

Technology Fact Sheet

Soil protection from wind erosionⁱ

- 1) **Sector:** Agriculture
- 2) **Subsector:** Soil degradation
- 3) **Technology Name:** Soil protection from wind erosion
- 4) **Recommended option of technology:** No till Technology
- 5) **Scale:** The technology is recommended for the application in the following regions of East Georgia. Shida (Inner) Kartli (Gori, Kaspi, Mtskheta administrative districts), Gare (Outer) Kakheti (Gardabani, Sagarejo, Signakhi districts) and Shiraki (Dedoplistskaro district)
- 6) **Availability:** This technology, not long ago, was less accessible to farmers, as it implies the one-run implementation of the complete technological cycle. This depends on the presence of a variety of machinery at the farm, that was actually unattainable for individual farmer. At present the situation has changed and this technology became accessible to individual/independent small farms

7) **Background/notes (short description of the technology option)**

One of the perspective ways of land cultivation is to lessen the impact on soil with the reduction of cultivation procedures by combining them. Most frequently the combined operations are used in practice during the pre-sowing cultivation and at sowing. Theoretically, the number of cultivation procedures could be reduced to one – the sowing. In many countries this idea is realized with direct sowing in furrow, tray or on the turf, that makes it possible to decrease operational expenses and soil loss by wind erosion. Farming virtually without land cultivation (at the background of “Zero cultivation”) is possible only under some preconditions. First of all, the application of mentioned technologies is most of all acceptable in the raising of fodder cereals. Besides, and most important, the application of these technologies is entirely dependent on the use of herbicides. The advantages of mentioned technologies are: 1) Less labour consumption; 2) Saving of time; 3) Less wearing of machinery; 4) Saving of fuel; 5) Long-term increase in crop productivity; 6) Improvement of water quality; 7) Lessening of soil erosion; 8) Increase in soil water-capacity; 9) Increase in soil water permeability; 10) Decrease in soil compression; 11) Rising of soil cultivation quality; 12) Increased number of living organisms; 13) Decrease in CO₂ emissions; 14) Reducing air pollution.

8) **Implementation assumptions (how the technology will be implemented and diffused across the sub-sector)**

Lands to be cultivated with the mentioned technology are abundant in the wind erosion zone of East Georgia. Under the modern technologies the introduction of soil minimal cultivation technology is not a technical problem. In the past the mentioned above technology usually was applied only on the vast areas. However, at present its application is possible at any area of agricultural land. Thus method of land cultivation traditionally was not used in Georgia. Hence, its introduction will require the implementation of as

much pilot projects as possible, and the conduction of consultations with farmers. At the same time, it would be necessary to make the land-use legislation more rigid to transfer more responsibility to the owner of the land. The monitoring of the land quality should be introduced. Indeed, all these activities could not be taken simultaneously

9) Impact statements

- **Social development priorities:** Overcoming the poverty, decreasing the number of ecomigrants
- **Economic development priorities:** The technology is important for the development of such priority sector of Georgia's economy as the agriculture is. The quality and productivity of land is of major importance for the development of agriculture
- **Environmental development priorities:** The wind degradation of soil is directly connected with the climate change. The combat against adverse results of climate change is one of priorities of Georgia Ministry of Environment and, in general, of Georgia's Environmental Action Plan. One of the most important resources endangered by climate change is the agricultural land.
- **Other factors:** The offered technology is not traditional for Georgia and so, the raising of farmers awareness on the importance of this technology for the abatement of wind erosion is one of the key items. This will require to carry out relevant theoretical and practical trainings.



10) Costs (US\$)

The conduction of anti-wind erosion measures is widely practiced in the USA, Canada, Australia. At present the adoption and application of recommended technology is going on in the developing countries of Asia and Africa. The machinery for the implementation of offered technology is available at the international market. Its cost would be accessible to farmers owing small areas of land and small and medium-sized agrarian companies

- **Effectiveness of technology:** The use of recommended technology will sharply reduce or completely halt the soil erosion processes at tilled lands, resulting in the improvement of soil physical, chemical and biological properties. The biological activity and fertility of soil will increase. The crop yield of cereals will increase by 0.50-0.80 t/ha and the cost price of produce will decrease
- **Barriers**
 - The legislation does not exist on the protection of agricultural lands and on retaining of their fertility, which determines the rights and obligations of land owner in respect of soil protection.
 - The monitoring is not being conducted of parameters, which are necessary for the assessment of soil erodibility and other quantities. Hence, the creation of this system requires additional expenses, that should not burden the land owners, especially in case of small farms.
 - The technology is not traditional for Georgia and is not spread at the market. This will require the creation of a market provision ring.
 - The awareness rising of population, farmers and local officials on the economic efficiency of this technology and on the possible aggravation of climate change adverse impact is of major importance for the provision of this technology and provision of its further sustainability.
 - It would be necessary to train local expert, which will perform the maintenance of applied machinery

ⁱ This fact sheet has been extracted from TNA Report - Adaptation for Georgia. You can access the complete report from the TNA project website <http://tech-action.org/>