

USDA-ARS Pasture Lab Report

1. A new Research Leader has been hired for the Pasture Lab and will be starting in mid-May. Name and details to follow at a later date. Our previous Research Leader, Dr. Peter Kleinman, took another Research Leader job in Colorado in June 2021. Dr. Tamie Veith is the acting Research Leader until the new one arrives.
2. The Pasture Lab is scheduled for a complete interior building renovation. Start date has been delayed approximately 6 months, now scheduled to start in Feb 2023. Our building was built in the 1930's and has had many smaller renovations as needed, but modernization is needed to keep up with personnel, research, and equipment. The outside of the building will remain, but the complete interior will be gutted and renovated. Laboratories will be move to a swing space on the Penn State campus.
3. Senator Casey is planning a community earmark for the FY23 Appropriations bill that would provide additional funding for some deferred maintenance for the Pasture Lab (buildings that won't be fully modernized). Also, due to the cost of everything right now, our renovation budget for modernizing our 1930&1960s buildings is going to fall short of covering modernization of our very old greenhouse. The renovation budget was determined 5 years ago when the world was different.

Research Summaries

Winter Annual Forages Fill Spring Productivity Gaps in Grazing or Hay Operations

Eric D. Billman, Igor Alexandre de Souza, Richard G. Smith, Kathy J. Soder, Nicholas D. Warren, Fábio Andrade Teixeira, and André F. Brito

With grass-fed meat and milk products gaining traction among consumers, pasture systems require adjustments to supply high-quality, year-round forage. Traditional perennial cool-season pasture species do not provide sufficient growth in early spring, resulting in farmers feeding more expensive harvested forages such as hay. Winter annual forages may provide high-quality, lower-cost pasture in early spring to offset this forage deficit. An experiment conducted in New Hampshire over 3 years assessed five winter annual forages (cereal rye, barley, triticale, wheat, and hairy vetch) for spring productivity and forage quality in monocultures and in mixtures. Results suggest that barley may have the most potential for supplementing spring pastures with the fewest tradeoffs in terms of maximizing both harvest yield and nutrient value for grazing cattle to reduce feed costs and improve meat and milk production.

Evaluating Warm-Season Annual Forages to Fill Summer Forage Gaps in New England

Eric D. Billman, Igor Alexandre de Souza, Richard G. Smith, Kathy J. Soder, Nicholas D. Warren, and André F. Brito

Summer may be the most challenging season for dairy and beef producers to provide adequate quantities of high-quality forage to grazing livestock. Oats have typically filled this niche, but warm-season annual forages may offer a better alternative option for producers in climates such as New England where the period of warm weather is typically short (June - August) and limits forage production. Research conducted in New Hampshire over a 2-year period compared the productivity and forage quality of four warm-season annual forages (Brown midrib sudangrass, buckwheat, Japanese millet, and teff) to two cool-season annual forages (oats and chickling vetch). Results of this work indicated species that produced more forage mass, such as buckwheat, exhibited very poor forage quality, while forages with greater forage quality, such as chickling vetch and teff, produced less forage mass. Species with better median performance, such as Japanese millet, were more suitable for summer forage production in New England than oats due to maintaining a more balanced ratio of forage mass to nutritional value.

Tradeoffs in Productivity and Nutritive Value Associated with Timing of Harvest in Six Annual Fall Forages

Eric D. Billman, Igor Alexandre de Souza, Richard G. Smith, Kathy J. Soder, Nicholas D. Warren, and André F. Brito

Fall forage production in the northern United States is complicated by the transition from warm to cold temperatures over a three-month period (September – November). Perennial cool-season forages are less productive in the fall than in spring, making annual, alternative forages useful for supplementing production. However, there is little knowledge of how annual forages respond to these temperature shifts and when tradeoffs between yield and livestock nutritional quality occur during the season. A 2-year research project conducted in New Hampshire assessed the forage mass and quality of six annual forage species (canola, forage radish, oats, spring triticale, spring wheat, and sunn hemp) not typically grown for fall harvest. Harvesting occurred 6, 8, and 10 weeks after planting, with the final harvest occurring after a killing frost. Findings from this work indicated that careful management of harvest timing in the fall is critical to maintaining a balance between forage mass and nutritive value, with most species declining in nutritive value rapidly following a killing frost. Therefore, species that rapidly accumulate high quality biomass, such as canola, oats, and triticale are most suitable for production throughout the fall grazing season.