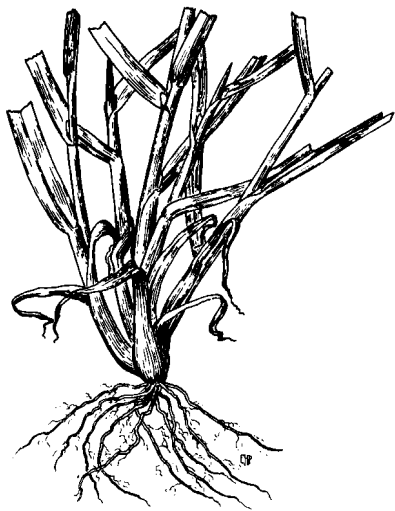


PLANT & PEST ADVISORY

FIELD CROPS/LIVESTOCK EDITION \$1.50

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Cool Season Grass Production: Fertility and Harvest Management

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

Many growers utilize cool season grasses in lieu of alfalfa on moderately-to-well drained soils or in fields with variable drainage where alfalfa typically does not persist. Growing grass mixes or monocultures increases weed control options and facilitates management decisions. These grasses will produce high quality forage and yields if managed properly. Hay producers in New Jersey should manage their grass hay fields to balance yield and quality.

Recent research out of New York has found that cool season grasses respond differently to nitrogen (N) applications. Economic N rates varied according to specie, location, and year. Economic N rates were higher for reed canarygrass than for timothy, and higher for the 4-cut system compared to the 3, even though the 3-cut system had greater yields. Concerns regarding excess nitrate accumulation in the above-ground dry matter have resulted in preliminary recommendations not to exceed 240 lb. N/acre per year when nitrate N tissue concentration is the primary concern.

N application rates should be based on soil productivity and cutting frequency. Currently in New York, 50-75 lb. of N is recommended as a topdress application for a 2-cut grass system. In a 3-cut system, 125 to 175 lb. N/acre are recommended, with an additional 25 lb. N/acre for the 4-cut system. Approximately 75 lb. N/acre should be applied in early spring at green-up and 25 to 50 pounds at green-up prior to each successive cutting.

Recent research out of Pennsylvania has focused on harvest frequency and number and its effect on forage yield and quality and economic returns. Established stands of orchardgrass, reed canarygrass, smooth brome grass, and timothy were harvested 2, 3, or 4 times per year at either 35, 45, or 70-d intervals. In dry years, greatest DM yields for all species were obtained when 2 or 3 harvests/year were taken on a 70 or 45-d interval.

Growing seasons with normal or above normal rainfall produced greatest yields of smooth brome grass and timothy when harvested 2 or 3 times/year, however, yields of orchardgrass and reed canarygrass were greatest when harvested 3 or 4 times/year.

Independent of rainfall during the growing season or grass species,

SEE GRASS ON PAGE 2

Wet Weather and Loss of Soil Nitrogen

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

Extremely wet weather this spring has likely caused significant losses of soil nitrogen (N) and N from applied fertilizers. The degree of N loss depends on a combination of soil type, rainfall amount, and management practices. Pathways of N loss include soil erosion, leaching, and denitrification. Nitrogen is most vulnerable to leaching in highly permeable sandy soils. Denitrification occurs when nitrate N is converted by soil microorganisms to gaseous forms of N which are lost to the atmosphere. Losses of N via denitrification can be very large when soils remain saturated with water for long periods.

Early plantings of vegetable and field crops that were fertilized with N before the recent heavy rains may become N deficient due to losses of applied N. Another factor that limits soil N availability to crops this spring is that cold wet soils are slower to release N than normally becomes available from decomposition of organic matter. For soil organic matter to release and supply significant amounts of N to crops the soil needs to be warm and moist and have good aeration.

If additional sidedressing or topdressing of N is planned, it is advisable to apply this N on an earlier schedule to prevent the development of crop N deficiency. Smaller and more frequent applications of N fertilizer are better than applying a large single application. □

GRASS FROM PAGE 1

forage quality improved and value of the forage increased from \$49 to \$81/ton as harvest interval decreased from 70 to 35-d. In dry years, the number of harvests made no difference in net economic return regardless of the grass species. Harvest schedules that produced the greatest yields also produced forage of the lowest quality, resulting in similar economic return for all harvest schedules. In growing seasons when rainfall is normal or above normal, frequent harvests (35 or 45-d intervals) tended to result in the greatest net economic return per acre. Frequent harvests also produced the highest quality forage but did not negatively impact forage yield as much as in dry years. An exception to this trend was for timothy where harvest frequency had no effect on economic return.

In the northeastern United States, cool season grass harvest schedules must remain flexible and responsive to climatic conditions. In dry years, reduced yields associated with more frequent harvests of orchardgrass, reed canarygrass, smooth bromegrass and timothy were offset by improved forage quality so that net economic return per acre was unaffected. Therefore, under dry conditions, the level of forage quality required by the consuming animal should be used as guidelines for implementing a harvest schedule. In years when rainfall is at or above normal, 35 to 45-d harvest intervals should be employed to maximize DM yield and forage quality.

Forage producers need to be able to plan a harvest strategy that will maximize net economic return without knowing what the growing season will be like.

Consequently, producers who want high quality forage, should plan the first harvest as if four harvests will be taken on 35-d intervals. Typically, grasses reach 55% NDF by the time they start heading out. Quality considerations should be based on the type of animal that will be consuming the feed. Remember, a large fraction of the total yield comes from the first harvest, so cutting should begin just prior to heading on some ground, so on average, first cut will consist of a high quality forage.

Sources: Harvest Management Alters Economic Return of Cool Season Grasses. M.H. Hall, Penn State University

Nitrogen Fertilization of Grasses. Klausner et al., Cornell University. □

Weekly Weather Summary

Keith Arnesen, Agricultural Meteorologist

Temperatures averaged slightly below normal. Extremes were 77 degrees at Seabrook on the 8th, and 43 degrees at Freehold on the 5th. Weekly rainfall averaged 4.17 inches north, 4.87 inches central, and 2.83 inches south. The heaviest 24 hour total was 2.60 inches at Toms River on the 8th to 9th. Estimated soil moisture, in percent of field capacity, this past week averaged 99 percent north, 97 percent central and 79 percent south. Four inch soil temperatures averaged 60 degrees north, 60 degrees central and 61 degrees south.

The following table contains meteorological information since the start of the growing season March first. The table is updated each Monday and the following is an explanation for each column.

Week=total rainfall for the previous 7 days ending Monday morning

Total=total rainfall since March 1st

Dep=departure from normal of rainfall since March 1st. A negative sign indicates below normal and no sign indicates above normal.

Mx=highest temperature for that 7 day period

Mn=lowest temperature for that 7 day period

Avg=average temperature for that 7 day period

Dep=departure from normal of the average temperature for that 7 day period

Total=total number of growing degree units since March 1st

Dep=departure from normal of growing degree units

%FC=percent of field capacity (soil moisture)

Weather Summary for the Week Ending 8 Am Monday 5/11/98										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD	BASE50 MON	
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	4.70	17.36	8.29	73	52	59.	1	254	146	100
CANOE BROOK	3.59	15.86	5.87	72	52	59.	1	363	271	100
CHARLOTTEBURG	5.12	17.51	7.67	71	48	56.	1	229	184	100
FLEMINGTON	3.90	17.68	8.15	74	53	59.	1	296	196	100
LONG VALLEY	3.55	16.14	5.94	68	54	58.	2	224	160	100
NEWTON	MISSING									
FREEHOLD	5.40	17.92	8.46	69	43	57.	-2	335	199	100
LONG BRANCH	5.85	21.95	12.17	64	52	57.	-1	238	126	100
NEW BRUNSWICK	3.96	17.26	8.07	72	53	58.	-2	313	153	100
PEMBERTON	3.43	14.47	5.41	75	52	60.	0	445	289	100
TOMS RIVER	6.99	23.29	13.78	72	48	58.	-2	372	251	100
TRENTON	3.58	16.79	8.22	71	52	58.	-3	310	127	100
CAPE MAY CRT HOUSE	1.68	12.09	3.78	68	52	59.	-1	322	163	100
DOWNSTOWN	2.63	13.07	4.51	76	53	61.	0	398	205	100
GLASSBORO	3.03	11.92	2.87	74	52	60.	-1	384	201	100
HAMMONTON	3.33	13.34	4.53	75	52	60.	0	362	186	100
POMONA	4.37	17.55	9.23	72	51	59.	0	338	199	100
SEABROOK	2.09	14.14	6.41	77	52	61.	0	404	208	100
ATLANTIC CITY MARINA	2.69	17.38	9.52	67	52	58.	0	270	131	100
WOODSTOWN	2.47	10.69	2.38	76	55	62	NA	433	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week 124 (Ending 5/4/98)										
This Week 149 (Ending 5/11/98)										

Insecticide - Herbicide Interactions

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

✓ **Corn:** Certain corn insecticides can increase the risk of crop injury when certain herbicides are used. Herbicides in the imidazolinone and the sulfonyl urea chemical families kill **weeds** by the same mode of action. They attack one single site of action in susceptible plants. The use of **Counter** insecticide reduces the tolerance of corn that normally would not be injured by these herbicides. The first and most well known examples are the interactions between the insecticide **Counter** and the postemergence **annual grass** herbicides Accent or Beacon.

The decision to use a postemergence **grass** herbicide often comes following a failure of the preemergence herbicide due to weather or other factors. The use of **Counter** at planting eliminates the option of using certain corn herbicides, including Accent or Beacon to control escaped **annual grasses**. Recently, additional corn herbicides in the same chemical families have been labeled to control **weeds** and **grasses**. The potential for interaction with insecticides varies with each product. See the *Summary Of Labeled Herbicide/Insecticide Uses Chart*. Do *not* use herbicides prohibited on the chart in combination with **Counter** insecticide.

IR and IT corn varieties have improved genetic tolerance to herbicides in the imidazolinone chemical family. IR corn tolerance also extends to sulfonyl urea herbicides. These genetically improved varieties may eliminate the potential for crop injury from the herbicide/insecticide interaction. See the *Summary of Labeled Herbicide/Insecticide Uses Chart* on page 5. □

Field Crop Weed Control

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

✓ **Corn:** Reports of a few fields have come in 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.

Basis Tank-Mix Recommendations

Basis is a corn herbicide introduced by DuPont. It is a "jug-mix" of two ALS inhibitor herbicides, Matrix and Pinnacle. The label allows application to corn preemergence through the 4 leaf stage of growth.

Basis is not recommended in New Jersey for application preemergence. Test results have indicated the length of weed control obtained from preemergence applications may be inadequate.

Basis is *recommended for use* at the spike to 2 - 3 leaf stage of corn, before the weeds exceed 1 to 2 inches in height. Larger weeds found in 3 to 4 leaf corn may be more difficult to control. Tank-mix with atrazine or Banvel to control annual **broadleaf weeds** and for resistance management, or plan to use apply a **broadleaf** weed herbicide late postemergence. Do *not* tank-mix Basis with other herbicides not listed on the label, or adverse interactions may reduce weed control or increase crop injury.

Basis Gold is a second corn herbicide marketed by DuPont. It is a "jug-mix" of two ALS inhibitor herbicides, Matrix and Accent, and atrazine. The label allows application to corn postemergence up to 12 inch tall corn or until 6 collars can be seen, whichever is more restrictive.

Basis Gold is recommended for corn growing where triazine resistant weeds, especially **common lambsquarter**, are *not* present. The deletion of Pinnacle and addition of Accent to the jug mix improves the control of larger emerged **grasses**, but only the atrazine controls **common lambsquarter**.

Warning: The maximum labeled rate of atrazine that can be applied per acre has been reduced. Additional restrictions have been added to the label. These changes have been made to protect ground and surface water from contamination with atrazine. Read and follow the new label restrictions. Consult the Commercial Production Recommendations for rates and additional information. □

SUMMARY OF LABELED HERBICIDE/INSECTICIDE USES									
Herbicide	THIMET Broadcast	COUNTER 15G In Furrow	COUNTER 15G Broadcast	COUNTER CR In Furrow	COUNTER CR Broadcast	OTHER INSECTI- CIDES	DYFONATE All Methods	LORSBAN All Methods	
Broadstrike/ Python Field Corn	OK	NO	NO	NO	NO	OK- Banded	OK	OK	
Permit Field Corn	OK	OK	OK	OK	OK	OK	OK	OK	
Basis Field Corn	NO	NO	NO	NO	NO	OK	NO	NO	
Basis IR Corn	OK	OK	OK	OK	OK	OK	OK	OK	
Accent Regular/IT Corn	NO	NO	NO	NO	NO	OK	NO	NO	
Accent IR Corn	OK	OK	OK	OK	OK	OK	OK	OK	
Accent Gold Field Corn	NO	NO	NO	NO	NO	OK	NO	NO	
Beacon Regular/IT Corn	NO	NO	NO	NO	NO	NO (organo- phosphates)	NO	NO	
Beacon IR Corn	OK	OK	OK	OK	OK	OK	OK	OK	
RESOLVE & CONTOUR IT Corn	OK	NO	OK	OK	OK	OK	OK	OK	
RESOLVE & CONTOUR IR Corn	OK	OK	OK	OK	OK	OK	OK	OK	
BASIS GOLD Field corn	NO	NO	NO	NO	NO	OK	NO	NO	
BASIS GOLD IR Corn	OK	OK	OK	OK	OK	OK	OK	OK	
HORNET/ SCORPION III Field Corn	NO	NO	NO	NO	NO	NO (organo- phosphates)	NO	NO	
EXCEED Field Corn	NO	NO	NO	NO	NO	NO (organo- phosphates)	NO	NO	
EXCEED IR Corn	OK	OK	OK	OK	OK	OK	OK	OK	

Current Pest Problems

Joe Ingerson-Mahar, Field Crops IPM Agent

Alfalfa

Blue alfalfa aphid has been a problem in some South Jersey fields. Stunted foliage and poor vigor are characteristic of heavily infested plants. Most damaged areas of these fields have been extensive and yield loss in first cutting may be large. If farmers have not yet examined their fields this spring, they may be in for a surprise at harvest. At this point, if a farmer plans on harvesting within a week (assuming that fields dry out enough) spraying is not recommended. Alfalfa weevil has also been found in fields around the state with some fields reaching threshold. Miles Huffaker, Salem County Program Associate, noted that he had seen the fungal pathogen that attacks alfalfa weevil. Farmers with heavily damaged fields should first look at the crop stage and determine when they would anticipate harvesting and, secondly, look at the weevil populations to make sure that weevils are still present before doing any spraying. Often fields have been severely damaged but on close examination no weevils are found. This happens because of the activity by parasites, pathogens and predators.

Corn

It is too early to see what pest problems corn may have. Fields planted just before the heaviest rains should be examined to determine if seeds are rotting. Seed corn maggot injury may be significant in some fields where extra organic matter is left or applied (crop residue and manure).

Wheat

Wheat farmers should examine their fields for powdery mildew and other foliar diseases. The optimal time for spraying fungicides is past, once the wheat has gone beyond the boot stage. Most fields are now in flower or soft dough stage.

Powdery Mildew in Wheat

Daniel Kluchinski, Mercer County Agricultural Agent

Recent wet weather and cool temperatures may not have been of much help to growers, but it has been advantageous for fungal pest organisms. Wheat powdery, a foliar fungal disease, is prevalent in many wheat fields across the state. The disease organism is found on the lower stems and leaves of plants, and as the season and crop maturity progresses, the disease will move up the plant if conditions are favorable. The disease is usually found on the upper surfaces of lower leaves, and first appears as cottony white oblong clumps. These patches will turn grey-brown in color as they mature, and chlorotic (=yellow) patches appear on the leaf surface. Generally cool wet or high humidity conditions will lead to continued disease development.

In order to make a decision about treating with a foliar fungicide, a decision-making score sheet (see page 7) has been developed. This IPM approach evaluates the pest incidence, stage of development of the disease and crop, and economics. Five factors are included in the evaluation, including cultivar susceptibility, yield potential, nitrogen application rate, weather conditions, and disease occurrence. To best use the decision-making guide, walk through your field to get an idea of plant growth stage and disease occurrence. Then read through the score sheet, and score each of the five factors for each field you are evaluating. Once the five factors are scored, add the total score and follow the recommendation listed at the end on the table. If a foliar application is recommended, propiconazole (=Tilt) or triadimefon (=Bayleton) are labeled. However, check with the product label or your Extension agent for use rates and restrictions.

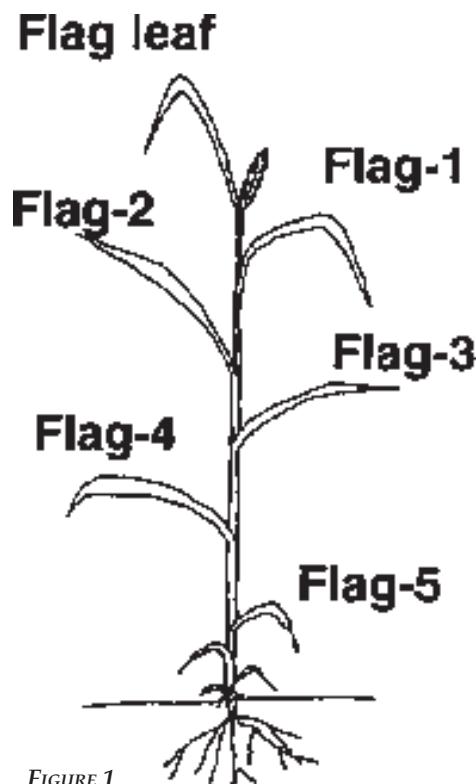


FIGURE 1

Wheat Powdery Mildew Foliar Fungicide Decision Guide and Score Sheet

1. Cultivar susceptibility to powdery mildew. HR=highly resistant, R=resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible, VS=very susceptible. Check the susceptibility chart on page 156 of the *1998 Pest Management Recommendations for Field Crops* or call your field crop Extension agent.

Resistance	HR	R	MR	MS	S	VS	Your score:
Score	0	0	0	1	2	3	

2. Site yield potential (bu/A). If yield potential is less than 45 bu/A, do not spray.

Yield	45-55	55-65	65-75	75-85	>85	Your score:
Score	0	1	2	3	4	

3. Spring nitrogen management (in pounds per acre).

Spring N	<60	60-90	60-90	90-120	90-120	Your score:
Timing	—	split	green up	split	green up	
Score	0	1	2	3	4	

4. Weather conditions.

Temperature Average	Score		Note: This is based on temperature and moisture conditions for the past 2 weeks and forecast for the next week. If average to wet conditions are due to heavy rain, subtract 2 for score total.	Your score:
	Dry	Moist/Wet		
50-60 F	1	3		
60-70 F	2	4		
70-80 F	1	3		
>80 F	0	0		

5. Disease Occurrence and Assessment. Scout the field to determine how high up on the plant powdery mildew occurs. See Figure 1 for flag leaf number determination.

Growth Stage: joint stage (first node on stem visible) and flag leaf visible

Mildew on	flag	flag-1	flag-2	flag-3	flag-4	Your score:
Score	4	3	2	1	do not spray*	

Growth Stage: boot stage (flag leaf fully expanded, head not yet formed)

Mildew on	flag	flag-1	flag-2	flag-3	flag-4	Your score:
Score	6	5	3	1	do not spray*	

Growth Stage: heading and flowering

Mildew on	flag	flag-1	flag-2	flag-3	Your score:
Score	6	4	2	do not spray*	

* Do not spray. Scout fields again in 5 to 7 days to determine disease occurrence.

Add your total score from all five factors

YOUR TOTAL SCORE

The decision threshold is a score of 13. If the total score is 13 or more, a fungicide application can be beneficial. Check product label or your Extension agent for use rates and restrictions. If weather conditions turn dry and warm, disease occurrence should slow, while wet weather will increase disease occurrence. Continue scouting on a weekly basis until heading.

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