RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

FIELD CROPS/LIVESTOCK EDITION $1.50 MAY 27, 1999

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Last-Minute Tips on Economic Soybean Production

Brian Aldrich, North Jersey Resource Conservation and Development; Daniel Kluchinski, Mercer County Agricultural Agent; Tom Morgart, North Jersey Resource Conservation and Development; and Jon Stutzman, Brubaker Agronomic Consulting Service

As soybean prices continue to decline, it's more important than ever to follow best management practices to optimize production while keeping costs low. Unfortunately we can't control prices, but we can control the choices we make for inputs. Following is a list of items that should be used to evaluate your soil pH, fertility, and management prior to planting soybeans this season.

- Lime for optimum pH: Maintain soil pH 6.5 for heavier soils (silt loams, loams), and 6.2 for sandy soils. The lower pH is recommended for sandy soils because they are more susceptible to manganese deficiency at pH greater than 6.2. High pH is especially important for the *Rhizobia* bacteria upon which soybeans depend for nitrogen fixation.
- Avoid planting beans into fields with pH below 6.0. If you must plant beans into such fields, disk lime into the surface based on soil test recommendations. If pH is below 6.0 and limestone will not be applied, consider applying molybdenum. Molybdenum is a micronutrient, which the *Rhizobia* bacteria need, and the availability of molybdenum drops off below pH 6.0. Since small quantities of this micronutrient are required, use a seed treatment, which contains molybdenum.
- If you are using lime-stabilized sludge as an alternative liming material, be careful not to over-apply. These materials should be treated as liming agents, not as nutrient sources, and their over-application can increase pH levels above the target pH mentioned above. Base applications on soil test and neutralizing value or calcium carbonate equivalent (CCE) of the sludge product.
- Inoculate: The last two issues of the *Plant and Pest Advisory* discussed the benefits of inoculating to ensure an ample population of nitrogen-fixing bacteria. Inoculants have been

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Prioritizing Fields for Use of the PSNT

Joseph R. Heckman, Ph.D., Soil Fertility

The Presidedress Soil Nitrate Test (PSNT) is useful to determine if the soil nitrogen supply is adequate or if sidedress nitrogen is needed to grow field corn or sweet corn. But because it takes time and labor to carry out the soil test and it is not practical to use the test on all acreage, one should first consider the merits of using the PSNT in various fields depending on field history.

The best use of the PSNT is in those fields where you expect there is enough N but you are not sure that it is enough. Sampling these fields that are questionable may save on sidedress N fertilizer. Examples of priority fields include field corn or sweet corn fields where manure or sewage sludge has recently been applied. Often such fields have sufficient nitrogen provided by the manure, but this is not always so. Various weather-related or manure management practices can influence nitrogen availability. The PSNT helps to take the guesswork out of deciding if a manured field of corn needs sidedress N.

Another situation where the PSNT is particularly useful is where corn is planted in fields following forage legumes or even a grass sod. Often when field corn or sweet corn follows a sod crop, little or no sidedress nitrogen is needed. The PSNT can be used to confirm this expectation of sufficient nitrogen availability for specific fields.

Sometimes the PSNT is useful in fields where there is no history of manure or sod crops. An example is where fertilizer N was broadcast at planting but subsequent rains may have caused the nitrogen to be lost from the soil. The PSNT is effective in this case to determine if sufficient fertilizer N remains in the soil.

Knowing the field history and weather conditions are the keys to targeting where to best use the PSNT. Generally there is little value in taking soil samples for the PSNT in fields that are expected to have low soil nitrogen availability. Soils that are sandy, low in organic matter content, and have no recent application of manure can be expected to have low soil nitrogen availability without using the PSNT.

Fact Sheets 569 and 760 give instructions on how to use the PSNT on field corn and sweet corn. ❑

Field Crops Weed Control

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

✔ **Corn:** Reports have come in of a few fields that require replanting for various reasons, including frost, bird damage, and others. If Lasso, Partner, Dual, atrazine, or Bladex have been used, disk and replant. Consider reapplying the Lasso, Dual, Partner, or Bladex at half the initial rate, if more than three weeks has gone by since the initial application, but *do not* exceed the maximum-labeled rate. Atrazine does not need to be reapplied.

Do *not* disk the field if Prowl has been used. Preplant incorporation of Prowl herbicide can result in severe injury to corn. Try to scrape away the top inch of soil with a wide shoe and replant into the untreated soil. Throw the treated soil back during the first cultivation. Consult your County Agent for additional assistance if Prowl treated fields need to be replanted. ❑

TIPS FROM PAGE 1

shown to be economical even on fertile ground, which has been in soybean production. Avoid planting beans without inoculant on ground, which has never had soybeans before or in the past 3 to 5 years, especially if the pH is low. Under these conditions, triple the rate of inoculant. A good combination is to mix a liquid inoculant at the normal rate with a peat inoculant at double its normal rate.

- Phosphorous and Potassium: If you have fields testing optimum or higher in phosphorous and potassium, there is no need to broadcast these nutrients. Research nationwide has shown that soybean yield will not respond to additional fertilizer on fields testing high in these nutrients. However, for soils testing low or medium in these nutrients, apply the recommended fertilizer as a pre-plant application. Double-cropped soybeans should not require any fertilization if the grain crop preceding it was adequately fertilized.
- Nitrogen: The yield response of soybeans to fertilizer nitrogen is inconsistent. If you are planting very early on cold wet soils, or if residues high in carbon have been incorporated, you may want to consider 10 to 20 pounds of nitrogen. But your long-term goal should be to maintain the optimum pH for bacterial nitrogen fixation, so that you will not need to rely on purchased nitrogen. ❑

Determining Hay Moisture Content

Jeremy W. Singer, Ph.D., Field and Forage Crops

Baling hay at the correct moisture is critical for successful storage. Even if hay isn't unloaded from wagons, baling hay at excessive moisture content can lead to heating. The current recommendation suggests that forage in small rectangular bales should not be baled if moisture content exceeds 20%, and no greater than 16% for large round bales. If preservatives are used, then moisture content above 20% is acceptable. However, research data on performance of preservatives are inconsistent. Therefore, if possible, baling hay at the correct moisture content will minimize heating, which contributes to color and quality changes during storage.

Determining accurate moisture content in the field before baling can be difficult. To determine moisture, collect grab samples, or make 3 to 5 bales to use a hay corer for moisture determination. A microwave oven or Koster moisture tester can be used to calculate moisture content. If grab samples are preferred, sampling an entire section of the swath is critical. Make sure you sample forage from the top and bottom so your moisture content accurately assesses the true moisture content of the curing forage. If using a hay corer, sample the long end of the bale.

We are evaluating species and nitrogen effects on hay yield at the Snyder Research Farm near Pittstown. First cut orchardgrass bales contained 13.2% moisture on average, with a range of 10.8% to 15.1% across a 3-acre field. Therefore, when determining moisture content to decide whether to bale, collect as many samples as possible to minimize the potential for heating during storage. For more information on determining moisture content contact your County Agent. ❑

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged slightly below normal. Extremes were 88 degrees at Pemberton on the 23rd and 38 degrees at Long Valley on the 18th. Weekly rainfall averaged 1.79 inches north, 1.29 inches central, and 1.11 inches south. The heaviest 24-hour total was 2.04 inches at Pemberton on the 19th to the 20th. Estimated soil moisture, in percent of field capacity, this past week averaged 88 percent north, 74 percent central and 59 percent south. Four inch soil temperatures averaged 59 degrees north, 60 degrees central and 61 degrees south.

Weather Summary for the Week Ending 8 am Monday 5/24/99

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	2.87	9.34	-1.23	80	42	61.	-1	260	17	100
CANOE BROOK	1.32	8.50	-3.17	82	42	61.	-1	335	117	87
CHARLOTTEBURG	1.76	10.66	-.84	82	39	58.	-1	187	47	96
FLEMINGTON	1.42	7.35	-3.72	85	42	62.	0	287	55	85
LONG VALLEY	1.56	8.33	-3.58	76	38	58.	-2	209	38	98
FREEHOLD	MISSING									
LONG BRANCH	.77	9.06	-2.33	76	47	60.	-2	292	45	72
NEW BRUNSWICK	1.41	8.17	-2.66	79	42	62.	-2	317	2	91
PEMBERTON	2.67	9.66	-.85	88	42	64.	0	384	73	97
TOMS RIVER	.26	4.55	-6.47	80	43	62.	-1	269	0	52
TRENTON	1.35	8.80	-1.18	83	41	62.	-3	266	-84	91
CAPE MAY COURT HOUSE	.75	6.69	-2.99	76	47	64.	1	338	28	50
DOWNSTOWN	1.44	8.96	-.98	85	45	64.	-1	362	-1	83
HAMMONTON	1.27	8.33	-1.95	84	47	65.	1	352	13	79
POMONA	.75	8.73	-.88	79	47	64.	1	321	34	64
SEABROOK	2.00	9.23	.15	84	47	65.	0	432	64	98
ATLANTIC CITY MARINA	.46	7.31	-1.77	76	52	63.	1	347	74	45
WOODSTOWN	.91	9.24	-1.09	86	44	64	NA	424	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 129 (Ending 5/17/99) This Week 171 (Ending 5/24/99)

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