticide trials this year the untreated plots had from 90 to 100% defoliation on 27 June.

Materials which are performing well include M-Track (B.t. san diego), Karate, Fury, Baythroid, NTN and Vydate. We have complete failure of Furadan, Sevin XLR plus, and Penncap-M at one location. Most presently labeled compounds are providing something below 90% control.

I visited with the Mycogen folks who produce M-Trak. They do not have any commercial supply of that product remaining for this growing season. It will cost about $20 per acre per application but is effective enough that we may choose to build CPB control programs around a limited number of applications of that product in 1993.

CPB in the Red River Valley has begun to hatch. Adult numbers suggest a lower larval population than in 1991. However the number of larvae are usually great enough that at least some reduction in yield will occur without treatment. Even when CPB does not trigger an insecticide application, our first insecticide application in the Red River Valley needs to go on around 1 July to 10 July for potato leafhopper.

Dave Noetzel
Extension Entomologist

POTATO LEAFHOPPER (PLH)—The action levels (one PLH adult/sweep or 10 nymph/100 acres) developed by Dr. Radcliffe and his students for PLH on potato are quite good and should be followed for PLH control. If a grower does not treat for CPB then follow the PLH counts before making an application for them. We have enough PLH in the state that their migration from alfalfa will produce economic levels in potato this summer.

Dave Noetzel
Extension Entomologist

VEGETABLES

ASTER LEAFHOPPER AND POTATO LEAFHOPPER—In previous articles, I have implicated some other crops susceptible to aster leafhopper (ALH). This week I want to clarify recommendations for specific crops and also distinguish damage symptoms caused by the potato leafhopper (PLH). ALH is olive green in color with 6 black spots on the head. PLH is light green in color.

Crops of most concern for **ALH** and the aster yellows disease, clearly include carrots, lettuce and celery. All previous recommendations still hold for ALH (see also *Minnesota Fruit and Vegetable Growers Association July '92 Newsletter).* There **was** a concern (a month ago) for very young potatoes (2-3" tall) because of the potential for purple top; **however, this threat is past**, and the only leafhopper concern now is **PLH**. Economic thresholds for PLH on potatoes is one adult/sweep (using a standard 15"-diameter sweep net) and/or 10 nymphs/100 leaves.

Yellow symptoms on onions, and other crops mentioned in the MFVGA July Newsletter (egg plant, rhubarb) may be possible but are rarely a problem, and

insecticide applications for these crops are not recommended at this time. Dr. Ed Grafius, Michigan State University, has observed symptoms on onions, but actual damage is rarely observed at harvest. He also indicates that control of ALH in onions is not warranted as the hoppers often quickly move in and out of the onions, which also accounts for only sporadic damage.

In beans the primary concern is **PLH**, not ALH. "Hopper burn", caused by PLH on a number of crops (alfalfa, potato) is characterized on snap beans as whitening of leaf veins within two days after feeding, but you can also see severe yellowing and/or purple discoloration and curling of leaves as well. The jury is still out on economic thresholds for snap beans. Dave Noetzel has conducted studies in dry beans, with a wide range of infestations, and found no yield loss effects. Data from Cornell indicates that there must be an average of 25 nymphs/plant from the time of the second trifoliate leaf through bloom to significantly reduce yield. However, current thresholds from Wisconsin and Maryland suggest that green beans should be treated when PLH are greater than 1 to 5/sweep, respectively. In addition, leaf samples can be taken to check for nymphs. Until we have more information, my recommendation would be that treatment be delayed until nymphs are present (1 to 5/10 leaves). Clearly, more work needs to be done to verify the potential for yield losses on snap bean cultivars in Minnesota.

Bill Hutchison
Extension Entomologist

SMALL GRAINS

SMALL GRAIN DISEASE UPDATE—Disease incidence in Minnesota spring wheat and barley remains nearly unchanged since the last report (6/26/92). Despite frequent rains, the incidence of fungal leaf spots is low. for the most part, temperatures have been below what is considered ideal for Tan spot and Septoria but growers with young wheat should actively scout for these diseases during the next two weeks. Bacterial streak has not been observed in surveyed fields from Fergus Falls to Moorhead north to the Canadian border. Powdery mildew is becoming more obvious in fields along the beach ridge from Roseau to Becker counties. Some fields are being treated for this disease.

Leaf rust development in wheat continues to subside but confusion in symptoms has lead many to spray their wheat thinking it's Tan spot. Leaf rust was reported earlier this season (6/1/92) on juvenile leaves of Marshall wheat (Marshall is moderately resistant (MR) to leaf rust). In the last two weeks, pustule that developed on lower and middle leaves began producing large chlorotic halos around them with the old rust pustule in the center. This reaction, called a mesothetic reaction, is a form of resistance produced by the plant in response to the presence of the leaf rust fungus. The yellow tissue within each of these spots eventually begins to die. The result is a "Tan" spot with a yellow halo surrounding it which closely resembles symptoms produced by the Tan spot fungus. The mesothetic (MX) response differs from either resistant (R) or Susceptible (S) responses. Truly resistant (R) varieties will respond to attempted rust infection by producing a small yellow fleck (hypersensitive response), a sign that the rust infection has been stopped. Susceptible reactions are surrounded by green healthy tissue upon which the fungus feeds. Rust fungi live only on live tissue (they are obligate parasites). Once the tissue dies, so do they. Resistant plants ward off the fungus by killing a few cells around the point of infection. This stops the fungus. Susceptible plants are unable to do this. The response of Marshall is an intermediate reaction but it is not one that will be benefitted by application of fungicides. The mesothetic response can be differentiated from Tan spot by closely observing the lesions with a quality hand lens. The old rust pustule should still be visible in the center of each spot.

Barley stem rust remains at very low levels throughout the upper Midwest. Concern over this disease is currently limited to late planted fields in Kittson and Roseau counties. Leaf spot diseases are not prevalent at this time. Growers should be checking barley fields for powdery mildew as conditions for this disease have been favorable during the last two weeks.

Roger K. Jones
Extension Plant Pathologist

MISCELLANEOUS

BLACK LIGHT TRAP CAPTURES—Data collected by: University of Minnesota, Minnesota Department of Agriculture and Private cooperators.Traps Reporting 7/1/92

EUROPEAN CORN BORER		+			
District	Location	Total	Aver	High	Date/Max
NW	CROOKSTON....21	10.00	1.43	5.00	920626
WC	FERGUS FALLS.26	5.00	1.25	4.00	920628
WC	MORRIS.....27A	26.00	3.71	12.00	920630
C	GLENCOE.....31A	48.00	6.86	15.00	920624
C	BIRD ISLAND 31B	117.00	16.71	38.00	920624
C	GROVE CITY..31C	38.00	5.43	15.00	920624
C	GAYLORD.....31D	44.00	11.00	19.00	920627
C	STAPLES.....37	2.00	0.33	1.00	920625
SW	LAMBERTON....41	0.00	0.00	0.00	
SW	WORTHINGTON..42	4.00	0.67	3.00	920623
SW	MINNEOTA.....44	34.00	4.86	11.00	920628
SC	BLUE EARTH..49A	12.00	1.71	7.00	920623
SC	BLUE EARTH..49B	15.00	2.14	8.00	920623
SC	LE SUEUR E..50A	67.00	9.57	18.00	920625
SC	LE SUEUR W..50B	24.00	3.43	19.00	920625
SC	ST. PETER...51B	94.00	13.43	25.00	920630
SC	SLEEPY EYE..52A	126.00	18.00	30.00	920624
SC	SLEEPY EYE..52B	26.00	3.71	15.00	920628
SC	WASECA SES...53	26.00	3.71	10.00	920625
SE	RANDOLPH....51C	99.00	14.14	32.00	920625
SE	CALEDONIA....56	3.00	0.75	3.00	920628
SE	ROSEMOUNT....61	9.00	1.50	3.00	920625+
ARMYWORM					
NW	CROOKSTON....21	6.00	0.86	2.00	920625
WC	FERGUS FALLS.26	41.00	10.25	28.00	920627
WC	MORRIS.....27A	112.00	16.00	28.00	920629 *-3
C	GLENCOE.....31A	54.00	7.71	15.00	920628+
C	BIRD ISLAND 31B	514.00	73.43	233.00	920628
C	GROVE CITY..31C	24.00	3.43	6.00	920630
C	GAYLORD.....31D	3.00	0.75	3.00	920624
C	STAPLES.....37	11.00	1.83	6.00	920625
SW	WORTHINGTON..42	4.00	0.67	2.00	920623
SC	BLUE EARTH..49A	241.00	34.43	55.00	920624
SC	BLUE EARTH..49B	257.00	36.71	113.00	920629
SC	LE SUEUR E..50A	42.00	6.00	11.00	920625
SC	LE SUEUR W..50B	79.00	11.29	37.00	920624
SC	ST. PETER...51B	44.00	6.29	10.00	920630
SC	SLEEPY EYE..52A	288.00	41.14	116.00	920628
SC	SLEEPY EYE..52B	207.00	29.57	85.00	920629
SC	WASECA SES...53	192.00	27.43	75.00	920701
SE	RANDOLPH....51C	177.00	25.29	44.00	920624
SE	CALEDONIA....56	1309.00	327.25	620.00	920630
CORN EARWORM					
NW	CROOKSTON....21	0.00	0.00	0.00	
WC	FERGUS FALLS.26	0.00	0.00	0.00	
WC	MORRIS.....27A	0.00	0.00	0.00	
C	GLENCOE.....31A	2.00	0.29	1.00	920630+
C	BIRD ISLAND 31B	3.00	0.43	1.00	920624+
C	GROVE CITY..31C	4.00	0.57	2.00	920630
C	GAYLORD.....31D	0.00	0.00	0.00	
SW	WORTHINGTON..42	10.00	1.67	5.00	920624
SC	BLUE EARTH..49A	0.00	0.00	0.00	
SC	BLUE EARTH..49B	0.00	0.00	0.00	
SC	LE SUEUR E..50A	0.00	0.00	0.00	
SC	LE SUEUR W..50B	0.00	0.00	0.00	
SC	ST. PETER...51B	0.00	0.00	0.00	
SC	SLEEPY EYE..52A	0.00	0.00	0.00	
SC	SLEEPY EYE..52B	0.00	0.00	0.00	
SC	WASECA SES...53	0.00	0.00	0.00	
SE	RANDOLPH....51C	0.00	0.00	0.00	
SE	CALEDONIA....56	0.00	0.00	0.00	
SE	ROSEMOUNT....61	0.00	0.00	0.00	

**-Number of nights...High derived by average over multiple nights.*
+ More than 1 night with maximum value.
Observation dates: 920623 TO 920701

DIAL U

County Agents: Please Alert
Master Gardeners of the Following Items

Aster Yellows—This plant disease is already prevalent in flower gardens, including the annual trial garden on the St. Paul campus. Symptoms are stunting, partial or complete yellowing of the foliage and the production of many spindly stems and or flower stalks. Flowers often fail to develop color, remain green and distorted, and seed or fruit fail to develop. A very large number of plants are susceptible including aster, chrysanthemum, coneflower, coreopsis, cosmos, dianthus, gladiolus, and petunia.

The disease is spread by a leafhopper, Macrosteles fascifrons. However, insecticides are generally not recommended unless a substantial number of susceptible varieties are grown. Diseased plants should be removed and promptly destroyed to prevent further spread—they will not produce additional flowers anyway.

Maples showing some fall color very prematurely—definitely not a good sign. We're getting lots of reports of maples declining, many of them well-established in the landscape. Quite a few are growing in heavy clay soils. In most cases we feel it is a response to environmental stress, probably the early cold snap last fall before trees were fully hardened off for winter.

There's not much to do for these trees. Watering every 7 to 10 days in hot dry weather helps alleviate further stress, but can't undo structural damage to the roots or vascular tissue responsible for the flow of moisture and nutrients. Fertilizer will just place more stress on the trees by giving them the signal to grow at a time they can't even maintain what they've already got.

You'll probably need to wait till next year to reassess these trees to see whether they are worth trying to save. They may just come back with little tufts of sprouts off the main trunk.

Elm leaf beetle larvae have been reported, sometimes in large numbers, moving down the trunks of elms. These larvae are worm-like, about 1/4 inch in size and greenish with black stripes. They are migrating to the base of trees to pupate (make cocoons). The adult beetles are about 1/4 inch long, yellowish green with black stripes. They will return to elms to feed on leaves and lay eggs for the second generation.

Healthy, mature trees can tolerate heavy feeding in one year. If you are dealing with a recently transplanted tree, an unhealthy tree, or a tree that has been severely defoliated in two or more consecutive years, then continued feeding could injury the tree. If control is desired, spray a contact insecticide, such as carbaryl (Sevin) or malathion, when larvae or adults are first found feeding on leaves. Because adult elm leaf beetles fly, treating the migrating larvae does not guarantee your elm will be free of elm leaf beetle infestations.

Rhizosphaera Needle Cast—Spruce infected with this needle cast have begun to shed the inner infected needles. Confirm the diagnosis by identifying the tiny black fungal structures on the green infected needles. It is too late to spray this year. For more information refer to the *Dial U Brief* on Rhizosphaera Needle Cast.

Asparagus and rhubarb shouldn't be picked after July 1st (give or take a few days, so you can have rhubarb pie on the 4th of July!). The foliage needs to remain on the plants till frost so energy will be stored in their roots for next year's growth.

Some people keep the brown, frost-killed asparagus fronds till early spring, because it helps trap snow to insulate the asparagus roots. Others have had good success cutting it down as soon as it's been badly damaged; usually October or early November.

Rhubarb stems are always edible, though they get woodier and less flavorful as the season advances into really hot weather. The leaves are always poisonous, regardless of season. Though you don't want to pull rhubarb after July 1, you definitely should pull out any stem that's going to flower. Flower and seed production uses energy that you'd prefer to go into next year's crop.

Mountain ash sawfly larvae have been very noticeable defoliating mountain ash. The larvae are about 3/4 inch long when full grown. They are pale yellowish or greenish with rows of irregularly shaped black spots. Mountain ash sawfly larvae typically eat the leaves except for the mid-vein. This sawfly normally does not seriously injure mountain ash, even if defoliation is heavy. A second generation usually occurs in August. Spray contact insecticides, such as acephate (Orthene), carbaryl (Sevin), or malathion if control is desired.

Weed ID is always a hot topic at Dial U. A reminder to county agents that Dial U identifies and suggests control measures for weeds commonly found in lawns and gardens. Field weeds should be sent directly to Agronomy for identification.

In many cases, the critical information is not so much the exact botanical name of the weed in question, but whether it is an annual, arising from seed each year, or a perennial, coming back from the same roots each year.

Expect apple maggots now—Apple maggot adults are expected to begin emerging from the ground the first week of July. People interested in their control should begin monitoring for them or start insecticide sprays. For different control tactics, see AG-FS-1007, *The Apple Maggot.*

Other common calls include carpenter ants, Dutch elm disease, oak wilt, patch disease, abiotic problems on trees and shrubs, pruning trees and shrubs, fruit drop on fruit trees, slo-o-o-ow ripening of heat-loving veggies (no wonder, with all the cool weather we've had), and lots of plant ID's.

Cynthia Ash *Plant Pathology*
Deborah Brown *Horticulture*
Jeffrey Hahn *Entomology*

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