



ADVANCED AG SYSTEMS'S

# Crop Soil News

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

Advanced Ag Systems  
Research, Education, Consulting

## New Crop Old Use; New Use Old Crop.

We are always looking at new crops and new uses for old crops. The past two years we have been doing both with the same crop. The crop is an **83 day BMR 6 sorghum**.

Why BMR Sorghum? The 83 day sorghum can be planted after winter triticale harvest or where planting was delayed by weather. Drilled on narrow rows, it will capture the maximum amount of sunlight faster than any corn plant (early planted corn does not cover the rows until hip high). With the early shading, a simple herbicide program (seed can be treated to use certain grass herbicides) is all that is needed. A huge factor this past season, (NO rain middle of July to early August), is the drought tolerance of the crop. Work in Texas found that corn needed an inch of water to produce 0.84 tons of corn silage dry matter.

Sorghum under the same conditions produced 1.76 tons of dry matter on that same inch of water. While the corn stopped growing, the sorghum kept on adding yield. There is no need for stacked genes and related expense for rootworm control. Sorghum is planted at 8 to 10 lbs/acre so a bag of seed goes much further. As a fibrous rooted plant, when drilled it actually improves soil quality. Finally, research has found BMR sorghum can produce as much milk as high quality corn silage.

We worked with related BMR sorghum-Sudan in the 1990's with varying success. It worked well in grazing but required a very high level of management as harvested forage. If not watched, the rapid growth (3 inches/day) produced forage that was very difficult to dry for silage because of the sheer mass of forage. It didn't need herbicide, but did require an extra harvest cost as there were two cuttings instead of one.

Based on that research and farm experience, the plant breeders went to work to develop a one cut BMR sorghum crop for the northern areas. We wanted it short enough that we could harvest winter triticale, manure and then plant the sorghum, harvest the sorghum and plant the triticale early enough for maximum yield. The system would keep us off of wet fields in the early spring and fall when they traditionally have traffic ability issues. It has the potential to produce higher yields than any corn crop. To assure mature silage in our shorten season they put in a dry stalk gene that will accelerate drying at maturity.

Because of the highly digestible fiber, the new sorghum's grain is a minor role for several reasons. The first is that digestible fiber is where we get a significant portion of our milk production. In a recent study where two groups of cows got equal energy, but one got it from starch and the other from digestible fiber; the starch group put on body condition score (fat) while the digestible fiber group put out milk. The second issue is that sorghum species



Drilled sorghum maximizes sunlight capture faster than corn and quickly shades out weeds.

grain tends to be very vitreous at **late maturity** (entire head is black layer) so the grain will go through the cows like preverbal buckshot and not produce milk. The third reason is that sorghum is notorious for lodging and the more grain on a thin stalk, the easier it lodges. Lodging was one of the reasons Sorghum Sudan recommendations were to mow at 36 inches height (in addition to drying issues).

The plant breeders bred 83 day BMR 6 sorghum with a dwarf gene for lodging control and a dry stalk gene to accelerate silage harvest. The dwarf gene makes a plant shorter but the stalk is very fat around. This reduces lodging but maintains or increases yield. As you can see in the photo the head is ready to come out of the sorghum, yet the stalk is large all the way to the head. The comparable short season corn was pencil thin stalk from the ear to the tassel. Remember, **yield is made by tons/acre not by crop height**. A 6 ft tall football linebacker will outweigh a 7 foot tall basketball player. Dwarf sorghum is the football linebacker.



The BMR as we learned with BMR corn, significantly increases the digestibility of the plant fibers. In the sorghum world, not all BMR genes are equal. In work done by Dr. Rick Grant (now of Miner Institute), found that BMR 6 was the best to get milk equal to corn silage (table above).

Lbs 4%Milk/day	Forage Sorghums		
	BMR 6	BMR 18	Non-BMR
Corn Silage	74.1	68.6	64.0
73.3			

A simple trial was planted June 9 (planting was delayed waiting for custom tillage) at the Cornell Valatie Research farm. We targeted the recommended 8 – 10 lbs of seed/acre but the very old (1960's) drill would not plant uniformly so we bumped it up – and hit 30 lbs/acre which is like you planting corn at 150,000 seeds/acre – not the best move. As it was not treated seed (treated is now available) we could not use a grass herbicide and only applied atrazine – yet it gave us sufficient control until the plants shaded the ground. The season was slightly warmer than normal. From mid-July to the first part of August we had no rain and the corn was rolled tight. The sorghum was slightly rolled. Harvest occurred the beginning of September due to the late planting date. The crop was hit by Hurricane Irene and then a week later by Tropical Storm Bob. With a population 3 times higher than it should be, part (but not all) of the crop lodged. The interesting part can be seen in the photo taken about 2 weeks after – most of the crop has stood back up again. A non-row type corn chopper would have gotten 90% of the stand without going one way as most sorghum lodged a foot or more off the ground.



The sorghum at excessive population, was flattened by the hurricane. Two weeks later it was half way back up and completely harvestable.

The bottom line is that we harvested 19.4 tons /acre of 35% DM silage from the plots. The individual sites ranged from 15.2 to 27.3 Tons/A. **Energy was equal to excellent corn silage**. Keep in mind that this was planted late and 8 tons of very high quality triticale is already harvested for a total of 27.4 tons of silage/acre. More work is planned and will be featured at the June 2012 Cornell Valatie Field Day.

Sincerely,

Thomas Kilcer,  
Certified Crop Advisor

172 Sunnyside Rd  
Kinderhook, NY  
12106

Tel: 518-421-2132

[tfk1@cornell.edu](mailto:tfk1@cornell.edu)

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