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Presenter Information

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Selection on silage pasture species of high yield in subtropics of Yunnan province

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Key words: subtropics, silage pasture species, selection

Introduction In the subtropical areas of Yunnan province, 8 silage pasture species were observed and tested for the phenophase and the performance of forage yield, stem and lamina ratio, fresh and dry matter ratio, nutrition component of dry matter and intake rate. The results showed that the dry matter yields of Pacesetter plus, Hunnigreen and M-8IE were significantly higher than those of maize; Of the maize, Donglong No.1, Danke 2143, performed better both in growth and yield. There were four species well adapted to the native climates with higher dry matter yields, namely Hunnigreen, Donglong No.1, Pacesetter plus and *Euchlaena mexicana*, making it suitable to extend to the areas of the similar climates.

Materials and methods Eight species were used for the trail including four maize species, three sorghum species and one Mexican teosinte listed in table 1. The trail was conducted on an evenly plane area available for irrigation with high fertility and good drainage at Shiaoouchang village, Nanzhao Township, Weishan county, of the north subtropics monsoon climate with elevation of 1700m, annual mean temperature of 15.6°C, annual rainfall of 804.7mm, 2314 hours of annual radiation, 280 days of frost free, 2124mm of evaporation. The soil type of the trail site is classified as the purple sand rice cropping field with 6.7 of soil pH. Random plotting with triplicates trail design was adopted on each plot of 2 m × 5 m = 10 m² with 0.5m of plots interval. The sowing rate was 60 kg/hm² for maize, 27 kg/hm² for *Sorghum vulgare* cv. Hunnigreen, *Sorghum sudan* cv. Pacesetter plus and M-8IE Sweet sorghum and 30 kg/hm² for Mexican teosinte

Results Speaking of the DM yield, among the 8 varieties, M-8IE was higher than Hunnigreen in sorghum group. But in the maize group, it followed the pattern as Local maize > Danke 2143 > Longfu 208 Forage maize. The yield in DM was ranked as Sweet Sudan grass hybrids at 77.68 t/hm², M-8IE at 72.14 t/hm², Local maize at 50.79 t/hm². While, the lowest yield in DM was Mexican teosinte at 35.51 t/hm². From the analysis made with the silaged material, it suggested that two cultivars were with high quality and nutrient, making them the top priority for silage forage in the subtropics in Yunnan for winter and spring feed shortage solution. These two cultivars were Hunnigreen of 6.34% in crude protein, 1.95% in crude fat, 43.90% in crude fiber and 44.52% in intake rate and Donglong No.1 of 8.82% in crude protein, 3.44% in crude fat, 9.03% in crude fiber and 100% in intake rate.

Table 1 Comparison of yield and nutrient of the silage species tested in the experiment.

Cultivars	DM yield (t/hm ²)	Crude protein (%)	Crude fat (%)	Crude fiber (%)	Digestible rate (%)	Acetic acid (%)	pH	Intake rate (%)
M-8IE Sweet sorghum	72.14 ^{Bb}	6.14 ^{Ec}	0.88 ^{Dd}	31.58 ^{Cc}	7.89 ^{Bb}	0.55 ^{Aa}	3.2 ^{De}	29.80 ^{Ff}
Hunnigreen Sweet sorghum	64.53 ^{Cc}	6.34 ^{Ec}	1.95 ^{Cc}	43.90 ^{Aa}	7.80 ^{Bb}	42.81 ^{Hh}	0.35 ^{De}	44.52 ^{Dd}
Sweet Sudan grass hybrids	77.68 ^{Aa}	7.11 ^{Dd}	0.84 ^{Dd}	40.17 ^{Bb}	7.53 ^{Cc}	0.47 ^{Bc}	3.6 ^{ABChe}	18.68 ^{Fg}
Mexican teosinte	35.51 ^{Gg}	7.78 ^{Cc}	0.60 ^{Ec}	43.71 ^{Aa}	9.58 ^{Aa}	0.55 ^{Aa}	3.6 ^{ABChe}	31.66 ^{Ee}
Longfu 208 Forage maize	33.59 ^{Gh}	8.08 ^{BCIc}	2.69 ^{Bb}	19.46 ^{Ec}	3.89 ^{Ff}	0.30 ^{Ef}	3.5 ^{BCed}	66.72 ^{Cc}
Donglong No.1 maize	29.48 ^{Hi}	8.82 ^{Aa}	3.44 ^{Aa}	9.03 ^{Gg}	3.01 ^{Gg}	0.49 ^{Bb}	3.7 ^{ABab}	100.00 ^{Aa}
Danke 2143 maize	37.76 ^{Ff}	8.43 ^{ABb}	2.71 ^{Bb}	17.47 ^{Ff}	4.22 ^{Ec}	0.54 ^{Aa}	3.8 ^{Aa}	71.22 ^{Bb}
Local maize	50.79 ^{Dd}	7.87 ^{Cc}	1.97 ^{Cc}	24.02 ^{Dd}	6.69 ^{Dd}	0.42 ^{Cd}	3.4 ^{CDd}	70.80 ^{Bb}

Note: In the same column, the different capital letter stands for differ significantly ($P < 0.01$); the different small letter means no significant ($P < 0.05$). The following is the same.

Conclusions In general, among the eight cultivars, Sweet Sudan grass, hybrids Hunnigreen, M-8IE, Donglong No.1, Danke 2143, performed better, ideal for silage making in the subtropics in Yunnan. Concerning to the intake, the silage made from sorghum cultivars were higher than that of made from maize. However, the cutting should be done before flowering.

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