North Dakota - Diverse Pasture Mixtures Increased Profit with Grazing Dairy Cows in Pennsylvania

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Establishing new pastures from seed can be expensive. An informal survey of 86 mixed-species pasture plantings on 56 farms in the northeastern U.S revealed that ~30% of plantings were four or more species. Species composition of mixed-forage seedings can be difficult to maintain, potentially needing more frequent re-establishment.

In this research, a whole-farm computer simulation model was used to assess the economic returns from several pasture-planting scenarios that varied in stand life in central Pennsylvania. The model analysis was based on real pasture and milk production data.

Research showed that planting grass-legume or grass-legume-chicory mixtures increased net returns per cow compared with N-fertilized orchardgrass pasture. Over a 3-year stand life, the net-return increase ranged from $57/cow for the 2-species mixture to $191/cow for a 6-species mixture. Over a 5-year stand life, corresponding net-return increases ranged from $107-$225/cow, respectively; and for a 10-year stand life, from $136-$246/cow, respectively.

The greater forage yields of mixtures compared with N-fertilized orchardgrass 1) reduced purchased feed input costs, and 2) in some instances increased income by providing more forage sold off the farm. Production risk of mixtures was as much as 24% less than orchardgrass+N. This was because 1) forage production was more consistent year-to-year with the mixtures, and 2) excess mixture forage harvested as baleage or hay was available to supplement forage shortages during drought years. In addition to increasing net returns, greater stand life reduced production risk.

Figure 1. *Effects of pasture diversity on net returns per dairy cow in central Pennsylvania. 'Orchardgrass+Nitrogen' was orchardgrass alone fertilized with 150 lb N/ac; the 2-species mixture was orchardgrass and white clover; the 3-species mixture was orchardgrass, white clover and chicory; and the 6- and 9-species mixtures had chicory mixed with several grasses and legumes.*