Two studies were conducted at the Big Flats Plant Materials Center in Cortland, NY (latitude 43°07’ N on a well-drained soil). The soil pH was 5.7 (acid medium phosphorus and potassium soil test values). The first study described in Table 1 was established on 5/22/09 and evaluated 13 lines (see Table 1) and developed by Dr. Ken Vogel from the USDA-NRCS Central-East Regional Biomass Center, Lincoln Nebraska for use in a hybrid population breeding system. It consists of selections from switchgrass populations with an origin of southeast Nebraska and Kanlow with an origin of east-central Oklahoma. The second study described in Table 2 was established on 5/21/10 and evaluated 4 lines developed by Dr. Michael Casler USDA-ARS U.S. Dairy Forage Research Center, Madison Wisconsin and lines from Oklahoma State University. All fields established well with good uniform stands allowing for reasonable yield comparisons (Figure 4). For the study evaluating Ken Vogel’s breeding lines, the second year after establishment (2010), there was no significant differences between the hybrid population lines compared to the improved parent breeding lines developed from Kanlow. The pooled population developed by Casler Summer has yields of 4.66 and 5.34 t/ac, respectively. The improved parent population developed from Casler Summer had lower yields (3.92 and 3.75 t/ac) compared to the average of the lowland parent (5.76 t/ac) or the Kanlow (4.86 t/ac). The ‘improved Casler-Rock’ lines yield better than the improved parent population lines.

In the third year after establishment, 2011 (Figure 2), there was an overall average yield increase from 4.12 to 5.76 t/ac, as expected at the stand reaches maturity. There was a statistical yield increase from the hybrid population lines compared to the improved breeding lines developed from Casler-Rock with yields of 5.13 and 5.05 t/ac, respectively. There was a trend toward higher yield from the K x S crosses compared to the S x K crosses with values of 5.45 and 5.05 t/ac, respectively. The yield of Kanlow from a cultivar evaluation at Cornell University without fertilizer (Table 4) had the same yield as this study, 5.3 t/ac. There was a significant increase in their Kanlow yield when fertilized. The addition of fertilizer to a typical precision can be used to evaluate these hybrids to compare differences when the plots are fertilized. The male parent population of Kanlow used in this study had no further selection. It is likely that using the improved male parents evaluated in this study will improve the hybrid populations yield over the breeding parents. The Summer population used in this study was not improved. Its origin of southeast Nebraska should increase the winter hardiness of the hybrid populations compared to Kanlow alone. The second study only is its second year and the yields represent only the second year following establishment. Two breeding lines of Casler’s and Timmer exceeded the yield of Kanlow although there were no statistical differences. The Biomass was significantly lower than Timmer. Since both came from similar starting material further evaluation of the data revealed one plot was very low and when removed brought the yield line with Kanlow to 5.65 with a 3.03 t/ac yield. This preliminary information shows the applicability of some of the cultivars and breeding lines for the Northeast.

References
