Farmers compensation for saving irrigation water. A methodological approach to assessment

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Groundwater is used for crop irrigation in many regions. In some, such as the area around Spain's Tablas de Daimiel, this has led to the ongoing deterioration of wetlands that depend on the same source of water, endangering the region's environmental sustainability. Such deterioration may intensify in future, in light of the anticipated decline of available water as a result of climate change.

The management measures envisaged in the EU's Water Framework Directive include the protection, enhancement and restoration of groundwater.

The present paper aims to determine, in this context, the minimum environmental premium per hectare that farmers should receive for changing over from irrigated to non-irrigated farming.

To this end, a mixed-integer quadratic model has been developed using a new methodology based on traditional positive mathematical programming .

In a preliminary evaluation, the results of this methodological approach have been compared to the findings obtained with other more conventional methods.

Keywords: Agri-environmental policy, water policy, mathematical programming models