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# Crops, Dairy, Livestock, Equine News

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In This Issue...





## 2009 Farmer Research Meetings
### March 31 Deerfield and April 1 Worcester

Crops, Dairy, Livestock, Equine Team – UMass Extension has scheduled two farmer meetings to share its research results and to seek your input and involvement. The first meeting will be held on Tuesday March 31 at UMass Crop and Animal Science Research Center, River Road in South Deerfield. The second meeting will be held on Wednesday April 1 at Broad Meadow Brook Conservation Center, 414 Massasoit Road, off Rt 290 in Worcester. Both meetings will begin at 10:30 AM and continue until 2:00 PM with lunch provided.

Some of the research results that will be discussed in these two meetings include:

- Pasture mixes (blends)
- Nitrogen sufficiency tests on farms
- Corn hybrid evaluation trials – silage and grain
- Planting date effect on yield and silage quality of various maturity groups of corn
- Biofuels
  - Grain corn as heating source
  - Switchgrass

We hope many farmers will be able to attend either of these meetings and participate in the discussions and field activities this year.

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## Mud Management for Horse Operations

If you have horses on limited acres of land, especially in the Northeast where the average annual precipitation is over 40 inches, muddy condition will pose a challenge for your operation. Mud management and many other topics are discussed in a new series of BMPs for equine, livestock, and dairy producers on the cdle website www.umass.edu/cdl . Access the BMPs by clicking on the publications button.

**Mud:**

- Transmits bacterial and fungal diseases, e.g. thrush (affects the frog of the hoof), mud fever (crusty scabs on lower limbs), rain scald (same condition on upper body), sand colic (ingesting dirt and sand when feeding), low body temperatures (burns more calories).
- Creates unsafe footing.
- Provides a breeding ground for flies.
- Makes core time unpleasant.
- Increase polluted runoff.

**What Causes Mud?**

Factors that create or enhance mud include organic matter in manure, barn and shelter roof runoff, poor soil infiltration, and poor pasture management. You may think that mud is an unavoidable part of owning horses on limited acreage. Although you may not be able to eliminate mud you can significantly reduce the amount of mud with proper maintenance.

(Mud Mgt. continued on page 7)

# 2008 Evaluation of Corn Hybrids in Massachusetts

In 2008 we evaluated corn hybrids submitted by contributing companies at three locations. In each site, hybrids were grouped in two maturity groups based on relative maturity (RM) provided by seed companies; short season group (84-100 days) and full season group (>100 days). Our earlier studies at the University of Massachusetts Crops Research and Education Center Farm indicated that average yield of earlier maturing corn hybrids were similar to later maturing hybrids. Using earlier maturity corn hybrids along with earlier planting can provide the opportunity for farmers to plant their cover crops early for maximizing N recovery after corn and fall manure application. Our multi-year research studies have shown well-established cover crops can accumulate more than 100 lb N per acre.

In all locations corn hybrids were planted in early May (Table 1). A cone type distributor mounted on a double disc opening corn planter was used in a conventionally prepared seed bed. Plots were planted at the rate of 32,000 seeds per acre in 30 inch rows. Plots consisted of 3 rows with a length of 25 feet. Each hybrid was replicated 4 times in all locations. Weeds were controlled as follows:

**UMass:** pre-emergence application of 2 quarts of Bicep II Magnum per acre.
**Deerfield:** Dual II Magnum 2.5 pints per acre and Prowl 4 pints per acre.
**Concord:** Atrazine 1 quart per acre + Lasso 1 quart per acre.

The PSNT result at the Concord location was slightly lower than optimum (Table 1). UMass Extension recommends 75 lbs N/acre when soil test $NO_3$-N level is 21-25 ppm. However, we have noticed that some dairy and livestock farmers who are in a “price-cost squeeze” under fertilize corn fields. Therefore, we decided to avoid side dressing at the Concord location to evaluate the yield response of all hybrids to a potentially nitrogen deficient condition.

Corn hybrids were harvested by hand at different dates when their kernels indicated 50-65% milk line. Harvested hybrids were evaluated for yield of silage and ear, percentage ears, and moisture content. Ten feet of the central row from each plot was taken for estimating yield. Silage yields were adjusted to 70% moisture and ear corn yields to 25% moisture. Moisture content is reported as a percentage of corn harvested as silage.

Climate data for UMass and Deerfield locations is presented in Table 2. In general, shorter season hybrids required 2032 GDD and full season required 2118 GDD, from planting to the 50% milk line stage. We recommend that farmers use the accumulated GDD from early May to early September on their farm as a guide in selecting hybrid RM. A mixture of hybrid maturities is recommended to minimize risk of drought during silking which has a significant impact upon yield and ear percentage. Yield performance of all hybrids and average GDD requirements for hybrids from planting to the silking stage (two locations) are presented in Table 3.

**Table 1:** Field manure history, fertilizer added, pre-sidedress N test (PSNT), and planting and harvesting dates for the three locations used for corn hybrid evaluations.

| Location | Manure | Pre-plant Fertilizer | PSNT | Planted | Harvested |
|---|---|---|---|---|---|
| UMass | N | 15-8-12 (650 lb/a) | 38.3 | May 1 | Sept. 10–18 |
| Deerfield | Y | None | 24.8 | May 7 | Sept. 5–10 |
| Concord | Y | Ca $NH_4NO_3$ (250 lb/a) | 21.0 | May 8 | Sept. 8–12 |

**Table 2:** Climate data for 2008 in S. Deerfield, MA.

| | GDD[1] | | Rainfall (inches) | |
|---|---|---|---|---|
| | 2008 | Norm | 2008 | Norm |
| May | 284 | 282 | 1.35 | 3.89 |
| Jun | 505 | 533 | 5.82 | 3.75 |
| Jul | 640 | 697 | 6.11 | 3.91 |
| Aug | 497 | 638 | 3.35 | 4.10 |
| Sep | 192 | 199 | 4.99 | 3.79 |
| **Total** | **2118**[2] | **2349** | **21.61**[3] | **20.24** |

[1] Growing Degree Days was calculated as:
GDD = $E(T_{max} + T_{min})/2 - 50$

[2] Total GDD for full maturity group. (Total GDD for shorter maturity group was 2032.)

[3] Total rainfall for full maturity group. (Total rainfall for shorter season maturity group was 19.88 inches.)

**Table 3:** Yield and ear % for all hybrids planted at the **University of Massachusetts Crops Research and Education Center Farm (**May 1, 2008), **Deerfield dairy farm** (May 7, 2008), and **Concord farm site** (May 8, 2008) and harvested at 50% milk line.

| | | | ----------------UMass---------------- | | | | --------------Deerfield--------------- | | | | --------------Concord-------------- | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRAND | HYBRID | RM Group | Silage[1] T/ac | Earcorn[2] T/ac | Pctear % | Silk GDD[3] | Silage[1] T/ac | Earcorn[2] T/ac | Pctear % | Silk GDD | Silage T/ac | Earcorn T/ac | Pctear % |
| AGRISURE | N20R-GT | 84 | 32.4 | 7.3 | 57 | 1050 | 28.2 | 7.0 | 62 | 995 | 25.5 | 5.7 | 56 |
| DAIRYLAND | 3000-6 | 100 | 35.2 | 8.1 | 57 | 1103 | 30.0 | 7.4 | 61 | 1201 | 25.8 | 5.7 | 55 |
| DEKALB | DKC 45-79 | 95 | 33.5 | 8.6 | 64 | 1022 | 30.1 | 7.6 | 63 | 1045 | 24.2 | 5.9 | 60 |
| DEKALB | DKC 50-44 | 100 | 35.8 | 9.0 | 63 | 1050 | 33.3 | 8.7 | 66 | 1168 | 27.6 | 6.4 | 58 |
| LICA | 946L | 94 | 36.7 | 8.2 | 56 | 1126 | 26.4 | 7.0 | 67 | 995 | 25.1 | 6.1 | 61 |
| LICA | 9707 Btill | 97 | 32.0 | 8.1 | 63 | 1000 | 29.3 | 6.7 | 57 | 1121 | 30.1 | 6.3 | 52 |
| LICA | 99S7 | 99 | 33.3 | 7.5 | 56 | 1126 | 28.7 | 5.9 | 52 | 1227 | 28.4 | 5.7 | 50 |
| SEEDWAY | SW 3301L | 90 | 33.5 | 7.5 | 56 | 1244 | 30.6 | 6.6 | 54 | 1201 | 26.5 | 5.1 | 48 |
| **Mean** | | | **34.1** | **8.0** | **59** | **1090** | **29.6** | **7.1** | **60** | **1119** | **26.7** | **5.9** | **59** |
| DEKALB | DKC 52-59 | 102 | 34.6 | 8.6 | 62 | 1189 | 33.2 | 8.1 | 61 | 1137 | 26.6 | 6.3 | 60 |
| DEKALB | DKC 54-49 | 104 | 37.5 | 8.8 | 59 | 1126 | 33.8 | 8.9 | 66 | 1168 | 27.6 | 6.6 | 59 |
| DEKALB | DKC 61-69 | 111 | 36.5 | 8.3 | 57 | 1142 | 38.5 | 8.6 | 56 | 1214 | 29.0 | 5.2 | 44 |
| DEKALB | DKC 63-42 | 113 | 38.9 | 9.2 | 59 | 1206 | 34.9 | 8.5 | 61 | 1168 | 27.6 | 5.8 | 53 |
| DEKALB | DKC 67-87 | 117 | 36.5 | 7.9 | 54 | 1244 | 34.8 | 8.4 | 61 | 1168 | 23.5 | 4.7 | 49 |
| DAIRYLAND | 3002-6 | 105 | 35.9 | 7.6 | 53 | 1142 | 33.6 | 7.9 | 59 | 1214 | 29.0 | 5.8 | 50 |
| DAIRYLAND | 3005-7 | 105 | 35.9 | 8.1 | 56 | 1219 | 33.5 | 8.1 | 60 | 1184 | 26.2 | 5.3 | 50 |
| DAIRYLAND | 3007-6 | 106 | 34.2 | 8.0 | 58 | 1244 | 32.7 | 7.8 | 59 | 1201 | 29.6 | 6.0 | 51 |
| DAIRYLAND | 3008-4 | 109 | 36.9 | 8.3 | 56 | 1142 | 32.9 | 7.6 | 58 | 1201 | 27.0 | 5.8 | 54 |
| DAIRYLAND | 3012-6 | 115 | 40.4 | 9.1 | 56 | 1279 | 36.1 | 8.3 | 57 | 1137 | 26.9 | 5.5 | 51 |
| **Mean** | | | **36.7** | **8.4** | **57** | **1193** | **34.4** | **8.2** | **59** | **1179** | **27.3** | **5.7** | **52** |
| **Overall Mean** | | | **35.4** | **8.2** | **58** | **1155** | **32.2** | **7.7** | **60** | **1148** | **27.0** | **5.8** | **53** |
| CV (%) | | | 7.7 | 9.4 | 3.3 | 2.4 | 10.5 | 10.8 | 4.0 | 2.3 | 10.6 | 14.0 | 6.7 |

[1]Silage @70%moisture [2]Earcorn @ 25% moisture [3]GDD required for silking Stephen J. Herbert and Masoud Hashemi Dept. of Plant, Soil, and Insect Sciences Univ. of Massachusetts, Amherst

# Planting Date and Hybrid Influence on Corn Silage Yield and Quality

Many farmers plant their silage corn relatively late due to the soil and weather conditions. Some of the growers believe that corn for silage is more tolerant of late planting than is corn planted for grain because forage harvest does not have to wait until the grain matures fully. This may be true when thinking of silage for yield only. It may not be a valid conclusion though when thinking of silage in terms of yield and quality such as milk per acre. Most of the energy content of corn silage is derived from its grain content therefore, the ear/stover ratio should be considered as an important criterion for silage quality. In later-planted corn, the energy level of silage is often reduce due to lower ear/stover ratio and presumably because of lower starch levels in grain due to reduced grain filling period. Therefore, early planting of corn for silage should be considered as an important strategy to increase forage yield and grain content of the silage.

Use of earlier maturity hybrids when planting corn is postponed for any reason could be considered a positive management strategy. Some of our earlier studies indicated that the average yields of shorter season maturing corn hybrids were similar to full season maturing hybrids.

In 2005, 2007, and 2008 we conducted date of planting studies at the UMass Crops Research and Education Center Farm, in South Deerfield. Hybrids were grouped based on their relative maturity (RM) provided by the seed companies; shorter season maturity group 84-100 days and full season maturity group >100 days. In 2005 a date of planting study was also conducted at a farm located in Spencer, Massachusetts. Summaries of results of these studies are presented in Tables 1 and 2.

Table 1: Yield response of corn hybrids differed in relative maturity to date of planting.

| Date of Planting | Silage Yield[1] ton/acre | | Ear Yield[2] ton/acre | | Ear Percentage % | |
|---|---|---|---|---|---|---|
| | Short | full | short | full | short | full |
| **Spencer, 2005 (2 hybrids)** | | | | | | |
| May 5 | 29.1 | 31.7 | 6.2 | 5.3 | 57.4 | 41.7 |
| May 18 | 26.9 | 29.4 | 5.2 | 4.8 | 44.8 | 38.0 |
| June 10 | 25.6 | 29.5 | 3.8 | 2.5 | 38.5 | 19.8 |
| | L* | | L** | | L** | |
| **Deerfield, 2005 (6 hybrids)** | | | | | | |
| April 20 | 24.9 | 28.9 | 5.7 | 6.2 | 57.0 | 53.3 |
| May 10 | 27.5 | 31.1 | 6.2 | 6.5 | 56.3 | 52.3 |
| May 30 | 24.0 | 28.5 | 5.3 | 5.2 | 54.7 | 46.4 |
| June 20 | 20.1 | 24.0 | 4.5 | 4.4 | 55.7 | 45.3 |
| | Q* | | Q* | | NS | |
| **Deerfield, 2007 (4 hybrids)** | | | | | | |
| April 26 | 32.0 | 30.4 | 7.5 | 7.4 | 59.0 | 61.0 |
| May 10 | 32.7 | 30.1 | 8.0 | 6.9 | 60.5 | 59.0 |
| May 24 | 29.3 | 28.9 | 7.0 | 6.6 | 59.0 | 57.0 |
| June 7 | 27.6 | 28.3 | 6.7 | 6.2 | 60.5 | 55.0 |
| June 21 | 22.7 | 23.6 | 5.4 | 5.1 | 59.5 | 54.5 |
| | L** | | L* | | L* | |
| **Deerfield, 2008 (8 hybrids)** | | | | | | |
| May 1 | 33.9 | 38.4 | 8.0 | 8.5 | 58.8 | 55.0 |
| May 19 | 31.5 | 30.2 | 7.6 | 6.2 | 60.5 | 50.5 |
| June 23 | 25.9 | 28.9 | 4.9 | 4.3 | 47.5 | 37.5 |
| | L** | | L** | | Q** | |

L and Q = Linear and quadratic trends, respectively, NS = Non-significant

[1]Silage @ 70% moisture [2]Ear Yield @ 25% moisture

Overall results indicate that:

- A delay in planting reduces silage and ear yield linearly.
- Yield reduction is more significant in full-season hybrids than shorter-season hybrids.
- The amount of yield reduction varies in different years depending on weather condition.
- Shorter-season hybrids when compared to full-season hybrids may produce a little less silage but usually are more productive in terms of ear yield.
- A combination of early planting and use of shorter-season corn hybrids provides the opportunity for farmers to plant cover crops early enough to maximize N recovery after corn and fall manure application.

Table 2: Influence of planting time on silage and ear yield and silage quality of shorter-season and full-season corn hybrids. (Numbers in parenthesis are weighted average of hybrids and number of years)

| Planting time period | Silage (ton/acre) | | Ear (ton/acre) | | Ear% | |
|---|---|---|---|---|---|---|
| | Short | Full | Short | Full | Short | Full |
| April 20 – May 4 | 31.1 (11) | 32.0 ( 7 ) | 7.3 (11) | 7.2 ( 7 ) | 58.3 (11) | 56.0 ( 7 ) |
| May 5 – May 19 | 30.2 (13) | 30.5 ( 9 ) | 7.0 (13) | 6.2 ( 9 ) | 58.0 (13) | 50.6 ( 9 ) |
| May 20– June 3 | 26.1 ( 5 ) | 28.6 ( 5 ) | 6.0 ( 5 ) | 5.7 ( 5 ) | 56.4 (5) | 50.0 ( 5 ) |
| June 4 – June 23 | 24.4 (14) | 24.3 (10) | 5.1 (14) | 4.6 (10) | 52.2 (14) | 45.0 (10) |
| Reduction due to delayed planting | - 22% | - 25% | - 31% | - 37% | - 10% | - 20% |
| Estimated yield reduction if planted after May 1 (lb/day) | -346 | -357 | -109 | -119 | | |

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## Yield of Grain Corn in Massachusetts

In Massachusetts corn is mostly grown for silage. However, the increased cost of grain corn along with fossil fuels has persuaded some dairy and livestock producers to grow shelled corn for feed or heat. Corn grain is a high energy feed and a high energy heat source. One bushel of shelled corn with 15.5% moisture produces 375,000 BTU. In recent years many vegetable growers have shown interests in using corn to heat their green houses. The thermal efficiency of shelled corn is reduced with higher moisture. On average each % moisture above 15.5 reduces 5000 BTU of heat per bushel. Thus, an important decision in growing grain corn especially as heating source is hybrid selection. Choosing the wrong hybrid could mean the difference between a profit and a loss.

The first consideration in choosing a grain corn hybrid is the ability of the hybrid to reach maturity before frost in the fall. Frozen immature corn is of inferior quality and difficult to market. The yields of frozen corn are lower and, when combined, the percentage of broken kernels is higher than for mature corn. However, a hybrid that matures too early for a locality may yield less because it does not make full use of the growing season.

Another important quality criterion for grain corn is test weight. Test weight often ranges between 45-60 lbs/bu. However the market standard is 56 lbs/bu. In general, high test weight indicates better filled kernels and higher % of hard endosperm. Early planting, sufficient N, and proper seeding density are among the factors that result in higher test weight. On the other hand, low test weight indicates that the crop did not mature and was under some stress. Grain corn with lower test weight contains more starch and has low protein, which slows field dry down rates and increases drying costs.

In 2007 we evaluated 19 grain corn hybrids and the results were reported in “2007 Agronomy Research Report.” Attendants of two farmer meetings held on April 1 and 3, 2008 in S. Deerfield and Jordan Farm in Rutland respectively, received a hard copy of the report and a copy is on-line at www.umass.edu/cdl.

In 2008 we evaluated 15 hybrids for grain production purpose. Hybrids were grouped in two maturity groups based on relative maturity (RM) provided by the seed companies; shorter season maturity group (85-99 days) and full season maturity group (≥100 days). Unlike corn silage production, our interest in shorter season maturity grain corn hybrids is not to provide the opportunity for efficient planting of cover crops. Grain corn normally is harvested in November-December therefore, planting cover crops for N recovery after corn is not an option or common practice. In fact almost half of the corn biomass is returned to the soil when grain corn is harvested, helping minimize soil erosion, add nutrients to the soil and helps build organic matter. However, if shorter season hybrids yield similar to full season hybrids then it provides the opportunity for growers to harvest the crop with lower natural moisture content and thereby reducing drying costs.

All hybrids were planted on May 14 at three planting densities; 28,000, 31,000, and 34,000 plants per acre using a cone type distributor mounted on a double disc opening corn planter in a conventionally prepared seed bed. Corn hybrids were harvested by hand at different dates when their kernels reached 20-30% moisture. Ten feet of central row from each plot was taken for yield estimation. Harvested ears were dried in the oven and shelled by hand. Grain yields were adjusted to 15.5% moisture.

Partial yield results are presented in table 1. The full results of hybrids together with yield components including average number of rows per ear, average number of kernels per row, and average kernel weight will be presented at the farmer research meetings.

Table 1: Maturity group and planting density effect on grain yield, harvest index, and silking date.

| Maturity Group | Density plts/acre | Grain Yield bushel/acre | Harvest Index % | Silking[1] days |
|---|---|---|---|---|
| Shorter[2] season | 28,000 | 198.1 | 64.7 | 74.4 |
| | 31,000 | 202.4 | 63.5 | 74.0 |
| | 34,000 | 205.5 | 63.1 | 75.9 |
| **Average** | | **202.0** | **63.8** | **74.8** |
| Full[3] season | 28,000 | 218.6 | 61.8 | 77.9 |
| | 31,000 | 204.2 | 60.0 | 79.2 |
| | 34,000 | 204.7 | 59.9 | 79.0 |
| **Average** | | **209.1** | **60.6** | **78.7** |

[1] Days after planting
[2] Hybrids mature between 85-99 days (average of 8 hybrids)
[3] Hybrids mature in more than 100 days (average of 7 hybrids)

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## Influence of Timing on Weed Management in Glyphosate-resistant Corn

We've all heard the expression timing is everything. That statement has always applied to weed management in corn and most other crops. Knowing the optimum time to control weeds may be one of the most important management decisions a grower must make during the growing season. Effective weed control with a combination of preemergence and postemergence herbicides was required in the past to maximize corn yields. Field trials in Connecticut have shown that when applied at the optimum time for eliminating weed competition early in the growing season, effective postemergence herbicide treatments with glyphosate applied without any prior preemergence herbicide treatments should result in similar or greater crop yields.

Glyphosate, a non selective herbicide, effectively controls a broad range of annual and perennial grasses and broadleaf weeds. Glyphosate-resistant field corn hybrids have allowed glyphosate, a non selective postemergence herbicide to be directly applied over the crop. Timing of the herbicide treatment continues to remain extremely important when using glyphosate-resistant corn hybrids despite the longer window available to achieve good weed control compared with the older conventional postemergence corn herbicides.

Field trials were conducted in Connecticut to evaluate the influence of the time of glyphosate application on weed management in glyphosate-resistant field corn. In the study early postemergence treatments were applied when the corn had 4-to-5 leaves, 8- to 14 inches in height. Mid postemergence treatments were applied when the corn had 5-to-6 leaves, 16-to-21 inches in height. Late postemergence treatments were applied when the corn had 8-to-9 leaves, 30-to-34 inches in height. At the end of the growing season average silage yields for the mid postemergence treatments of glyphosate (26.2 tons) and the late postemergence treatments of glyphosate (22.6 tons) were reduced 14% and 25%, respectively, compared to the early postemergence treatments of glyphosate (30.3 tons). Similar results were obtained for corn grain yields. Average corn grain yields for the mid postemergence treatments of glyphosate (189 bushels) and the late postemergence treatments of glyphosate (168 bushels) were reduced 13% and 23%, respectively, compared to the early postemergence treatments of glyphosate (217 bushels).

The three different rates of glyphosate compared in this study which were 50%, 75% and 100% of the standard recommended rate resulted in no significant difference in weed control. Corn silage and grain yields were similar between three different rates of glyphosate applied. Additional residual herbicides in tank mixtures with some glyphosate treatments in this study did not increase yield. Corn silage and grain yields were similar between the early postemergence treatments of glyphosate applied at all three rates used alone and in combination with the residual herbicide treatments. The time of application had the most significant impact on corn yield. Overall corn silage and grain yields were reduced by the extended period of weed competition when glyphosate treatments were delayed. The mid postemergence treatments were applied only a week after the early postemergence treatments and the late postemergence treatments were applied two weeks after the early postemergence treatments.

When weeds were traditionally controlled with preemergence treatments, this did allow more flexibility in the timing of the postemergence treatments for control of certain weeds in order to obtain maximum corn yields. This type of management program however, is much more expensive in terms of the products used and requires two passes over the field. When postemergence applications of glyphosate are used alone in field corn, the applications should be made early in order to avoid potential yield loss from the extended period of early weed competition. The fields should be scouted for problem weeds throughout the growing season. A second application with glyphosate or another postemergence herbicide may be needed to control certain late germinating problem weeds such as burcucumber in order to maximize the yield and the quality of the corn crop. In conclusion, Connecticut field studies with glyphosate-resistant corn indicate that when glyphosate is used without any prior preemergence herbicide program, the applications should be made prior to the fifth leaf stage of corn or before the corn exceeds 12 inches in height in order to avoid potential yield loss from the extended period of early weed competition.

Prepared by Frank J. Himmelstein PhD. Integrated Weed Management Specialist, Lebanon, CT.

## Mud Management for Horse Operations continued...

**BMPs for Controlling Mud:**

The best management strategy for controlling mud is prevention. Reducing the amount of rain that runs through your animal yard will reduce mud and polluted runoff.

- **Install Roof Gutters and Downspouts:** One inch rain on a 50 by 20 foot roof collects about 620 gallons of water. Therefore, 40 inches annual precipitation directs 25,000 gallons of additional water to the yard! Empty downspouts into rain barrel (for emergency use), dry well, road ditch, or a creek. Keeping clean water clean is easier than treating it once it has become contaminated with manure and sediments.
- **Use Sacrifice Areas:** Horses on wet pastures kill or weaken grasses and create mud. Confine horses to paddocks during the winter and early spring as well as in the summer before the pastures become overgrazed. Using a sacrifice area creates a healthier pasture. The size depends on available land, number of horses, horse age, and many other factors. An area of 25 ft by 100 ft should be large enough for a horse to be able to run or play in a paddock.
- **Install Firm Footing:** Mud often form at barn entrances, gates, and loafing areas. In these high traffic areas, use of geotextile fabric and gravel allows water to drain down while stopping mud from emerging through the gravel. In less traffic areas, wood chips or hogfuel (unprocessed mix of barks and wood fiber) can be used.
- **Remove Manure:** Picking up the manure every one to three days will help reduce your horse's parasite load as well as reducing flies and insects. Regular removal of manure also greatly reduces the amount of mud that develops and it will prevent contaminated runoffs from reaching the surface waters in your area. The manure you pick up can be composted and reapplied to your pastures during the growing season.
- **Rotate Watering and Feeding Containers:** This prevents too much manure and traffic in one area compacting the soil, leading to mud formation after heavy rainfall.
- **Use Grass Buffer Strips:** You can help to control the runoffs by surrounding the sacrifice areas, paddocks and other confinement areas with at least 25 feet of lawn, pasture, woods or even a garden. Vegetation in buffer areas will act as mud managers, a natural filtration system that slows down runoff and reduces sediments and nutrients. Buffers of grasses and legumes can be grazed in the spring and summer and left ungrazed to function as a buffer during times of slow growth, steady rain, or potential flooding.

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## Pasture Research & Outreach Activities

UMass with Mass Grass (massgrass.org) continues to develop research and outreach activities for grazers. Information on grazing activities will be posted on the Mass Grass web page. Some of these activities include:

- Pasture walks at UMass and on farms throughout Massachusetts.
- Summer Grazing School (August 8) at UMass at the time of the NOFA/Mass conference.
- A tri-state cooperative program on food systems and meat marketing with Connecticut and Rhode Island. Contact is michael.keilty@uconn.edu
- Participation in the Northeast Pasture Consortium activities.
- Equine pasture management.
- Pasture Research
  - evaluation of 28 pasture blends.
  - intensification of grazing management.
  - fencing systems and fencing innovations.
  - grassfed beef raising and finishing.
  - annual forages for times of slumps in pasture production and extending the grazing season.

## Upcoming Events

(umass.edu/cdl/news.html or massgrass.org)

| | |
|---|---|
| March 31 | Farmer Research Meeting UMass Farm Center Deerfield |
| April 1 | Farmer Research Meeting Worcester Co. |
| April 25 | Mass Aggie Equine Seminar Worcester Co. (massaggie.org) |
| May 20 | Round bale rodeo and strip tillage demo., UMass Farm, Deerfield |
| July 15 | Agronomy and Vegetable Crops field day, UMass Farm, Deerfield |
| July 25 | Pasture and Angus beef field day, UMass Farm, Deerfield |
| August 8 | Pasture Grazing School, UMass Amherst Campus |
| Fall 09 | Pasture walk Upper Northeast Pasture Center at UMass. TBA |
| Fall 09 | Biofuel research at UMass. TBA |

For further information check web sites or call Masoud Hashemi (413-545-1843) or for other livestock and equine programs call Carrie Sears (413-549-3257).