

Germplasm collection and dry matter production of Mongolian forage plants

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Introduction Mongolian rangelands harbour 564 genera, 128 families and 2,823 species of plants (Gubanov, 1996). Approximately 600 species can be used as forage plants (Yunatov, 1968). There are 5 to 6 species of perennial forage plants that are unique to Mongolia and the country has a domestic cultivar "Burgaltai" of lucerne. This paper provides the results of a study on vegetative and seed yield of germplasm collected from naturally occurring forage plants during 1976-2003. To date, seeds have been collected and are involved in the experimental work from approximately 70 percent of forage plants available at the forage plant seed bank of the Animal Husbandry Research Institute where there are over 2000 samples available.

Materials and methods One thousand one hundred and fifty samples of 230 species from 11 natural vegetation zones of Mongolia were collected during several expeditions. The experiments involved planting the seeds under irrigated and non-irrigated conditions in the steppe of Mongolia.

Results From the Mongol-Daurian Mountains forest steppe, 376 samples of 200 species, 120 genera and 40 families were collected. This zone has the richest collection of forage plant germplasm within Mongolia and forage plants such as *Medicago falcata*, *Elymus dahuricus* and *Melilotus dentatus* were found within the natural rangeland of this zone. From the botanical-geographical region passing through the Depression of the Great Lakes, Trans-Altai Gobi desert and Dzungarian Gobi, plant samples with high nutritional value such as *Reaumuria zoongorica*, *Zygophyllum xanthoxylon*, *Tamarix gracilis* and also precious and rare plants such as *Rosa laxa*, *Elaeagnus Moorcroftii* and *Halimodendron halodendron* were collected. Forage plants were found to be unique in their germination period, seed viability, winterhardiness, seed and dry matter yield. The method of planting was also found to influence the production results. If the plant species were first grown in sheds and then transplanted as seedlings into the field, 8.3 to 50.0 % of the legume plants germinated in 19-29 days. If the plant species were planted as seeds directly into the experimental fields then the germination rate dropped to 5.3 to 33.3 percent in 58-71 days (Tsogoo & Batsukh (2003)). Forage plants such as *Medicago falcata*, *Astragalus adsurgens*, *Trifolium lupinaster*, *Agropyron cristatum*, *Bromus inermis*, *Elymus dahuricus* under irrigation will grow in 44-133 days and one plant can produce between 3.9 and 156.2 grams of forage and 0.1 to 4.4 grams of seeds (Table 1) (Tsogoo & Turtogto, 2003).

Table 1 Yield of some forage plants (2001-2002)

Plant names	Nr. Mongolian gene bank catalogue	Plant yield, g/pl		Seed yield, g/pl		Conclusions As expected, most of the forage species did not grow under dry or non-irrigated conditions. <i>Hedysarum</i> , <i>Festuca</i> , <i>Poa</i> , <i>Cleistogenes</i> , <i>Ajania</i> , <i>Salsola</i> could be used under these conditions.
		Planting method				
		Transplanted	Seed	Transplanted	Seed	
1. <i>Elymus dahuricus</i>	1118	62.0	45.0	4.4	4.3	
2. <i>E. Gmelinii</i>	1446	11.5	21.3	1.2	2.0	
3. <i>E. sibiricus</i>	895	66.0	20.8	8.0	2.7	
4. <i>Poa attenuata</i>	1192	17.5	44.0	0.3	0.3	
5. <i>Agropyron cristatum</i>	1311	42.7	13.6	3.7	2.5	
6. <i>A. michnoi</i>	1068	26.4	9.35	1.4	1.1	
7. <i>Bromus inermis</i>	420	52.7	7.2	0.4	0.1	
8. <i>Stipa sibirica</i>	920	36.7	37.0	0.6	2.4	
9. <i>Medicago falcata</i>	1131	20.0	30.0	0.1	0.5	
10. <i>Astragalus adsurgens</i>	1390	156.2	29.2	2.2	4.2	
11. <i>Trifolium lupinaster</i>	1371	5.8	3.9	0.6	0.3	

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