

# ASSESSING PASTURE GRASSES, LEGUMES AND PASTURE BLENDS FOR VARYING SOIL CONDITIONS IN NEW ENGLAND AND PENNSYLVANIA. A NE SARE PROJECT

Stephen Herbert (ph. 413-545-2890, sherbert@pssci.umass.edu), Sarah Weis and Timothy Randhir, Un. of Massachusetts, Sid Bosworth and Rachel Gilker, Un. of Vermont, Matt Sanderson, USDA-ARS, PA, Kevin Kaija, USDA-NRCS, VT, Richard Brzozowski, Un. of Maine, Carl Majewski, Un. of New Hampshire

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## Introduction

Many farmers contact Extension and USDA-NRCS seeking information and recommendations on pasture species and varieties. This topic was mentioned often by farmers at meetings and monthly conference calls for the Upper Northeast Pasture Research Center for New England and Eastern New York, and at Vermont Grass Farmers' Association meetings. The Northeast Pasture Consortium reaffirmed this in 2006 as a research priority. Events such as Mass Aggie Seminars, the Vermont Grazing Conference, and pasture walks in several states have also requested information for varieties in varying soil/climatic conditions. Because there is little to no research information on forage varieties and blends available in New England a multistate USDA-SARE project was initiated in 2007 to evaluate forage species/cultivars under intense grazing management with beef cattle.

Our hypotheses were (i) that with improved information on forage species and varieties interest and adoption of pasturing will increase because of economic benefit to farmers, and (ii) that this can be integrated into farm practices through a participatory project with farmers, complemented with outreach and education.

The objectives were: (i). Evaluate forage species/varieties for varying soil conditions/locations (ii). On-farm evaluation and cost/benefit of adopting newly released new pasture varieties.

Replicated field experiments have been planted at the UMass Crop and Animal Research and Education Center (location of the Upper NE Pasture Center) farm, the Vermont Technical College dairy farm, and at the USDA-ARS Pasture Systems and Watershed

Management Research Unit with 25 to 28 pasture mixes and commercial blend for evaluations. A mob-stocking technique continues to be used to evaluate forages under grazing with beef cattle to determine yield and adaptability under grazing. First and second year yields are presented showing yield increased in the first year when mixes had more than two species but declined when blends had as many as seven species included. Regrowth and productivity in the second year will be included. This project and others have helped the formation of Mass Grass a Massachusetts farmer-led association with supporting agencies of UMass, USDA-NRCS, NOFA-Mass, New Entry Sustainable Farming Project at Tufts Univ. Mass Grass ([massgrass.org](http://massgrass.org)) provides educational activities and technical information for new and experienced grazers.

## Methods

Three sites with varied growing season lengths resulting from different latitudes and elevations were seeded in the Fall 2007. These sites have varied soil conditions from deep fine sandy loam alluvial soil (UMass – Connecticut River), heavier upland or hill soils in Vermont (Randolph, VT), and a silt loam soil near State College, Pennsylvania. Twenty five to 28 pasture blends and mixtures were seeded with seed obtained from commercial companies. Seed mixtures varied from 2 to 7 species sometimes with more than one variety within a species. Pastures were mob stocked and rotationally grazed with beef cattle.

Commercial blends used in MA with number of species included in parenthesis ( ):

|            |                       |
|------------|-----------------------|
| AgriCulver | All-Weather Mix (4)   |
| AgriCulver | Graze Master Mix ( 4) |

|                       |                                |
|-----------------------|--------------------------------|
| AgriCulver            | Lowland Mix (5)                |
| AgriCulver            | Milk Master Plus Mix (2+)      |
| AgriCulver            | Renovator Mix (3)              |
| AMPAC Seed Co         | Multi-Purpose Plus Mixture (7) |
| Doebler's             | DMX-D dairy mix (3)            |
| Doebler's             | DMX-P pasture mix (6)          |
| King's Agriseeds      | Creek Grazing mix (6)          |
| King's Agriseeds      | Dairy Plus (4)                 |
| King's Agriseeds      | Greenfast (6)                  |
| King's Agriseeds      | Haymaster (4)                  |
| King's Agriseeds      | King's Grazing mix (5)         |
| Farm Science Genetics | Pro Beef Mix (6)               |
| Farm Science Genetics | Pro Dairy (5)                  |
| Farm Science Genetics | Pro Horse (5)                  |
| Farm Science Genetics | Range Master (6)               |
| Seed Solutions        | Triple Crown (5)               |

Two species mixes were also seeded with Alice white clover and orchardgrass or perennial:

*Orchardgrasses:*

|                    |                |
|--------------------|----------------|
| AMPAC Seed Co      | Tekapo (19),   |
| King's Agriseed    | Sparta (20)    |
| Barenburg          | Baridana (22), |
| Doebler's          | LG 31 (27)     |
| Farm Sci. Genetics | Extend (28)    |

*Perennial Ryegrasses:*

|                   |                |
|-------------------|----------------|
| AMPAC Seed Co     | Tonga (21),    |
| DFL International | Gariboldi (23) |
| King's Agriseeds  | Mara (24),     |
| King's Agriseeds  | Tivoli (25)    |
| King's Agriseeds  | BG 34 (26)     |

In Pennsylvania and Vermont 2-specie custom mixtures differed from those in Massachusetts. In Pennsylvania both grass and legume species were varied, and in Vermont festuloliums were grown instead of the perennial ryegrasses in Massachusetts.

## Results

Two mixtures were ranked within the top 3 for highest yield in Massachusetts and Pennsylvania and most often included orchardgrass in Massachusetts, and red clover, perennial ryegrass, orchardgrass, or tall fescue in Pennsylvania. Festulolium did not persist after the first year at three all sites, and Alaska brome did not persist after the first year in Pennsylvania. Perennial ryegrass in Massachusetts and Vermont also suffered some winter damage reducing yield in the second production year.

Species that included small amounts of species in mixtures (e.g. > 10%, such as trefoil, timothy, bluegrass) did not establish enough plants to contribute significantly to forage yield.