Technology Fact Sheet for Adaptation

Technologies in the animal husbandry

B.2. Planting of forage perennials resistant to drought and cold winter for fodder production [i]	
1. Introduction	During 1986-1990, Mongolia produced about 1 million tons of forage a year. Since 1990, forage production has decreased by about 65% due to privatization of livestock[1]. 13 big cooperatives and 27 small factories which produced animal fodder at the local level were closed down. Also, types of forage have changed considerably. At the same time, livestock numbers have increased significantly and reached about 36 million in 2011. However, natural resources are limited, because about 70% of pasture has been classified as degraded to a certain extent, production of hay mowing decreased and the diversity of plants declined. Consequently, production of seeds of local varieties that are drought and frost resistant and forage production is required.
2. Technology characteristics	In the past, several plant species (*Agropyron L, Elymus L, legumes* etc) have been tested. This technology consists of several components: 1. Research and identification of the best plant species for the region such as mountains, the forest steppe, and the steppe. 2. Planting of forage plants: Perennials can be used as seeds or forage for subsequent 5 to 7 years in the same planted field. Protection from animal grazing is essential while plants are growing. Investments such as planting techniques, water efficient irrigation systems, environmentally sound pest and disease control are needed. 3. Establishing a seed bank of forage plants at provincial level. Storage and transportation are required to supply a province.
3. Country specific applicability and potential	Experimental seeds were sent to Russia and Inner Mongolia of China for seed exchanges and research. The preliminary research confirmed the seeds that can be planted. "Sumber -1" of *Agropyron* and "Mandal" of *Carex L* are drought and frost resistant perennial varieties. They have 75-80% survival rate in winter, 80-85% of emergence rate, grass biomass of 2650-3050 kg/ha and seed production of 280 -300 kg/ha. It can be mowed 2-3 times each year. 75-80% of the above varieties can survive harsh winters when air temperature is -30 to -35 ^{0}C and soil temperatures are -40 to -45 ^{0}C. In summer it would produce seeds and grass harvests. Also in summer, plants absorb carbon dioxide and greenhouse gasses. 3-5 years would

[1] Additional forage for livestock, 2009, http://www.mongolfarmer.mn/index.php?option=com_content&task=view&id=420&Itemid=32

	be required to introduce the technology.
4. Status of technology in country	Technologies to plant the above perennials in the forest steppe and high mountain regions are being studied and piloted.
5. Benefits and impact on the country development ✓ Economic (- Job creation; - Investment) ✓ Social (- Income generation; - Education; - Health) ✓ Environmental	After the introduction of the technology, herders would have hay fields with high production for 5-7 years and eventually livestock production would be increased. About 1500 jobs such as tractor drivers, agriculture machine drivers, trucks drivers, workers in forage factories, finance and storage staff, and agriculture specialists etc would be created in forage producing farms. Herders and forage producers in the forest steppe and the steppe zones will get benefits and their income could be increased by 25-30%. Forage plants would be fully beneficial to the environment.
6. Climate change adaptation benefits	Planting of forage perennials and local varieties would lead to increased biomass, decreased pasture degradation and mitigation of greenhouse gases.
7. Financial Requirements and Costs	**The total required funding: 1.3 million USD** International agencies– 1.2 million USD The state budget- 800,000 USD Enterprises and individuals– 200,000 USD
8. Institutional requirements	Experts need to train herders about planting and growing of forage perennials, and using seeds and forage production. The technology introduction requires techniques and machineries, capacity building of experts and financial support.

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment For Climate Change Adaptation– Mongolia. You can access the complete report from the TNA project website http://tech-action.org/**