

Technology Fact Sheet

Technology name	Conservation system of soil tillage without herbicides for winter wheat ⁱ
How this technology contributes to adaption	- Moldboard plow is replaced by combinator, which contributes to the reduction of soil erosion and uncompensated mineralizational losses - By reduction of soil erosion and mineralization losses of soil organic matter we decrease global warming through increased carbon sequestration - By reducing the consumption of fuel as a result of replacing moldboard plow with minimum tillage it is possible to adapt to the limited sources of nonrenewable sources of energy, to the fluctuation of prices for nonrenewable sources of energy at the international level - By keeping mulch on the soil surface it is possible to reduce evaporation of soil moisture and to increase the resistance
Background Notes, Short description of the technology	By using combinator we can replace moldboard plow or chisel plow. After both of them as a rule disking is done. So, by using combinator we can replace three technological operations by one. After this direct sowing is done.
Implementation assumption	Minimum tillage system is studied in the long/term field experiments at the RIFC «Selectia». Research results are available for farmers through publications of books, recommendations, articles, TV, radio etc. Farmers are visiting experimental plots of the institute with different systems of soil tillage. Each year we are organizing seminars for farmers at least two times (in the spring, before sowing spring crops, and in the fall before sowing winter cereal crops). During these seminars farmers can see the equipment in operation for minimum tillage in crop rotation
Costs per 1 ha	Costs of technological operations for conventional tillage: fuel – 37 lei/ha; salary – 63.1 lei/ha. Costs of technological operation by using combinator: fuel – 10 lei/ha; salary – 13 lei/ha
Country social development priorities	- Reducing the poverty - Increasing the employment of people - Increasing the rates of burth and decreasing the mortality - Improving the system of health care for people
Country economic priorities – economic benefits	- Increasing the sustainability of agricultural sector, including profitability - Reducing the dependence from nonrenewable sources of energy and their derivates (mineral fertilizers and pesticides), which we have to import at the moment and in the future - Creating conditions for the development of small and medium enterprises
Environment benefits	- Achieving a more sustainable use of natural resources through preventing soil degradation, soil and water pollution, preservation of biodiversity etc. - By implementing a conservative system of soil tillage it would be possible to increase the environment benefits through: - higher carbon sequestration which allows to reduce global warming; - reduction of soil erosion and better storage of soil moisture; - reduction of pollution for ground water with nitrates; - reduction of GHG emission as a result of lower amount of burned fuel
Social benefits	Maintaining soil fertility as the basis for maintaining and increasing productivity for achieving economic stability for the wellbeing of people
Other considerations:	● Decreasing expenditures for fuel will lead to higher competitiveness of agricultural products at the local, regional and international markets ● Providing food self-sufficiency at different levels
Capital costs for one unit	The moldboard plow costs (PR-4) – 82862 lei The combinator costs (CN3-3) – 110000 lei The chisel plow costs – 80000 lei

	The required amount for the total area of field crops in Moldova for this technology is 340 200 ha Total capital costs 353808000lei (22,113,000 euro)
Operational costs	Costs of technological operation by using combinator: fuel – 10 lei/ha; salary – 13 lei/ha Total operational costs per ha 4160 lei (260 euro) Tota operational costs rquired: 1415232000lei (88,452,000 euro).

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/>