The Relationship Between Yield and In Vitro True Digestibility for Summer Annual Grasses Commonly Grown in the Mid-Atlantic Region of the United States

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INTRODUCTION

- Summer annuals can provide high quality summer grazing
- Breeders targeting digestibility
- Cultivar selection has been traditionally based on yield

Figure 1. Brood cows grazing a BMR sorghum-sudangrass at a summer field day near Goochland, VA.

OBJECTIVE

To evaluate the relationship between yield and digestibility for summer annual varieties

MATERIALS AND METHODS

- Conducted near Blackstone, VA in 2009, 2010, and 2011
- RCB with four reps
- Pearl millet, sudangrass, forage sorghum, and sorghum-sudangrass were evaluated
- Established 1-Jun-09, 21-May-10, and 20-May-11
- Plots harvested on 27-Jul, 10-Sep and 21-Oct in 2009, 26-Jul and 26-Aug in 2010, and 22-Jun, 25-Jul, 30-Aug, 4-Oct in 2011

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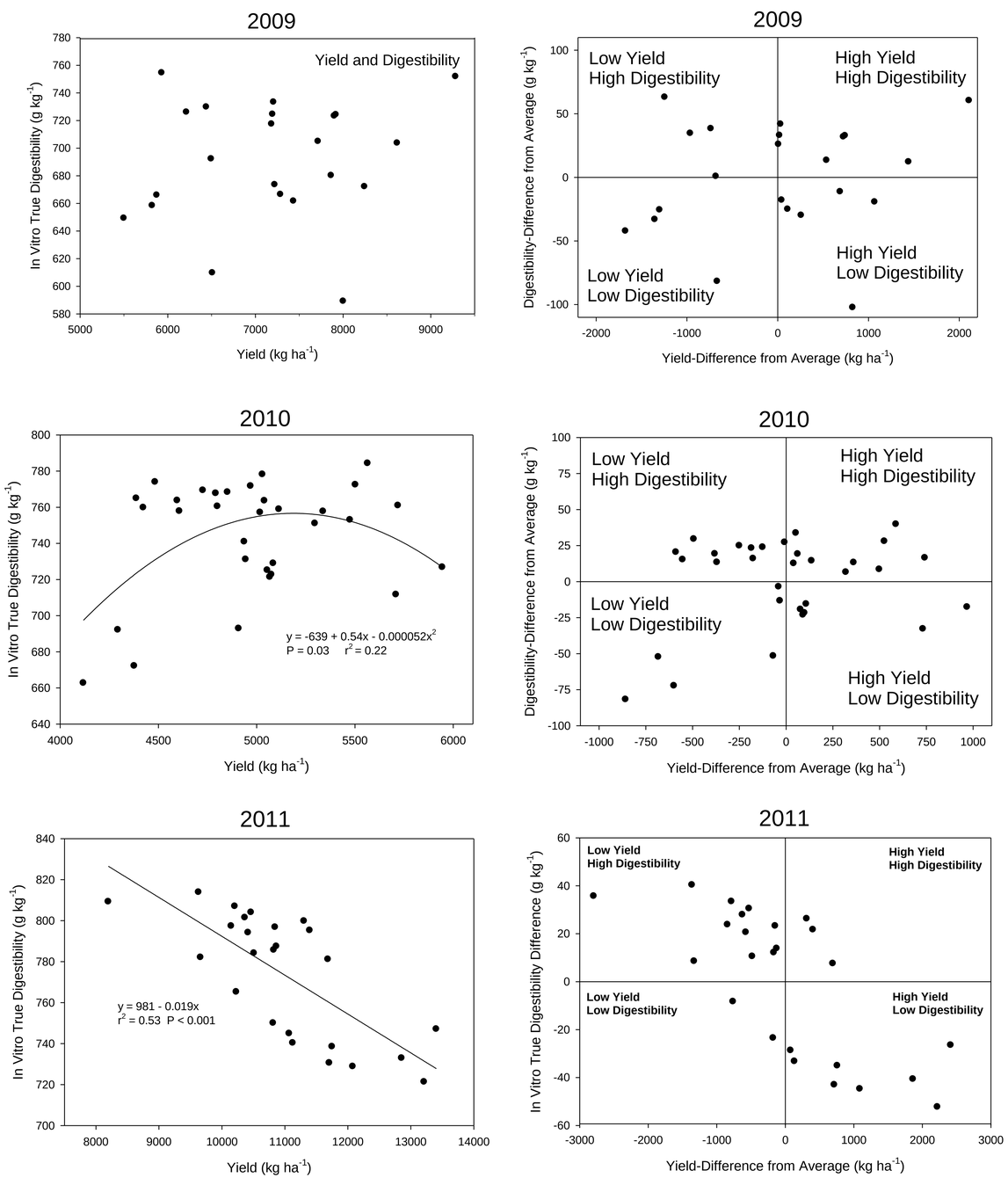

Figure 2. In the graphs on the LEFT, no or weak relationships between total yield and in vitro true digestibility (IVTD) were found in 2009 and 2010. A stronger relationship was observed in 2011. In the graphs on the RIGHT, total yield and IVTD are expressed as a difference from the average value. The value of zero represents the average value for the trial. Negative values represents a value that is below average, while a positive value represents a value that is above average. Producers should select varieties that are above average for both yield and digestibility.

Figure 3. Plots were established with a cultipack type seeder (Carter Manufacturing, Brookston, IN) (left) and harvested with self propelled sickle bar type forage harvester (Swift Machine, Swift Current, SK) (right).

SUMMARY

- Total yield ranged from 5512 to 9303, 4119 to 5945, 8196 to 13405 kg ha^{-1} in 2009, 2010, and 2011, respectively
- Weighted IVTD ranged from 590 to 750, 660 to 780, and 720 to 810 g kg^{-1} in 2009, 2010 and 2011, respectively
- Relationship between yield and digestibility varied among years
- Yield and digestibility may not be mutually exclusive traits
- Both yield and digestibility should be considered when selecting or recommending summer annual varieties

Figure 4 The sorghum species above exhibits the brown midrib trait that is associated with increased digestibility.

Figure 5. Summer annuals plots at Virginia Tech's Southern Piedmont Agricultural Research and Extension Center, Blackstone, VA during the 2011 growing season.

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