Technology Fact Sheet

Sector	**Agricultural Soils**
Technology name	**Mini-Till soil cultivation system with preliminary positive recovery of the post-arable layer and use of vetch as intermediary crop for green fertilizer.** [i] Budoi G., Penescu A. Agrotehnica. **Mini-Till soil cutivation system**. Bucureşti: Cereş, 1996, p. 330-332. Mihai Rusu. Tratat de Agrochimie. Green Fertilizers. Bucureşti: Cereş, 2005, p. 487-488.
CO2 Emissions in „Agricultural Soils" sector, tons CO2	**Anul 2010 – 3 000 787 t sau 2,07 t/ha** (sown areas – 1 451 500 ha, fallow land= 1 820 510-1 451 500 = 369 010 ha; on fallow lands the emissions were well balanced or slightly positive)
General description of the technology	Mini-Till soil cultivation system further became a version of soil conservation system based on the agro technical, economic and energy, ecologic principles. This system implies returning the crop residues back into the soil, partial preservation of vegetal waste as mulching, as the source of energy material for the living beings living in sol, on the surface of the soil, maintaining biodiversity and balance in ecosystems. Use of this system is conditioned by certain appropriate measures allowing combined (concurrent) implementation of a number of operations related to use of insecticides, fungicides and herbicides, fertilizers and use of mechanisms for their application or incorporation in soil, knowledge of specific features of crops and local pedoclimatic conditions, types of soils and hybrids adapted to conditions created by this technology. It is proposed to improve this system by using vetch as successive crop as green fertilizer. A vetch crop accumulates cca 10 tons of organic matter in soil, which ensures synthesis of 2.5 t/ha of humus containing cca 200kg of nitrogen. Cca 1,45 t/ha/year of carbon is stocked in soil. It reduces CO2 emissions by **5.08 t/ha**, ensures a positive carbon balance in soil over 2 years, reduces annual CO2 emissions from soil by **2.54 t/ha**.
How the technology will be implemented and disseminated across the sector?	This technology can be successfully implemented by all farm businesses on cca 20-25 percent of agricultural lands (cca 200 000 ha), primarily for cultivation of grain crops. Implementation of this technology will require a combined drill tillage with light discs and a common sowing machine, or combined tillage and sowing machine (Annex 10).
Implementation barriers	Do not exist. It is necessary to create a vetch seeds operation.
CO2 reduction as a result of technology implementation , tons CO2	Mini-Till system used in combination with vetch as successive crop for green fertilizer (10t/ha of dry mass forming cca 2.5 t/ha of humus and stocks cca 1.45 t/ha carbon in soil) reduces CO2 emissions by **5.08 t/ha**, ensures a positive carbon balance in soil over 2 years, reduces annual CO2 emissions from soil by **2.54 t/ha**.
Impact – Impact of the technology on the country development priorities	
Impact of the technology on the country social priorities	Harvests of 4-5 t/ha grain units ensure the welfare of population, decrease migration, create prerequisites for implementation of various social projects.
Impact of the technology on the country economic priorities	The technology ensures crops of 4-5 t/ha grain units **(on average 4.5 t/ha)**, at a cost of **1125 dollars**. It provides for the food security of the country and agricultural products export needs.
Impact of the technology on the country environmental priorities	The technology assures a positive balance of humus, carbon and nitrogen in soil, decreases soil degradation and fertility, radically decreases CO2emissions from soil.
Other impact	It creates prerequisites for implementation of ecologically safe agriculture. Advantages are the same as for the first No-Till technology, however, more prominent. Soil protection against natural disasters is less ensured.

Costs	
Investment costs	Investment costs for 1ha – **$230** once in 10 years or **$23 / ha/year.** For 200 000 ha - **$46 mln** once in 10 years or **$4.6 mln /year.**
Operation and maintenance costs	Operation and maintenance costs amount to $384 /ha/year or $ 77 mln /year on the area of 200 000 ha.
CO2 reduction cost	CO2 emissions reduction by **2.54 t/ha/year**. CO2 reduction cost = 2.54 t/ha/year x $30 = **$76.2/ha/year or $15.24 mln / year** on the area of 200000 ha.
Technology lifetime	Technology lifetime is unlimited
Other	For a crop of **4,5t/ha/year** grain units the cost of production is **$1125 /ha/year**, costs – 384+23= **$407 /ha/year**. Profit =1125-407 = **718 $/ha/year.**

[i] This fact sheet has been extracted from TNA Report - Technology Needs Assessment for climate change mitigation - Republic of Moldova. You can access the complete report from the TNA project website **http://tech-action.org/**