



ADVANCED AG SYSTEMS'

Crop Soil News

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"It is the crops
that feed the
cows that make
the milk
which creates
the money."

Sorghum Variety Trial Results

For the New York and New England area we had tremendous yields of winter forage. Over **4 tons of dry matter/acre** (12 tons of silage) was the average for one of our trials. Further west in Minnesota and Wisconsin, yields were down as the late April snows kept the crop dormant and then the weather went over 90 F in six weeks. This drove all the winter forage to immediately send up a seed head even if the yield was only a fraction of what it normally was. The temperature over 85 F caused all of our trials to head at the same time, regardless of planting date. With the rollercoaster cold snaps, forage quality is anticipated to be very high.

As more farms take advantage of winter forage yield and quality, the season length for corn gets squeezed. For many farms, BMR corn available today has difficulty fitting in the shorter rotations. Thus, the major increase in interest in getting the BMR advantage by planting sorghum species with their shorter season and potentially wider harvest window. The other reason farms are adding **BMR sorghum** to the rotation, is that the forage is perfect for optimum growth of heifers and maintaining dry cows in good but not excessive condition. This is often at a much lower cost than growing corn silage.

There is a huge genetic range with sorghum species. There are grain and forage sorghums. There are Sudan grasses. There are sorghum Sudan grass crosses. And each of these have a Brown Mid Rib variant (BMR) which greatly increases the energy derived from the forage. For livestock feed, **Brown Mid Rib would be the only type I would suggest you grow** in your region.

With the help of **NY Farm Viability Institute**, we tested shorter season bmr brachytic dwarf (lodging resistant) sorghum species and found they produce high yields and quality to replace corn silage. We also found that sorghum allowed to go to hard dough (like corn) will produce high energy grain that passes the processor uncracked and then through the cow without being digested. When allowed to go to that late maturity, even the best brachytic dwarf will deteriorate and lodge – a major limit to farmer adoption. A new breeding approach, male sterile sorghum lines, potentially solve the lodging and over mature grain, by not setting seed. Energy is stored in the plant cells rather than in seed starch. With no grain they potentially have a wider harvest window with no hard kernels/lodging if we get late. We tested male sterile bmr sorghum for yield and to determine the potentially optimum time to harvest. Photoperiod sensitive sorghum-Sudan was also included as it does not set seed.

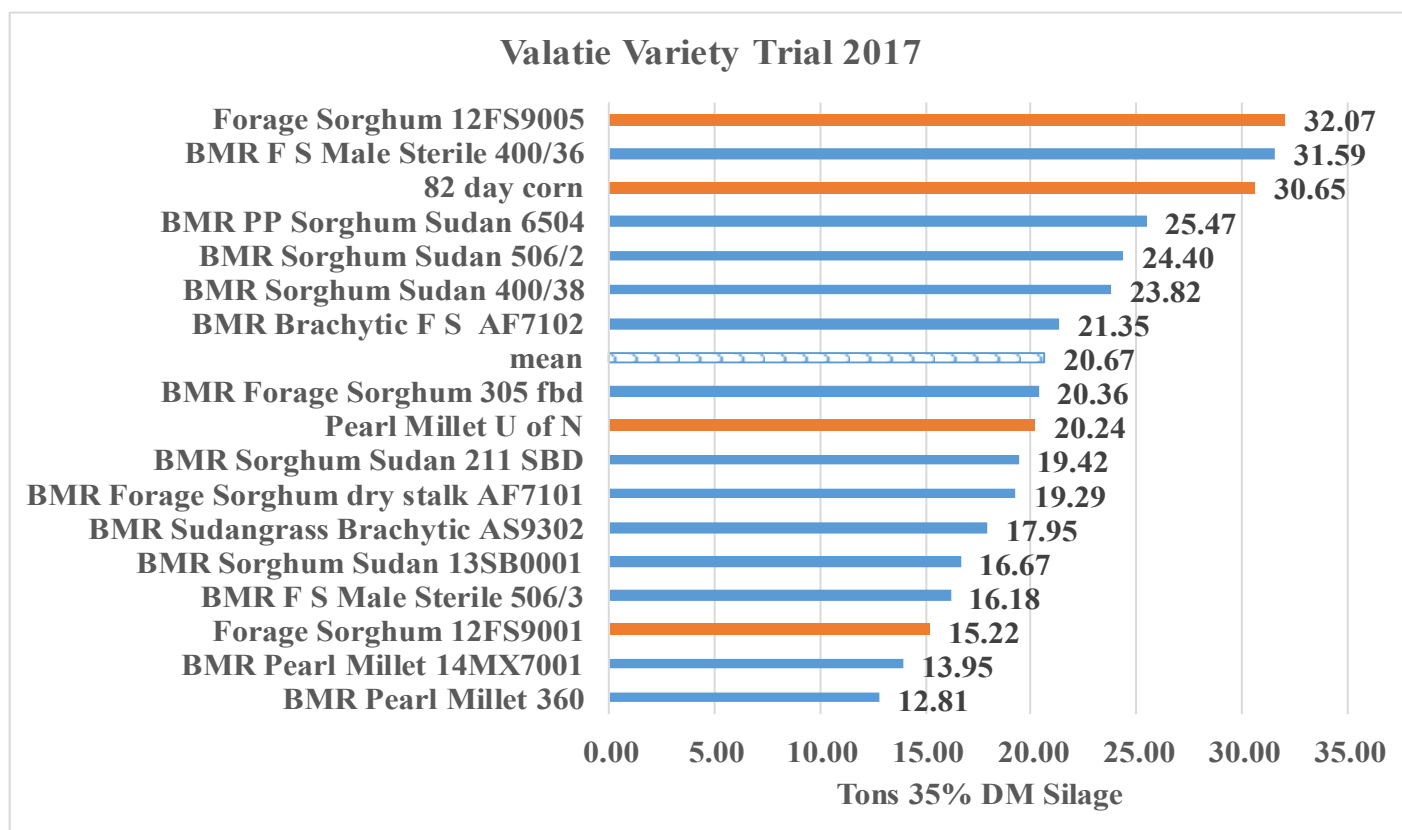
Sorghum-Sudans hybrids have been found to emerge quickly and grow fast. The rapid emergence allows it to **outcompete weeds in an organic system**. Normally a multi-cut crop, it has significant potential to increase yield and decrease soil contamination of the silage by utilizing a direct one-cut system. We have even tested the higher quality (possibly lower yielding or shorter season) Sudan grasses in a one cut system.

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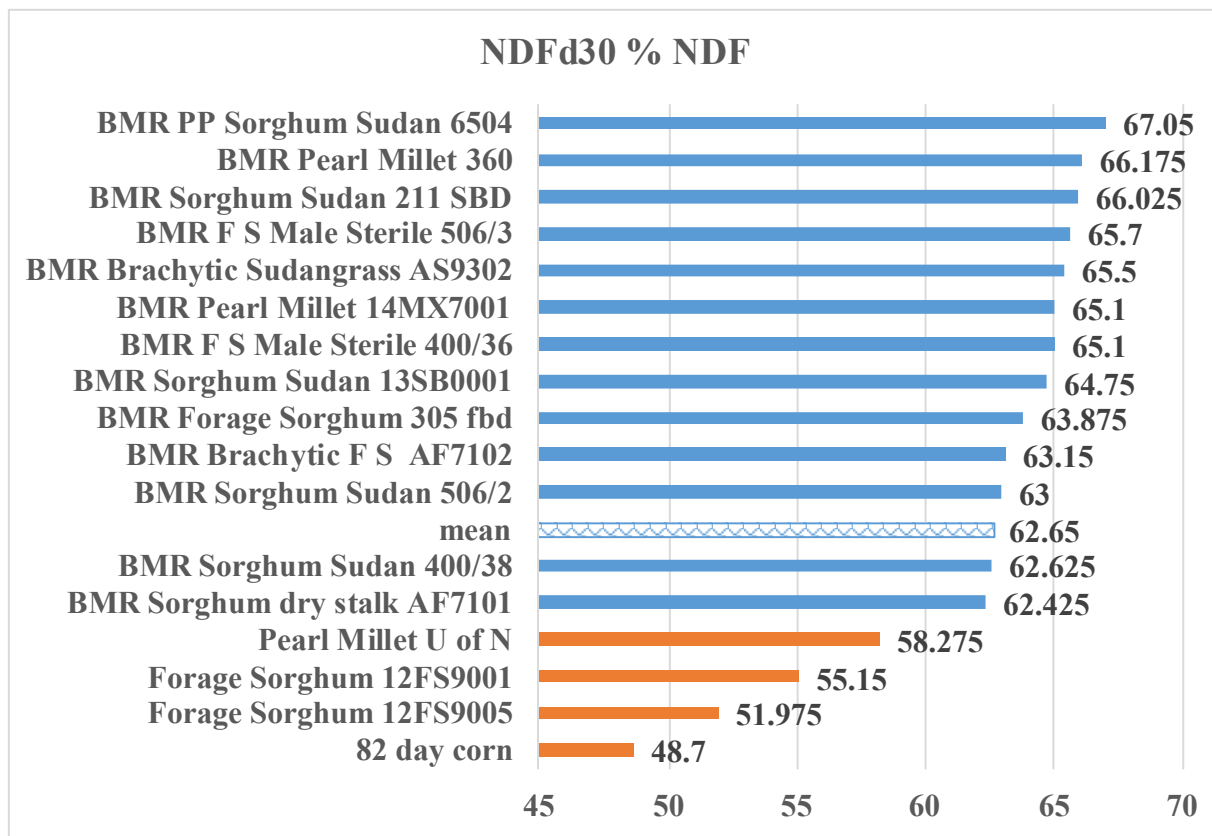
BMR pearl millets (not a sorghum but a separate species that grows similarly) have potentially higher yield and quality. They have almost twice the leaf to stem ratio than do the sorghums. Unfortunately, the delineation between grazing types and mechanically harvested types is not often clarified. We grew two commercial available machine harvest types, yet they were too short, better suited for grazing. We are researching that millet has a possible major loss of quality at heading (similar to winter forage losing quality after flag leaf). We tested a new mechanically harvested forage pearl millet that does not head in our area. Initial results have been very promising (Pearl Millet U of N, below). We will test the new sister BMR line this year.

In 2017 multiple varieties of these forage types were grown in three trials at two locations in New York. The season was cold and wet through May and the first half of June (worst possible weather for warm season crops). Rainfall was adequate, but the end of summer (August and early September) were the coldest in 26 years. The second half of September was the warmest two weeks of the entire summer. Thus, our original harvest target in early September was delayed by the bizarre weather until the beginning of October. We tested at the Valatie Research farm which is in the warm Hudson valley about 20 miles south of Albany, N.Y. Normally we plant June 3 -5. We were not able to plant until June 15, and even that was pushing it (**soil temperature MUST be over 60F and increasing**; see June 2017 newsletter for pictures of what happens if you don't). We were so concerned by the very slow emergence that we put in a second trial on July 5 (this also gives us data on what to plant at this late date). What was unusual at this site was corn normally yields 18 – 20 tons of silage/acre. This year an 82 day Masters Choice corn yielded 30.65 tons/acre. The second site was deliberately chosen as a cold site to see what a warm season crop will do under those conditions.

The companies that entered varieties were: Alta Seed (AF7102 brachytic dwarf sorghum, AF701 dry stalk sorghum, 6504 photoperiod sorghum Sudan, AS9302 brachytic dwarf Sudan grass); BH Genetics (305 fbd sorghum, 211 sbd sorghum Sudan); Chromatin whose varieties arrived late, and were planted 6 days after others (12FS9005 **Non** BMR sorghum, 12FS9001 **Non** BMR sorghum, 13SB0001 sorghum-Sudan, 14MX7001 pearl millet); Kings Agriseed (pearl millet 360); Richardson Seed (400/36 male sterile sorghum, 400/38 sorghum Sudan); Scott Seed (506/3 male sterile sorghum, 506/2 sorghum Sudan); University of Nebraska (**Non** BMR pearl millet). All were BMR except 3 that were noted and the corn silage. Results are 4 replicated plots mean. **Orange on the graphs are NON bmr.**



The top 3 were not significantly different in yield. The next 8 were not significantly different from each other. The top 7 varieties of the NDFd30 % NDF were not significantly different in fiber digestibility. Note: they were not all at the same maturity when harvested. Most of the forage sorghum (not male sterile) were at early soft dough except for the non-bmr which was in milk. Of the others only the Brachytic Sudan-grass was in soft dough. In spite of the poor growing conditions for warm season crops, the yields were equal or better than we had at this site for the past several years. This indicates the consistency of the crop with good management. We had increased rooting depth and organic matter the past years.



A future letter will report in more detail on the male sterile and the impact on forage quality. We will report on the quality change with maturity of the photoperiod 6504 in a future issue. It had excellent yield and quality. A caution on the photoperiod sorghum-Sudan. By early September it was starting to lodge. By the end of September it was severely lodged. The company is working with us in replicated research to determine why this happened. We will report when results are completed.

My July letter will cover what we found with planting at a cool location next to the Canadian border. We will also cover the results of planting these same varieties on July 5. This would be reflective of an emergency crop planting.

Sincerely,

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