Research Note 2017-01-25

Assessing the Nitrogen Requirements of Sorghum Crops

Currently, OMAFRA recommends fertilizing sorghum-sudangrass like corn. Local experience suggests that adequate yields might be possible with less than the recommended amount of nitrogen.

This project will assess whether there is unrealized yield potential on sorghum crops in Algoma District.

Thanks go to the Algoma Community Pasture Association and Murray Cochrane for their assistance with this project.

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Sorghum-sudangrass is a hybrid of forage sorghum and sudangrass that does well in Ontario's climate. It is often used as emergency forage because it is sown in early summer. As a warm season grass, sorghum-sudangrass grows rapidly under hot conditions when most of Ontario's other forages slow down.

OMAFRA's factsheet on sorghum-sudangrass suggests applying 100-125 kg/ha (90-110 lbs/ac) of nitrogen (N) at planting, followed by an additional 50 kg/ha (45 lbs/ac) after each cut. This same document advises fertilizing sorghum like corn, because both are large, hungry, subtropical grasses. In many cases, corn N recommendations are based on a fertilizer price ratio rather than crop demand.

Several producers in Algoma have tried growing sorghum-sudangrass over the last few years. Success has depended very much on growing conditions. Conversations with these farmers have indicated that while some provide N through fall-applied manure or fertilizer at planting, none are applying the high levels of N recommended by OMAFRA. In years where growing conditions are favourable for this warm season grass, farmers have been satisfied with the yields.

This project will assess whether there are significant yield losses associated with lower-than-recommended N applications on sorghum-sudangrass grown in northern Ontario.

On 0.75 acres at the Algoma Community Pasture, sorghum-sudangrass will be established and provided with adequate phosphate and potash. This stand will be divided into 12 plots, and each plot will be fertilized at either the full recommended rate (100 kg/ha [90 lbs/ac]), half the recommended rate (50 kg/ha [45 lbs/ac]), or no nitrogen.

After first cut, each plot will be divided in three and each section will be fertilized at full (50 kg/ha [45 lbs/ac]), half (25 kg/ha [22.5 lbs/ac]), or no nitrogen. This will allow for measurements to be taken of all combinations of planting and post-cutting fertilizer rates. Yield data will be collected for first and second cut.

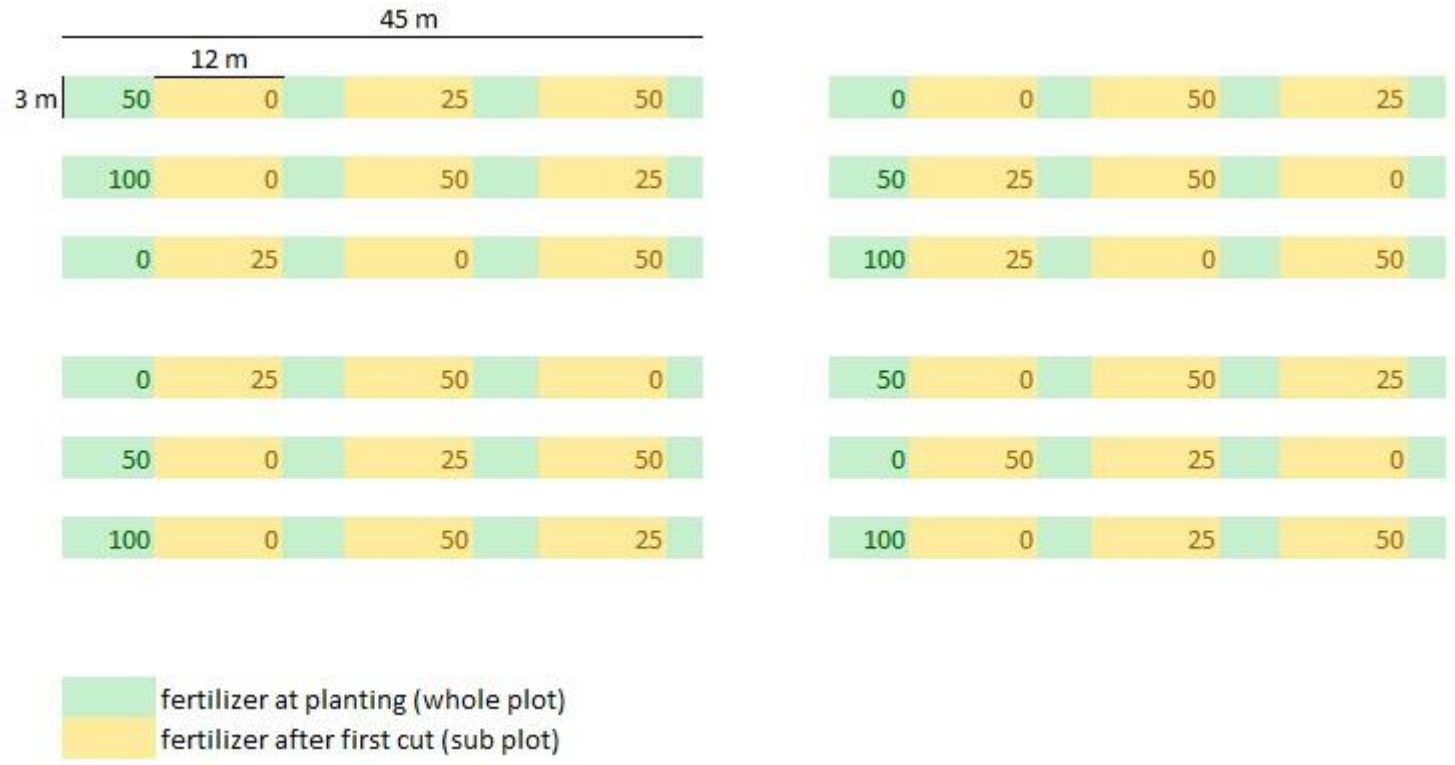

Figure 1. Experimental design for nitrogen recommendation assessment at Algoma Community Pasture

The results will indicate whether there is unrealized yield potential on sorghum crops in Algoma District. It will also help verify provincial recommendations on a crop that is increasing in acreage.