Managing Crabgrass for New England Grazing Systems and Hay Production

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Background

Cool season perennials dominate grazing pastures in New England and make for limited access to high-quality pasture during warmer months. In turn, livestock and dairy farmers are turning to stored feed, stretching farmers economically, and potentially leading to nutrition deficiencies, and overgrazing within livestock.

This is particularly pertinent, as the realities of climate change will likely lead to hotter, dryer summers, and will necessitate more diversified, heat-withstanding forage options

One of the ways New England can diversify grazing systems is by looking outside the region and attempting to integrate forages from other warmer regions into New England grazing systems during summer.

This experiment looks at the possibility of using crabgrass, a warm-season annual forage used in the Southern United States (specifically Oklahoma), as potential summer forage for New England growers.

Basic agronomic information is needed for the successful cultivation of crabgrass in the region. While this experiment contains multiple parts, I am focused on presenting and analyzing data dependent on the planting date and seeding rate of crabgrass.

Hypothesis

The new upright varieties of crabgrass will yield sufficient high-quality forage during the hot months of summer when cool-season grasses are dormant.

Early June should be the optimum time for seeding crabgrass in the Northeast U.S.

Materials and Management

- Quick N Big crabgrass variety was planted at the UMass Research Farm in South Deerfield, MA. The treatments were planted in 6 by 40-foot plots arranged in a randomized complete block design with four replications. This is the first year of a two-year experiment.
- All crabgrass plots received 50 lbs/A nitrogen fertilizer two weeks after planting.

Treatments

- Seeding Rate (3 lbs/A, 6 lbs/A, 9 lbs/A)
- Planting Date (Late May, Early June, Mid June, Late June)
- Harvest Time (Weeks 4-9 After Planting)

Measurements

Crabgrass and weed biomass were sampled for biomass determination by cutting at the ground level, using randomly placed ¼ m² quadrats.

- Crabgrass biomass
- Weed biomass at the first harvest time*
- Forage quality*
- Height*
- Crabgrass growth stage*

*data not displayed on poster

Results and Conclusion

- Results obtained in the first year of the study revealed that our hypothesis that crabgrass produces high-yield, high-quality forage in summer was valid.
- The average yield for plots seeded at 6 lbs/A, was 2,906 lbs/acre which was similar to the seeding rate of 9 lb/acre (2934 lbs/A) but 20% higher than the seeding rate of 3 lb/acre (2377 lbs/A). This corroborates that the most economic seeding rate for crabgrass is 6 lbs/A.
- The early June planting seemed to be the most consistent, yielding the highest biomass compared with other seeding dates, followed by mid-June planting (Table 3).
- On average, the early June planting produced 3,372 lb/acre which was twofold higher than the May planting (1,769 lb/acre) (Table 2).
- Weeks 6 and 7 would be the optimal time to harvest, when there will be both highest yield, and highest forage quality.

Table 1. Crabgrass dry matter yield (lbs/A) at different seeding rates between 4 and 9 weeks after planting.

Weeks Harvested After Planting	Seeding Rate	Crabgrass Dry Matter Yield (lbs/A)
4	3 lbs/A	568
4	6 lbs/A	767
4	9 lbs/A	815
5	3 lbs/A	1121
5	6 lbs/A	1456
5	9 lbs/A	1616
6	3 lbs/A	2059
6	6 lbs/A	2093
6	9 lbs/A	2247
7	3 lbs/A	2591
7	6 lbs/A	3188
7	9 lbs/A	3210
8	3 lbs/A	3305
8	6 lbs/A	4138
8	9 lbs/A	4183
9	3 lbs/A	4617
9	6 lbs/A	5792
9	9 lbs/A	5536

Table 2. Crabgrass dry matter yield (lbs/A) at different planting dates between 4 and 9 weeks after planting.

Weeks Harvested After Planting	Planting Date	Crabgrass Dry Matter Yield (lbs/A)
4	18 - May	426
4	1- June	576
4	15-June	815
4	29- June	1050
5	18 - May	840
5	1- June	1296
5	15-June	1392
5	29- June	2060
6	18 - May	1144
6	1- June	2502
6	15-June	2592
6	29- June	2294
7	18 - May	1855
7	1- June	3862
7	15-June	3034
7	29- June	3233
8	18 - May	2743
8	1- June	5388
8	15-June	3929
8	29- June	3441
9	18 - May	3604
9	1- June	6611
9	15-June	6003
9	29- June	5041

Table 3. Interactive effect of seeding rate and planting time on crabgrass dry matter yield (lbs/A)..

	Seeding Rate (lbs/A)			
Planting Date	3	6	9	Average
18 - May	1464	1782	2061	1769
1- June	3024	3697	3397	3372
15-June	2681	2916	3286	2961
29- June	2338	3228	2994	2853
Average	2377	2906	2934	