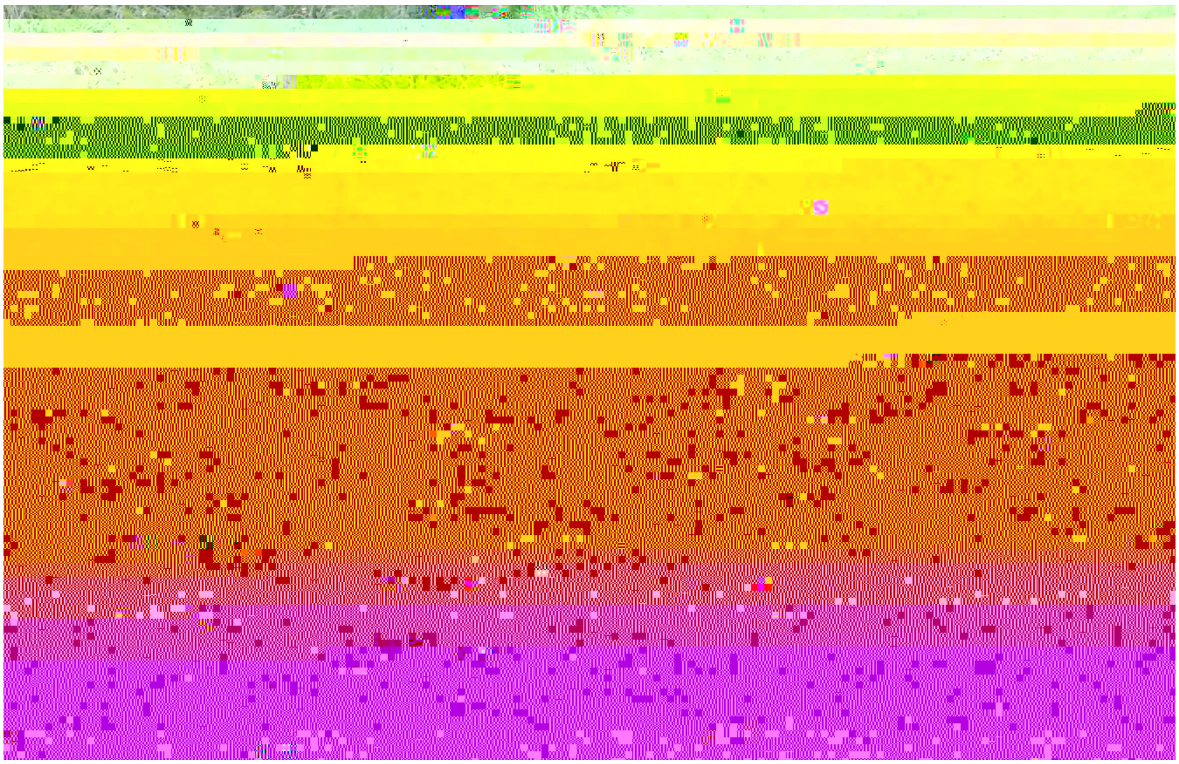
2022 Perennial Grass Stockpiling Trial



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2022 PERENNIAL GRASS STOCKPILING TRIAL

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Stockpiling is the practice of deferring grazing or harvest of perennial forage stands in order to extend the grazing season later into the fall/winter. While this practice can be a useful tool in managing pasture

Impact of Species

The three grass treatments performed similarly in terms of dry matter yield (Table 4). Each species and the mixture of the two yielded approximately 1.4 tons ac^{-1} from the stockpiled harvest. Last year, there was a

If we look at both yield and quality together, we can obtain a better understanding of whether the differences in quality will be substantial enough to equate to differences on a per acre basis (Table 6). Previously we saw there was no dry matter yield difference between the species. The differences in digestibility and predicted milk yield per ton ultimately were not great enough to translate into statistical differences on a per acre basis. While the orchardgrass alone treatment produced 886 lbs ac^{-1} 30-hr digestible NDF, this was not statistically different from the other treatments likely due to variability within each treatment. Similarly, the predicted milk yield per acre was numerically higher for orchardgrass, but not statistically different. These quality and yield data suggest there may be increased quality characteristics by including orchardgrass in stands intended for fall stockpiling as opposed to tall fescue alone, however, similar dry matter, digestible fiber, and milk yields may be achieved per acre.

Table 6. Dry matter, digestible NDF, and milk yield by grass species.

Grass species	DM Yield	30-hr Digestible NDF	Milk yield
	tons ac^{-1}	lbs ac^{-1}	
Orchardgrass	**1.41**	**886**	**5034**
Orchardgrass/Tall Fescue	1.34	845	4789
Tall Fescue	1.40	835	4812
LSD (*p*	NS†	NS	NS
Trial mean	1.38	855	4878

Top performer treatments are in **bold.**

†NS, not statistically significant.

Impact of Nitrogen Treatment

The five nitrogen treatments evaluated in this trial differed statistically in yield (Table 7). As expected, the control treatment that received no additional nitrogen produced the lowest yield of 0.810 tons ac^{-1}.

Table 7. Dry matter yield by nitrogen treatment, 2022.

Nitrogen treatment	Dry matter Yield
	tons ac^{-1}
Early N	1.63a
Late N	1.29b
Alfalfa	1.51ab
Clover	**1.68a†**
None	0.810c
LSD ($p = 0.10$)	0.242
Trial mean	1.38

†Treatments that share a letter performed statistically similarly to one another.
Top performer treatments are in **bold.**

Interestingly, the early applied urea, alfalfa, and clover treatments all produced statistically similar yields. This is consistent with results found in 2021 as well. This suggests that planting orchardgrass or tall fescue with alfalfa or red clover can replace an early application of nitrogen fertilizer for stockpiling. The reduction in yield produced by the later application of nitrogen compared to the earlier application could be due to having more time for the nitrogen to make its way to the plant roots and be utilized for dry matter production. While weather conditions at the time of fertilizing can influence losses due to volatilization or leaching, conditions were the same at both fertilizing times. Therefore, the results are likely a function of the timing of application.

However, unlike in 2021, this year we did see a significant grass species by nitrogen treatment interaction, which suggests that th milk output from the late nitrogen treatment, which was over 100 lbs ton^{-1} more than the next highest treatments. Similarly, the relative forage quality was highest in the late nitrogen treatment followed by the clover, no nitrogen, and early nitrogen treatments with the lowest quality including alfalfa.

Table 8. Quality characteristics by nitrogen treatment.

Nitrogen treatment	CP	NDF	NFC	30-hr NDF digestibility	uNDF	Milk yield	RFQ
		% of DM		% of NDF		lbs ton^{-1}	
Early N	9.15c†	55.6b	24.8	58.7b	13.9ab	3560b	137b
Late N	**12.2**a	52.9a	24.3				

Despite these yield and quality benefits, it is important to understand the cost of these different strategies relative to their benefit. Using price estimates for urea and seed at the time this report was written, the red clover treatment appears to be a similarly priced option as an early application of urea but much less expensive than a later application or a mixture with alfalfa. (Table 10). This is critical for organic producers who cannot apply urea and do not have a comparably priced soluble nitrogen fertilizer source. While the cost per acre of an unfertilized grass stand is the lowest, because of its significantly lower yield, its cost per pound of dry matter produced is significantly higher than the other nitrogen treatments. Similarly, when you express the cost on a per milk hundredweight basis, the unfertilized grass stand also has the highest cost as the least production was gained from that treatment. With the volatile prices of seed and fertilizer, it is important to consider the costs in your area. Furthermore, the costs shown here include the cost of the seed which, after the first year, are not incurred while the nitrogen benefit is still gained. Therefore, utilizing legumes, if dry matter yields can be maintained, can be a longer-term solution to higher fertilizer prices and one that can be utilized on organic operations.

Table 10. Cost by nitrogen treatment, 2022.

Treatment

ACKNOWLEDGEMENTS