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The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Presenter Information

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A comparative test of *Melilotoides ruthenica* experimental varieties

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Key words: variety test agronomic traits performance

Introduction *M. ruthenica* (L.) Sojak is an excellent forage species with drought tolerance and cold resistance. We had selected four *M. ruthenica* strains from a germplasm collection from all over the China, through several years. Objectives of this study were to evaluate the agronomic traits and performances of the four strains (variety comparative test), and to provide information for releasing and registering new cultivars.

Materials and methods Four strains were 93-21 (erect type), 00-61 (creeping type), 00-81 (creeping type) and 90-36 (semi-creeping type), and *M. ruthenica* (L.) Sojak cv. Zhili as comparative check registered by Wu Yunfei (1994). The experimental field was located at the proving ground of Grassland Research Institute of Chinese Academy of Agricultural Science near Huhhot city. Agronomic traits, including plant height, branch number, crown width, stem and leaf ratio, and the main productive performances, including hay production and seed production were measured during the flowering stage during 2004-2006. All indexes measured on ten randomly selected plants and averaged the value.

Results Table 1 showed the plant height, branch number and plant width of four strains had significantly improvement and stem and leaf ratio had some decrease, compared with their wild relatives. All agronomic traits of four strains were significantly better except the branch number of strain 00-81 than those of the check. Their hay and seed production were above 14.31% and 62.27% higher than those of their own wild type, respectively. All strains but strain 00-81 had significantly higher hay production than that of the check, and no significantly different in seed production from that of the check. Strain 93-21 was an erect type and different from the other strains (creeping or semi-creeping type), its agronomic traits were significantly different from those of the others. Strain 93-21, 00-61, and 90-36 had significantly better main productive performances than those of the strain 00-81.

Table 1 The agronomic traits and the main productive performance of various materials.

Strain	Agronomic trait								Main productive performance			
	Plant height(cm)		Branch number		Crown width (cm)		Stem and leaf ratio(%)		Hay(kg/ha)		Seed(kg/ha)	
	Dom	Wil	Dom	Wil	Dom	Wil	Dom	Wil	Dom	Wil	Dom	Wil
CK	87.0 ^b		32.8 ^{ab}		130.2 ^b		2.2 ^a		3863.6 ^{bc}		156.8 ^{ab}	
93-21	97.3 ^b	65.2	48.7 ^a	29.4	145.4 ^b	78.9	1.9 ^a	2.2	4520.4 ^a	3509.6	200.9 ^a	120.2
00-61	145.0 ^a	103.4	41.0 ^a	28.0	243.9 ^a	152.1	0.9 ^b	1.1	4381.5 ^a	3596.7	191.0 ^a	109.8
00-81	131.2 ^a	84.1	22.4 ^b	14.7	220.2 ^a	134.5	0.9 ^{ab}	1.2	3422.6 ^b	2994.2	145.8 ^b	89.9
90-36	137.7 ^a	78.6	47.3 ^a	25.1	200.0 ^a	117.9	1.9 ^a	2.1	4121.9 ^a	3432.6	188.1 ^a	104.7

Note: Dom and Wil were abbreviation of domestication and wildness, respectively. Different letters in the same column mean significance at 0.05 level.

Conclusions Domestication led to the improvement in agronomic traits and also led to the increase in the main productive performances. Strain 93-21, 00-61 and 90-36 performed better in agronomic traits and main productive performance than the check and strain 00-81. The three strains could be the materials to release and register as new cultivars and we could utilize them according to their agronomic traits. For example, strain 93-21 was an erect type and adapted to mowing; strain 00-61 and 90-36 were creeping types and semi-creeping types, respectively, and were fit for grazing.

Reference

Wu Yunfei, Shi Fengling. The breeding of *Melilotoides Ruthenicus*. *Proceedings of the International Symposium on Grassland Resources*, 1994, 887-888.