

Canadian Silage Sorghum Hybrid (CHMSH 35)

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Dormancy- Sorghum stays dormant during drought stress and recovers with rain, whereas this recovery is not found in corn.

Better grain filling- Sorghum stays green and sheds more pollen to assure seed set under high temperature. Corn shed less pollen and creates silk delay resulting in partial grain fill.

Low-cost feed- Silage sorghum requires 70% of corn fertilizer program, no insect control and can be harvested with camper head forage harvester.

Feed quality- Nutritive value is comparable to corn. Harvesting at 120 days after planting will optimize nutritive value of sorghum silage (Table 1).

Assured feed supply- Perennial forage grasses and silage corn production in Ontario and Quebec is frequently affected by drought. Sorghum being an excellent drought and heat tolerant crop will ensure feed supply even in dry years



Characteristics of CHMSH 35:

- Recommended for one time harvesting to make silage or green chop for dairy and beef.
- Forage dry matter yield of 12-16 t/ha and its stem has soluble sugars having brix percentage ranging from 12-14.
- The leaf width ranges from 8-10.5 cm and leaf length ranges from 89-94 cm which is comparable to corn leaf. It has 12-14 leaves and takes 100-110 days to reach soft dough stage of grain maturity.
- Frost sensitive with safe prussic acid level
- This hybrid is exceptional in phenotypic traits and can be a future replacement of corn silage in temperate climate as it yields 15-20% higher biomass than corn silage.

Silage Sorghum CHMSH 35:

AERC Inc. has developed new silage sorghum hybrids adapted to Ontario and Quebec for single cutting system. Based on initial field trials our first silage hybrid CHMSH 35 was released in 2003. Harvesting at dough stage of grain maximizes total production and optimum quality due to increased energy associated with the grain. Field testing indicated that total dry matter yield of CHMSH 35 is 21% superior to the silage corn (Check) at Harlaka, Quebec and 59% superior to silage corn at Delhi, Ontario. The average forage composition of CHMSH 35 was 9% crude protein (CP), 28% acid detergent fiber (ADF), 49.9% neutral detergent fiber (NDF) and 81% invitro dry matter digestibility (IVDMD) and a net energy lactation (NEL) of 1.54 Mcal/kg) across locations (Table 1)

Table 1: FORAGE DRY MATTER YIELD AND QUALITY OF CHMSH 35*

Parameter	CHMSH 35	Silage Corn
Plant height (cm)	260	180
DMY (kg/ha)	13,580	9,732
CP (% dm)	9.0	8.0
ADF (% dm)	27.7	21.5
NDF (% dm)	49.9	45.3
IVDMD (% dm)	81.1	86.7
NEL (Mcal/kg)	1.54	1.72
TDN (% dm)	67.6	72.8
Ca (% dm)	0.15	0.09
P (% dm)	0.38	0.42

*Tested in Ontario at two locations and one location in Quebec province.

Animal Feeding trials:

Feeding trials with dairy cattle have been conducted at Kemptville College, University of Guelph. The diets were formulated based on NRC (1989) minimum nutrient requirement for 650 Kg cows producing 35 kg of milk with 4.0 milk fat per day. Formulated diets contained 24 % sorghum silage or 24% corn silage and 29 % alfalfa-grass haylage and 31% high moisture ear corn. Sorghum silage had similar fatty acid composition and slightly higher protein than corn Silage (Table 3). Dairy cows with AERC's high moisture sorghum silage had similar dry matter intake, milk yield and milk composition as compared to those on the control diet with corn silage.

**Table 3: Fatty Acid and Protein Composition of Sorghum Silage and Corn Silage**

Parameter (% dry matter)	Sorghum silage	Corn silage
Lactic Acid	5.22	4.34
Acetic Acid	1.32	1.51
Lactic/Acetic Ratio	3.95	2.87
Butyric Acid	0.001	0.001
Total Acids	6.58	5.92
pH as sampled	3.65	3.80
Crude Protein	9.33	8.18
Ammonia, CPE	0.60	0.40
Ammonium-N % of Total N	7.61	4.79

Table 4: Milk production in late lactation dairy cows

Parameter	Sorghum silage	Corn silage
Dry matter intake (kg/day)	25.7 a	26.2 a
Milk production (kg/day)	30.55 a	30.63 a
Milk fat (%)	3.97 a	3.90 a

*Means in the same row with the same letter are not significantly different at P=0.05

CROP MANAGEMENT GUIDE- CSSH 45 SWEET SORGHUM (FOR ETHANOL AND SILAGE)

Planting date	Plant in 3 rd week of May, when soil temperature is above 12^oC with no risk of frost. (Warm soil is needed for rapid emergence and growth).
Spacing	Between rows 15-24 inches and 2 to 3 inches apart within the row.
Seed rate	4 kg/acre (10 lbs/acre) or 10 kg/hectare. (CHMSH 35 has 40,000 - 45,000 seeds/kg).
Planting depth	Plant shallow at 1 to 1.5 inch in good seed bed.
Population	Target population 80,000 to 100,000 plants/acre or 200,000-250,000 plants/ha.
Planting equipment	Use a grain drill with cereal box or vacuum seeder. Most corn planters need special sorghum plates.
Fertilizer	Use 70% of silage corn fertilizer based on soil test. Apply 120 lbs N, 30 lbs P and 75 lbs K per acre at planting. Side dress N after 4 to 5 weeks after planting is also an option.
Soil pH	Optimum soil pH 5.5 – 7.5.
Grass weed control	If grass weeds are heavy use Roundup before planting. Cultivation is also an effective option. In addition, if seed is treated with Concep III, apply Dual II magnum as per recommendation (Follow labels and guide to weed control).
Broad leaf weed control	Following herbicides are registered for broad leaf control in Ontario. 1) PEAK 75WG plus BANVEL-280, 2) BASAGRAN Forte, 3) 2,4-D 0.5-1.0 L/ha. Herbicide should be used at 4-6 leaves stage. (Follow labels and guide to weed control).
Harvesting	Harvest at plant moisture of 60-72% with a regular forage harvester chop uniformly and fill the silo as quickly as possible and pack the silage well. Recommended chop length is at 1/4 to 3/8 inch.