

ADOPTION OF NO-TILL IN NORTH KAZAKHSTAN: CONSTRAINTS AND PERSPECTIVES

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The territory of North Kazakhstan is typified by gently sloping lands covering about 80 percent of its territory. Much is known about No-Till (NT) effects at flat countries but less is known about NT across topography and agrolandscape. The results of our field research and data analyses have shown that up to 60-70 percent of water from melting snow is lost from summer fallow prepared by conventional and up to 6,0-7,0 tons of soil from one hectare is eroded. Huge losses of carbon occur as well. During the runoff of melting water from fallow fields, nitrates are lost 8-9 times more than from stubble fields and 20-30 times more than from continuous cropping with No-Till. Our research conducted in North Kazakhstan has shown that after about 3-4 years of continuous No-till technology the use of herbicides can be cut by 50 and in some years by 100 percent. Our research has demonstrated that No-till should be used in accordance to topography and agrolandscape. The precipitation use efficiency of NT with high stubble on continuous wheat is more than 40% instead of only 18-20% on the summer fallow fields. Based on our research farmers in the North part of Kazakhstan who switch from the conventional tillage system to continuous NT cropping with soil cover crop rotations could protect soil against erosion, cut production costs and stabilize grain production.