

# SAFE-World Project/Initiative Summary

**Country:** Peru

Project/Initiative Title: Proyecto Interinstitucional de Rehabilitacion de *Waru-Warus*(PIWA)

Nos. farmers: 500

Hectares: 250

Agro-Ecological Zone: VIII

Improvement types

1x	2	3x	4	5x	6x	7	8	9
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## A. Key Impacts

### A1 - Productivity

	Before/Without	After/With	% change
Potato	1000-4000 kg/ha	8-14000 kg/ha	

## D. Contact Point for Project/Initiative

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## E. Project Narrative

### Raised Fields in Lake Titicaca Basin, Peru

The Proyecto Agr? cola de los Campos Elevados has been working with Quechua communities in and around the District of Huatta to rehabilitate ancient raised fields. These chinampas or *waru-waru* were used widely in the Lake Titicaca basin by pre-hispanic farmers, but had fallen into disuse. In addition, many thousands of hectares had been destroyed by modern, capital-intensive irrigation projects that then failed to improve agricultural yields.

The Basin, located about 3800 metres above sea level, is a difficult environment for agriculture because of irregular rainfall, poor and degraded soils, and frequent and severe frosts during the short growing season. Pre-hispanic farmers had developed sophisticated ways to overcome these limitations, by focusing on diverse and intensive cropping on terraces, sunken gardens (*gochas*) and raised fields (*camellones* or *waru-waru*), together with social mechanisms to ensure efficient and collective action to achieve high and secure levels of productivity.

During the 1980s, local farmers' organisations of Huatta, involving some 500 families in ten communities, began to reconstruct these ancient raised fields. The success of the effort was because of the community participation and the development of effective teaching and learning materials. Although the technology was new to present-day farmers, it was they who conducted the experiments to adapt the technology to their own conditions. In 1986, the programme was taken on by the Peruvian government, and has since expanded to include over 30 altiplano communities.

Raised beds require strong social cohesion for the cooperative work needed on beds and canals. For the construction of the fields, labour was organised at the individual family, multi-family and communal levels. Most of the raised fields were constructed on community-owned land that had formerly lain unused for want of local motivation and presence of appropriate institutions. The labour required for construction was between 200-900 person-days per ha, depending on local physical conditions. The raised fields are surrounded by canals, which trap silt, improve the micro-climate for crops, act as a barrier to pests and grazing animals, and act as a habitat for aquatic animals. This microclimate of beds and canals reduces frost incidence. Soil fertility is maintained by green manuring with aquatic plants, livestock manures and crop-weed residues.

This fertility encourages a highly productive agriculture. Potato yields are 8-14 t/ha without use of pesticides or fertilizers. This compares with an average of 1-4 t/ha using fertilizers for the Department of Puno. Extra crops are grown, with forage crops of oats, wheat and barley now grown in winter. These raised fields are also more resilient: one year hundreds of hectares of mechanically prepared fields of wheat and potatoes were destroyed by flooding, but raised fields adjacent to them were unaffected.

*Sources: Erickson and Candler, 1989; Denevan, 1970; Donkin, 1979*