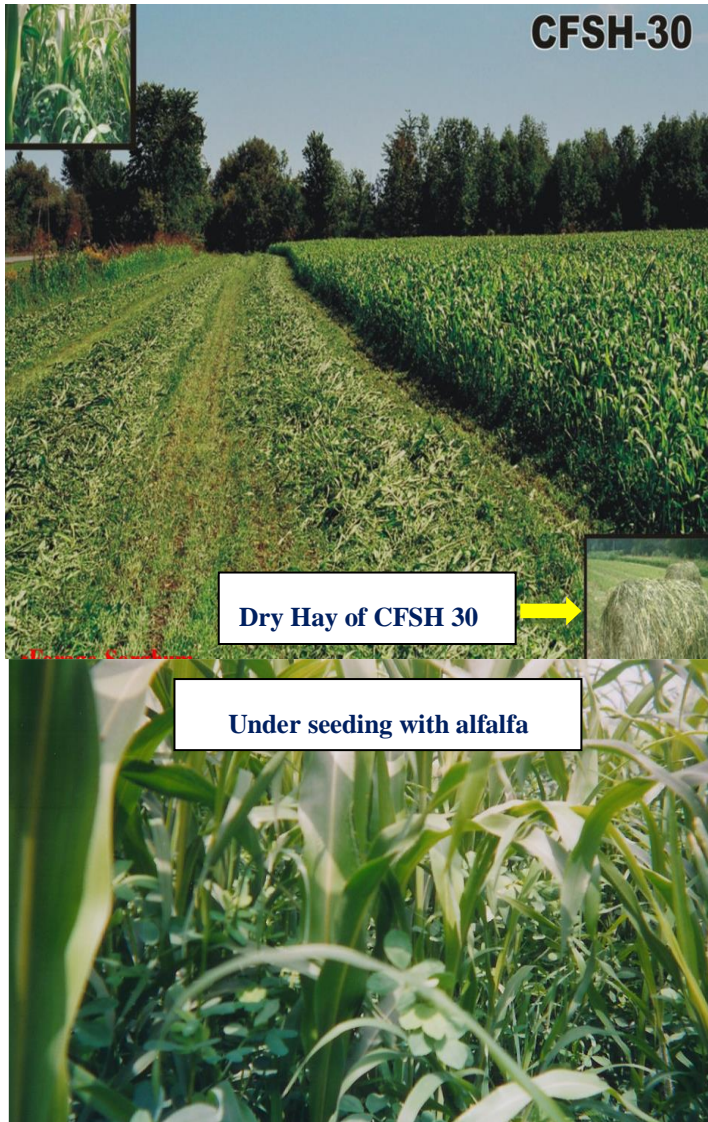


Canadian Forage Sudan Hybrid (CFSH 30)



Characteristics:

- Forage dry matter yield of 10 to 14 t/ha with crude protein of 14-15%
- Flowering in 40 to 50 days, 2 to 3 cuttings during season and rapid re-growth
- Very leafy with fine stems and 3-6 tillers per plant
- Recommended for silage, green chop and pasture; (excellent recovery from grazing)
- Frost sensitive with safe prussic acid level (10-20ppm) in temperate climate
- Ideal for dairy, beef, sheep and goat nutrition
- Ideal nutritional crop for under seeding with alfalfa for dairy cattle
- Exceptionally palatable
- Highly tolerant to alkaline and saline soils in UAE and China

Why Forage Sudan?

AERC Inc. has developed forage sorghum hybrids as multi-cut sudan hybrid which is mainly adaptable to temperate climate as a part of the feeding program for livestock. Canadian Forage Sudan Hybrid 30 (CFSH 30) is developed from Sudan type parents. Sudan hybrid will supplement pasture in lower production period of summer and fall months. It is a great option for replacing winterkilled alfalfa. It provides energy equal to alfalfa (early vegetative to midbloom) and protein superior to corn (14-15% vs 7.5-8.5% respectively). For each mouthful sudan hybrid offers 45% more protein, 15 % less energy when compared to corn silage. Sudan hybrid grows well on all soil types. Like other crops sudan hybrid will not perform well under high weed pressure and in poor rotation systems. The plant can reach over four feet in height and produces several tillers. Forage sudan hybrid is drought and heat tolerant (300 liters water per kg of dry matter production versus 849 liters of water per kg of dry matter production for Alfalfa) but is sensitive to frost.

Now, growers have access to AERC's Canadian forage Sudan hybrid 30. It produces better forage yields with excellent quality under a wide range of growing conditions. CFSH 30 was tested at multiple locations over several years showing its high nutritional values.

Research on Adaptability, Agronomy and Utilization of AERC's Forage Sudan Hybrids are conducted in Partnership with Research branch, Agriculture and Agri Food Canada, Ontario Ministry of Agriculture and Food, University of Guelph, Quebec Ministry of Agriculture and Rural Affairs and other agricultural universities across Canada.

Commercial field of CFSH 30 for cattle feed near Ottawa,



Yield and Quality of CFSH 30: Multi-location testing over years indicated that CFSH 30 is 14 to 76 % superior to the check US Sudan grass in total forage dry matter yield (Table1). CFSH 30 forage was high in quality with 12- 16 % crude protein (CP), 28- 34 % acid detergent fiber (ADF), 56-59 % neutral detergent fiber (NDF) and 81-84 % invitro dry matter digestibility (IVDMD) and net energy lactation (NEL) of 1.3 – 1.4 (Mcal/kg) across locations. The variation of forage quality across regions is small as compared to the yield (Table 1 and 2).

Table 1: Forage dry matter yield (tons/ha) over years across Canada

Region	CFSH 30*	US Sudan*	% Over check
South western Ontario	10.9	9.6	114
North eastern Ontario	4.6	4.0	115
Quebec	7.1	5.9	120
Manitoba	5.5	5.0	110
Saskatchewan	3.7	2.1	176
Mean over locations	6.36	5.40	120

* Years tested- South western Ontario Delhi-5, London-2; North Eastern Ontario-4 (Thunder Bay and Emo-4, New Liskeard- 2); Quebec-5 (Harlaka-5 Princeville-3 St Rosalie-2); Saskatoon-5, Manitoba -3.

Table 2: Forage Quality (% of dry matter) of CFSH 30 over years across Canada

Parameter	South western Ontario	North eastern Ontario	Quebec	Saskatchewan	Mean over locations
Crude Protein	15.6	14.0	15.7	12.1	14.3
ADF	28.02	33.63	31.48	31.0	31.0
NDF	55.7	58.2	58.9	58.0	58.9
I.V.D.M.D	86.1	81.4	83.7	82.0	83.3
Phosphorous	0.31	0.30	0.35	0.17	0.28
Calcium	0.49	0.25	0.61	0.29	0.41
N.E.L (Mcal/kg)	1.54	1.49	1.51	1.51	1.51

*Years tested- South western Ontario Delhi-5, London-2; North Eastern Ontario-4 (Thunder Bay and Emo-4, New Liskeard-2); Quebec-5 (Harlaka-5 Princeville-3 St Rosalie-2); Saskatoon-5,

Animal Feeding trial with Beef and Dairy: Feeding trials with dairy and beef have been conducted at Kemptville College, University of Guelph. The nutritional profile of CFSH 30 silage was as follow 16.2 % CP, 34.5 % ADF, 57.5 % NDF and 66.5 % total digestible nutrients (TDN) whereas the typical corn silage values are 9 % CP, 24.9 % ADF, 42.8% NDF, and 65.8 % TDN. Research showed that dry matter yield for CFSH 30 (9.5 t/ha) were comparable to silage corn (10 t/ha). Dairy cows with AERC’s CFSH 30 silage had similar dry matter intake, milk yield and milk composition as compared to those on the control diet on alfalfa-corn silage (Table 3). Beef heifers produced a weight gain of 0.88 kg/day with AERC’s CFSH 30 silage, whereas the body weight gain with mixed haylage and alfalfa grass was 0.82 kg/day (Table 4). The crop management recommendations are summarized in the Table 5.

Table 3: Milk production in late lactation dairy cows

Parameter	Corn silage ^B	CFSH 30 silage ^A
Dry matter intake (kg/day)	23.1 a	22.2 a
Milk production (kg/day)	34.1 a	32.4 a
Milk fat (%)	3.70 a	3.66 a
Milk protein (%)	3.70 a	3.53 a

**Means in the same row with the same letter are not significantly different at P=0.05. 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 sorghum diet (A) contained 35% CFSH 30 sorghum silage, 33% alfalfa-grass haylage and 32% high moisture corn. Control diet (B) contained 40% corn silage and 42% alfalfa-grass haylage and 18% high moisture corn.*

Table 4: Body Weight gain in beef heifer in feeding trial:

Type of diet	Initial body weight (kg/animal)	Final body weight (kg/animal)
AERC’s sorghum silage	325.9	421.3
Mixed haylage (Alfa-alfa + Grass)	315.6	414.6

Table 5: Crop Management CFSH 30

Planting date	Plant in when soil temperature is 12 ^o C and above
Spacing	Between rows 7 inches and 2 to 3 inches apart within the row.
Seed size	CFSH 30 seeds are small with approximately 30,000seeds/lb. and 66,000 seeds/kg.
Seed rate	10 kg/ha
Planting depth	Plant shallow at 1.5 inch.
Planting equipment	Use a grain drill with a grass box or conventional grain drill. Broad casting of seeds results in uneven stand. Use 80 % of chart opening for sorghum or sudangrass because the seed of CFSH 30 is smaller than sorghum or other sudangrass varieties.
Fertilizer	Apply 100 kg N and 30 lbs P and 0 lbs K per /ha at planting plus 50 kg of N after first cut and second cut. The P and K should be applied based on soil analysis.
Soil pH	Optimum soil pH 5.5 – 9.5.
Harvesting	Ready at 40-50 days after planting. Optimum forage quality at one meter height tall. Schedule the 2 nd and 3 rd cut after every 20-25 days.
Harvest height	Leave 4 to 6 inches of stubble for faster re–growth.
Forage Yield and Quality	Forage dry matter yield 14-16t/ha (from all cuts). Forage quality (in % DM) was 14-16% CP, 28 -32% ADF, 56-59 % NDF and 66-70% total digestible nutrients and net energy of lactation of 1.3- 1.4 (Mcal/kg) across Canada. CFSH 30 has low levels of prussic acid at all the time (after a frost or drought ranged 10 to 20 ppm % DM).

Note: Prussic acid level of less than 250 ppm is safe to use as feed