

Results of the project “Research of sustainable land management” in Uzbekistan

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The research was conducted under the “Central Asian Countries Initiative for Land Management” by local scientists from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan from 15.06.2007 to 15.06.2009 in cooperation with ICARDA with the financing of the Asian Development Bank. Two pilot sites in irrigated areas of Syrdarya and Dzhizak oblasts and one site in the Kyzylkum desert pastures, Navoi oblast were chosen in Uzbekistan. The followings were examined:

- Different soil leaching options on saline lands in Syrdarya oblast with application of water-saving irrigation techniques during winter wheat cultivation (by lysimeters and field experiments). It was found that when water application is 2500 - 3100m³/ha against practiced 4600 m³/ha, the yield will not fall below 44-45 centner/ha, while water productivity will increase up to 67%;
- Maintenance of favorable salt balance in permanent ridge-furrows (made up using special resource-saving drills) under cotton – wheat cropping system (Dzhizak oblast). Based on new technology, winter wheat was intercropped at 90 cm. This resulted in 16.7% of water saving and 4.1 centner/ha more yield as compared to control site. After harvesting winter wheat, without ploughing the ridges again, the following options were considered: maize was re-sown (yield- 34.5 centner/ha), maize and green gram was planted in double-rows (maize – 38.6 centner/ha, green gram – 13.2 centner/ha), and maize was planted in double-rows (46.3 centner/ha);
- Two options for cultivation of cotton sown by resource-saving drill; at 90 cm row spacing: 1-row (54 centner/ha), 1-row cotton, 2-row green gram (cotton 48 centner/ha, green gram – 16.3 centner/ha); at 60 cm row spacing: 1-row cotton (44 centner/ha); 1-row cotton, 2-row green gram (cotton 44 centner/ha, green gram - 15 centner/ha);
- Farmland leveling in Syrdarya and Dzhizak oblasts using laser systems and farmer’s cultivating tractor without land retirement. The productivity reached up to 2 ha per shift; with cost of leveling per ha (including ploughing, harrowing) amounting to 197110 sums and volume of earthwork - to 150-400 m³/ha, water savings at each application reached 500-600 m³/ha, while irrigators’ performance increased by 2.5 times;
- Plants at Kyzylkum site, including fruit trees- apricots, peaches, quince, cherry; timber trees - ailanthus, red ash, Bolle’s poplar. In addition, grape cuttings and Bolle’s poplar were planted. According to results, their acclimation rate ranges from 6.5% to 54%, whereas annual growth of different species varies from 15 to 45 cm. The testing of fodder halophytes, i.e. two amaranth species, climocaptera, licorice, atriplex-nitex, belvedere indicated their yields amounting to 35.4 - 90.7 centner/ha, while that of green fodder and seeds to 3.8-16 centner/ha. Promising forage plants were examined, including sorghum, millet, maize, alfalfa, barley, rye and triticale, as well as cucurbits (watermelon, melon and pumpkin). Cultivation of maize, sorghum and millet allows obtaining 48-78 t/ha of silage, and 14.4-15 t/ha of alfalfa; cucurbits yielded 20-30 t/ha.

In addition, optical sensors technique for operational assessment of biomass and conductivity meter EM-38 for estimation of soil salinity were tested. Research results were disseminated through booklets for farmers, central and local press, and farmer field schools (so-called watering days).