Technology Fact Sheet

Sector	Agriculture
Adaptation needs	Due to specifics of some crops (sugar beet and fodder, vegetables, etc..), the classical soil cultivation system can be replaced with a system aimed at soil conservation on only 80 percent of arable lands. Based on this, it is proposed to improve the classical cultivation system that will still be used for 20 percent of lands, by including a " vetch field as green fertilizer" into a 5 fields crop rotation, or using the vetch as successive green fertilizer crop.
Name of technologies	**Conventional land cultivation system with moldboard plow in 5 fields crop rotation with a field of vetch used as green fertilizer**. [i]
Short description of the technology option sourced from ClimateTechWiki.	This technology contributes to environmental friendliness of agriculture, creating a positive balance of humus and soil carbon, return of about 200 kg of nitrogen into soil, of which 50% are of symbiotic origin, reduces the risk of reduced yields due to climate change.
How this technology will be implemented and spread across the sector?	This technology can be successfully implemented on 20 percent of agricultural lands, on which for various reasons it is not possible to implement the soil conservation system. On the "occupied field" vetch shall be sown and applied to soil twice a year (the soil accumulates about 20t/ha of organic matter that maintains the balance of nitrogen and carbon during 4 years). Vetch as a successive crop used as green fertilizer, shall be sown once in two years after harvesting spiked cereals. Implementation of this complex technology requires vetch seeds production operation. The autumn vetch shall be planted, as appropriate, in late August or early September.
Costs	Annual expenditures for including vetch as green fertilizer in the classical soil cultivation system as "occupied field" in crop rotation, as well as using it as successive crop are equal and are worth 85 € / ha / year per harvest, and 170€/ha/year for 2 harvests per year. Under the classical soil cultivation system, the cost of tillage stubble-turning, weed control, plowing, seedbed preparation, sowing of the basic crops and post sowing compression are 135 € / ha / year. Other expenses after planting are equal for all soil cultivation systems.
Country social development priorities	This technology ensures a long-term preservation of soil fertility - the main means of production of the country, protects the land from desertification processes entailing impoverishment and migration of population, creates economic prerequisites for replacing the existing system of subsistence agriculture with sustainable agriculture based primarily on employment of

	natural processes, biological and renewable resources and only secondarily - purchased resources. Preserved internal resources, the soil with its characteristics, water, biodiversity, etc., are a prominent feature of sustainable agriculture and subsequently, of combating land degradation and desertification.
Country economic development priorities (economic benefits)	The total crop growth over the whole period of vetch green mass action (5 years) is 4t/ha cereal units or 765 € / ha / year in monetary terms. The net benefit is € 20 / ha / year. If applied regularly, this technology contributes to a positive balance of soil carbon, excludes CO2 emissions, reduces the need to purchase and apply nitrogen fertilizers by 80-90 percent.
Country environmental development priorities (environmental benefits)	It stops soil degradation, makes the humus and soil carbon balance positive or well-balanced, cardinally improves the soil biota status, increases resistance of soil to pollution and of plants to drought.
Social benefits	The social - economic effect of this technology implementation will be the following: it will increase the turnover and quality of agricultural production on arable soils, wellbeing of rural population, and decrease migration.
Other considerations and priorities (ex. market potential)	The agricultural production process becomes more environmentally friendly.
Capital (investment) costs	Investment costs are the same as the cost in conventional agriculture (171 euro once in 10 years or 17.1euro / ha/year. For areas of 200 000 ha – 34,200,000 euro once in 10 years or 3,400,000 euro /year (for purchasing of the necessary equipment).
Operational and maintenance costs	Expenses for organizing the vetch seed production process or purchase are 170 € / ha once in 5 years for each field or 34 € / ha / year. These expenses are included in the cost of technology. Expenses for classical soil cultivation are 135 € / ha / year. Total operating expenses - 169 €/ha/year. Total implemented area is 200, 000ha. Thus, the operational costs are: 33, 800, 000 euro. The total costs of this technology is 37,220,000 euro.
Growth potential	The weight of this technology on the market will grow along with environmental friendliness of agriculture.

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