Geophysical Research Abstracts
Vol. 19, EGU2017-9339, 2017
EGU General Assembly 2017

Land and water use practices intended to increase water productivity in arid and semi-arid zones. Application to Uzbekistan.

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Abstract Title

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Abstract Text

Water demand increases as more food is required to meet population growth and higher living standards. In addition, climate change is expected to further exacerbate water scarcity in already dry areas where irrigation is most needed. In the water scarce areas, the key strategy to meet demand of growing food production and water use is increase of water productivity (WP) based on best land and water use practices.

A literature review will be conducted to study promising land and water use practices that increase water productivity in arid and semi-arid zones, with a special focus on Uzbekistan. In addition to literature review we will conduct interviews with local farmers and land and water management experts. However, due to time constraints and difficult to access grey literature, the review paper cannot cover all promising land and water use practices that have been used in Uzbekistan. We selected the following promising practices: a) conventional furrow irrigation; b) deficit irrigation; c) drip/sprinkle irrigation, and d) rain-fed with supplemental irrigation.

The preliminary findings of the literature review show that in Uzbekistan in case of conventional furrow irrigation the WP range of cotton was 0.32-0.89, and of wheat 0.44-1.77 (kg m3). By applying deficit irrigation practices, WP values of cotton can be 0-25% higher (0.32-1.11 kg m3), and of wheat 114-400% higher (2.20-3.78 kg m3). However, deficit irrigation practices for potato's need to be managed carefully to reach higher WP, and might even negatively effect WP, showing a range of 0.85-7.04 compared to conventional furrow irrigation 4.02-4.81 (kg m3). Important to mention that drip irrigation practice can highly contribute to increase WP of cotton by 156-91 % (0.82-1.70 kg m3) compared to furrow irrigation. Also, rain-fed cultivation with supplemental irrigation result is anticipated and will be included in the presentation and full version of paper.

In summary, the review of current land and water use practices shows promising increases of WP values for cotton, wheat and potato crops in case of Uzbekistan.