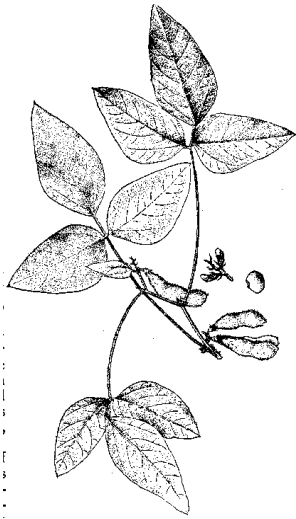


PLANT & PEST ADVISORY

FIELD CROPS/LIVESTOCK EDITION \$1.50

MAY 28, 1998



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Use of Soybean Seed Inoculants

Daniel Kluchinski, Mercer County Agricultural Agent

Legumes have the ability to convert atmospheric nitrogen (N₂) to useable ammonia nitrogen for plant growth. This ability is due to the symbiotic (mutually beneficial) relationship between the legume plant and *Rhizobium* and *Bradyrhizobium* bacteria. The bacteria is enclosed in the root in specialized tissues called nodules. Within the nodules, the bacteria converts the atmospheric nitrogen from the gases in the soil into a plant-useable form. For legumes such as soybean, clovers and alfalfa, this relationship allows the plants to fix enough atmospheric nitrogen that no long term nitrogen fertilization is needed.

Rhizobia are naturally occurring, but native populations are less effective in nitrogen fixation. Therefore, use of inoculants which are commercially prepared *Rhizobia* bacteria is recommended. Research on various strains that are more efficient at fixing nitrogen is being conducted at USDA, and Extension personnel in New Jersey have evaluated yield response to soybean inoculants. Although research shows various effectiveness or yield impact of commercially prepared inoculum, the cost of these materials and the potential benefit of improving nitrogen fixation and therefore crop growth support their use.

Follow these guidelines when selecting and using inoculants to increase the potential benefits from their use:

- ◆ Remember each legume requires a specific species of *Rhizobium* to form nodules and fix nitrogen. Therefore, use only inoculants labeled for soybean on soybean, clover on clover, etc. Be sure to inoculate if the crop you are planting has not been planted in the field in the past 5 years or more.
- ◆ Check inoculum packets for expiration dates. Inoculum will decline in viability over time, reducing the ability for successful establishment and nitrogen fixation.
- ◆ Inoculants are most commonly sold as a solid peat-based material or liquids. Some are applied dry or mixed with water into a slurry, and are added to the planter box. Follow the instructions on the label for best performance.
- ◆ Store inoculum and pre-inoculated seed in cool conditions (35 to 60 degrees Fahrenheit) without exposure to sunlight. Keep inoculum in an ice chest or cooler when getting ready to use it in the field. This is a living organism that will be of no benefit if it dies before it is introduced into the soil.

SEE INOCULANTS ON PAGE 2

Field Crops Weekly Pest Summary

Susan Eck-Jones, Field Crops IPM
Program Associate

Alfalfa

Most farmers have taken off first cutting alfalfa early, particularly in North Jersey. Alfalfa weevil counts were increasing, but remained under threshold. They are now in the pupa stage. Second cutting alfalfa is in stubble. Very few aphids and weevil larva were found and no potato leafhoppers were found yet.

Corn

Early planted corn fields are in the second leaf stage. There has been a crusting problem which lowered stand counts. Flea beetles were found over threshold in both field corn and sweet corn. Later-planted corn had a problem with shallow-planted corn. Some seeds were lying on the surface while others were easily pulled up by birds such as blackbirds, pheasants and turkeys. Weeds common in corn are shattercane, burcucumber and velvet leaf.

Soybeans

Only one field of soybeans has emerged so far. The germination rate looks good. □

INOCULANTS FROM PAGE 1

- ◆ Nodules are formed once the soybean plant has reached the second to third trifoliate stage. Before this time, the plants rely on soil nitrogen or on nitrogen applied at planting. Note that in a high rainfall year such as 1998, soil nitrogen levels may be lower than normal, and therefore some nitrogen deficiency might be noticeable in legumes seedings. This may be especially true if high carbon residues such as corn stalks or grain residues have been tilled under. Therefore, to ensure adequate nitrogen fixation and availability, inoculate.
- ◆ Maintain proper pH and soil fertility. These conditions favor plant growth and also *Rhizobia* establishment and performance. □

Time to Make Hay?

Daniel Kluchinski, Mercer County Agricultural Agent

Doesn't it seem like the 1998 season has brought it's share of unpredicted weather — heavy rains, hot temperatures, cold spells, extended wet spells followed by dry periods? Unfortunately, it is mostly weather predication and time management that comes into play when making hay. This year's harvest looks to be a good one, but later-than-normal soybean planting will squeeze into earlier-than-normal hay making. You may improve your chances of getting good quality hay and getting it in the barn in a timely manner if you use some basic meteorological phenomena and forecasting to help plan your hay making.

The best conditions for making hay will occur after the passage of a cold front. This normally will provide at least three days of good hay making weather. What factors can help you to determine when these conditions will occur and hay making should begin?

- How much temperature drop is expected? A 10°F or more drop is normally associated with a strong cold front passage.
- A forecast that mentions a trace or less of precipitation is the most desirable. A forecast of widely scattered showers, or less than 1/4 inch of precipitation, would also indicate a low rainfall risk period.
- A forecasted wind shift from a southerly to a westerly or northwesterly direction is a good sign for clear weather.
- A low humidity forecast indicates good hay making conditions.
- Mention of rising barometric pressure is also favorable.
- When viewing a forecast on television, look for a cold front diagrammed slightly west of your geographic position, followed by a strong high pressure area.

In addition to knowing when a cold front will be approaching, one needs to know when the front has actually passed. The following signs, in order of importance, are:

- the wind should shift in a counter-clockwise manner from a southerly to a westerly or northwesterly direction.
- the sky should clear rapidly and the appearance of fair weather cumulus or low fleecy alto-cumulus clouds be evident.
- dry bulb thermometer temperatures should drop rapidly.
- barometric pressure should rise steadily.

If one observes the above guidelines, a conservative estimate of a three day rainless period is 85 percent for the late-May/early-June period, and will be higher as the season progresses. Therefore, keep an eye to the sky and an ear to the forecast before cutting hay.

Adapted from Forages, Hughes, D. H, M. E. Heath and D. S. Metcalfe, editors. 1962. The Iowa State University Press. p. 534. □

Field Crops Weed Control

Bradley A. Majek, Ph.D., Weed Science

✓ **Corn:** Corn emerged in some fields before herbicides could be applied. The labels of common **annual grass** herbicides, including Frontier, Dual II; alachlor products including Lasso, Micro-Tech, and Partner; and acetochlor products including Surpass, Topnotch, and Harness, can be applied after corn has emerged. Frontier and alachlor product labels specify that applications must be made before weeds emerge or that emerged weeds must be controlled with postemergence herbicides. Frontier must be applied before corn exceeds 8 inches in height. Alachlor products, including Lasso, Micro-Tech, and Partner, must be applied before corn exceeds 5 inches in height.

Acetochlor products Surpass, Topnotch, and Harness must be applied when **annual grasses** have no more than 2 leaves and before the corn exceeds 11 inches in height.

The use of atrazine and oil concentrate in combination with any of the above residual **annual grass** herbicides as a tank-mix or the use of the pre-mix product will improve the spectrum of weeds controlled. Emerged **broadleaf weeds** will also be controlled, but **annual grass** control may become erratic as the growth of the grass weeds progress from the one- to two-leaf stage.

Fields with **annual grasses** with two or more leaves may not be controlled with this program. A postemergence weed control program that includes the use of Basis early postemergence or Basis Gold, Accent Gold, or Accent plus atrazine or Banvel/Clarity postemergence will provide consistently good results and should be considered.

✓ **Grass Pastures:** Crossbow, an ester jug-mix formulation of 2,4-D and triclopyr, is registered for use in pastures. The product is especially effective for the control of **woody perennial broadleaf weeds** and certain other hard-to-control **annual** and **perennial broadleaves**, including **spiny pigweed**. Hay harvest and grazing restrictions, especially for lactating dairy animals, were severe and limited the product's usefulness. Shorter restrictions have been approved for rates below 2 gallons per acre. Standard rates are 2 to 4 quarts per acre, depending on weed species.

Pasture and Green Forage

Lactating dairy animals - 14 days
other livestock - no restrictions

Grass Hay

Lactating dairy animals - next growing season
other livestock - 7 days

Slaughter Restrictions - withdraw livestock from treated forage 3 days before slaughter.

Consult your Cooperative Extension Office and the new product label for additional information. □

Weekly Weather Summary

Keith Arnesen, Agricultural Meteorologist

Temperatures averaged much above normal. Extremes were 93 degrees at Woodstown on the 21st, and 38 degrees at Newton on the 23rd. Weekly rainfall averaged 0.05 inches north, 0.25 inches central, and 0.07 inches south. The heaviest 24 hour total was 0.55 inches at Toms River on the 20th to 21st. Estimated soil moisture, in percent of field capacity, this past week averaged 74 percent north, 72 percent central and 58 percent south. Four inch soil temperatures averaged 61 degrees north, 65 degrees central and 67 degrees south.

Weather Summary for the Week Ending 8 a.m. Monday, 5/25/98										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.10	18.40	7.71	87	40	65.	3	444	189	66
CANOE BROOK	.13	17.19	5.39	88	40	65.	3	549	319	74
CHARLOTTEBURG	.00	18.01	6.38	86	39	62.	3	379	230	62
LONG VALLEY	.00	17.07	5.03	84	39	64.	4	380	199	70
NEWTON	.00	14.05	3.71	85	38	62.	2	375	191	69
FREEHOLD	.38	18.96	7.81	89	46	68.	4	530	230	74
LONG BRANCH	.00	22.59	11.08	89	48	67.	5	399	140	48
NEW BRUNSWICK	.00	18.09	7.13	89	44	66.	2	493	164	72
PEMBERTON	.52	16.28	5.66	91	44	68.	4	651	326	78
TOMS RIVER	.55	25.72	14.58	89	43	66.	3	548	266	66
TRENTON	.02	18.61	8.52	89	43	66.	1	489	124	62
CAPE MAY COURT HOUSE	.02	14.64	4.86	89	46	67.	4	486	163	53
DOWNSTOWN	.28	14.16	4.11	90	46	67.	2	596	218	56
GLASSBORO	.11	12.81	2.13	90	47	70.	5	602	240	53
HAMMONTON	.00	14.30	3.91	91	45	68.	3	552	198	43
POMONA	.00	18.89	9.18	91	44	69.	6	523	223	46
SEABROOK	.06	15.06	5.88	92	48	69.	4	621	238	51
ATLANTIC CITY MARINA	.00	18.70	9.52	86	52	69.	7	449	164	46
WOODSTOWN	.00	11.47	1.57	93	44	69	NA	653	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW	Last Week			144 (Ending 5/18/98) This Week				194 (Ending 5/25/98)		

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