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## Comparison of different maize hybrids cultivated and fermented with or without sorghum

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**Introduction** In Hungary our key forage crop is silage maize, however, the joint growing of maize and sorghum is increasingly important in arid regions. The reason is, that sorghum varieties tolerate well the various ecological stresses (drought). The joint growing of maize and sorghum varieties has several advantages and disadvantages in respect of yields, safety of production, fermentability of the crop and nutrient content of the silage. The basis of realising the complementary qualities of the two crops and of the successful joint growing and preservation is the suitable pairing of hybrid varieties.

**Materials and methods** The authors studied certain early maturing (290-350), medium maturing (FAO 350-450) and late maturing (> FAO 450) maize hybrids (12), grown alone and jointly (2x2) with Sucrosorgo silage sorghum (1 hectare per each hybrid). The preservation and storage were carried out in 3 shared plastic tubes (60 m long with diameter of 3.0 m and 0.27 mm thickness). The nutrient and energy content of the fresh maize and maize-sorghum mixtures and silages, the pH, the lactic - and volatile fatty acid content of silages (sampled on the days 14, 28 and 140 of fermentation) were analysed according to the Hungarian National Standards (Hungarian Feed Codex, 2004).

**Table 1** Result of the different maize hybrids grown and ensiled alone or with sorghum

Maize hybrids	Yield						Nutrient and energy content of silages						Fermentation			
	Green yield		DM		Nel		DM		NEI		CF		pH		Lactic acid	
	(t/ha)	(t/ha)	(t/ha)	(t/ha)	(GJ/ha)	(GJ/ha)	(g/kg)	(g/kg)	(g/kg DM)	(g/kg DM)	(g/kg DM)	(g/kg DM)	(28 <sup>th</sup> day)	(28 <sup>th</sup> day)	(28 <sup>th</sup> day)	(28 <sup>th</sup> day)
	M+S*	M**	M+S	M	M+S	M	M+S	M	M+S	M	M+S	M	M+S	M	M+S	M
LG2483	42.2	23.1	11.0	8.3	63.2	52.4	256.7	364.0	5.22	6.17	275.5	165.1	3.7	3.9	81.7	81.5
LG2470	44.4	27.4	11.1	10.4	61.9	67.9	251.3	392.1	5.50	6.27	309.1	178.6	3.7	4.0	82.4	84.0
GEYSER	41.5	24.4	11.3	10.2	62.1	66.7	269.2	397.6	5.50	6.22	260.0	178.2	3.8	3.9	86.0	83.7
VASALICA	40.5	27.2	11.0	11.3	61.0	75.5	293.4	424.6	5.46	6.30	266.8	164.2	3.7	3.9	83.0	84.4
CORALBA	41.6	29.2	10.8	10.7	60.6	71.2	266.8	373.0	5.58	6.32	273.3	174.1	3.8	3.8	85.6	83.9
DK 527	38.8	25.2	10.3	10.5	57.4	69.9	224.5	387.4	5.38	6.34	288.1	136.3	3.9	3.9	71.0	83.5
DK 523	39.4	23.2	10.5	9.5	59.3	63.5	276.0	424.9	5.45	6.24	278.2	160.5	3.8	3.9	82.1	80.1
DK 557	39.4	27.3	10.7	10.3	59.1	68.0	298.2	394.0	5.56	6.33	274.8	153.0	3.8	3.9	82.9	84.0
DK 366	39.2	17.5	10.8	7.2	60.3	47.7	265.0	372.7	5.51	6.22	242.9	168.7	3.7	4.1	85.3	80.6
MAXIMA	39.1	21.4	10.1	8.0	56.7	53.0	267.9	377.6	5.48	6.22	280.8	185.3	3.8	4.0	85.3	88.3
KÁMA	36.7	22.0	10.2	8.4	56.5	56.6	273.8	378.1	5.52	6.30	277.9	154.8	3.8	3.9	83.9	83.3
SZETC 465	33.3	23.5	9.0	11.0	49.5	73.2	247.3	436.6	5.57	6.20	291.8	158.4	3.8	4.0	82.7	83.2

Note\*M+S: Maize grown with sorghum (2 x2), \*\*M: maize grown alone, DM: dry matter, NEI: net energy for lactation, CF: crude fibre

**Conclusions** Where drought can be expected (during July-August in Hungary), the available acreage is limited or crop conditions are not ideal for any other reason, it is recommended to grow maize hybrids which perform well with sorghum and produce together a large green and dry matter yield safely (Vasalica, LG2470, Coralba, LG 2483 and Geysler). Where no such limitations exist (in good soil and weather conditions, with low risk of drought and high yielding dairy herd), higher energy yielding maize hybrids sown on their own are more important (Szetc 465, Vasalica, Coralba, DK 527 and DK 557). Where the high performance has priority the sowing of maize is highly recommended alone, because the sorghum decreased the dry matter (32%), net energy content (13%), while increasing the crude fibre content (68%) of the silages compared to maize silages.

## References

Hungarian Feed Codex. III. (2004.). Laboratory methods and operations. National Institute for Agricultural Quality Control. Budapest. ISBN 963 86097 5 3, Hungary.