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A COMPARATIVE ANALYSIS OF WASTEWATER REUSE AS A POSSIBLE SOLUTION TO DROUGHT CRISIS

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Recent decrease in rainfall in Israel has caused severe damage to both the farmers as well as to the national economy. During drought years there is a need to either reduce the water consumption or alternatively increase supply by alternative methods (Use of marginal water, desalination or water storage).

Because agricultural water use is considered as the marginal user of water in Israel, it is also the first segment that suffers from water allotments cut. The uncertainty involved with this process caused farmers to move to less profitable crops which are associated with short term decisions and are less capital intensive. This is especially true with respect to crops which their capital inputs have low salvage value.

In this research we examine alternative solutions. We concentrate on wastewater re-use because of its popularity in Israel due to its external environmental benefits, and compare it to alternative solutions such as water storage, desalination, water price increase or compensation for losses. Wastewater can be thought of as a certain supply source which can be also stored during the winter in order to be used in the summer.

This research shows that while uncertainty does not count, there is no justification in wastewater reclamation. This conclusion changes when we take uncertainty into account through its implied damages. We find that wastewater use is, in general, more cost effective than water storage. We draw conditions at which waste water are preferable to other means. Transfer cost is the limiting factor of waste water use.

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