

# SAFE-World Project/Initiative Summary

**Country: Bolivia**

Project/Initiative Title: Integrated development Programme of Northern Potosí (PRODINPO) – World Neighbors

Nos. farmers: 2000

Hectares: 1000

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	4000 kg/ha	10-15000 kg/ha	250%

### A2 – Impacts on natural capital

- ?? Improved yields
- ?? Improved soil fertility and organic matter
- ?? Reduced soil erosion

### A3 – Impacts on local community (social capital)

- ?? Reduced migration (stopped mothers and children from rural areas migrating to towns for food Which had happened after the drought, frost and hailstorms from 1983-1985)
- ?? Farmer groups formed

### A4 – Impacts on households and individuals (human capital)

- ?? The democratic and participatory processes used in helping the people test the variables of their own choosing motivated them to play a more active role in the election of their representatives. Eg two of the teachers were elected mayor in 2 of the most prominent rural towns in the area another to be sub-prefect of San Pedro de Buena Vista and another to the House of Representatives
- ?? Reduced field sizes have made farming easier for women

### A5 – Key changes in farm / regional system

The cost for using lupines such as tarwi as green manure to fertilize soil is 72.5% of the cost of commercial fertilizers. Cash outlay per hectare US\$18 for lupines and US\$167.38 for chemical fertilizers.

Chemical fertilizers not economically viable for farmers and lupin easier to transport into the remoter areas.

Lupines such as tawri fix 200kg of nitrogen per hectare

## B. Types of Sustainable Agriculture Improvements

Type 1: Better use of available renewable natural capital

- Type 2: Intensification of single sub-component of farm system
- Type 3: Diversify by adding new productive natural capital and regenerative components
- Type 4: Better use of non-renewable inputs and technologies
- Type 5: Social and participatory processes leading to group action for making better use of natural capital
- Type 6: Human capital building through training-learning programmes
- Type 7: Access to Finance
- Type 8: Add value by processing to reduce losses and increase returns
- Type 9: Add value by direct or organised marketing of produce to consumers

	Yes/No	Narrative
Type 1	x	Deep cultivation, uniform spacing, correct seed size and at least 10,000kg/ha of manure
Type 2		
Type 3	x	Green manuring and cover cropping with lupines and vetch
Type 4		
Type 5	x	Farmer innovation and experimentation, farmer-led demonstration Farmer group – potato growers association formed
Type 6	x	Farmer seminars, 2-day courses Literacy campaign
Type 7		
Type 8		
Type 9		

### C. Key Lessons: Success, Spread and Constraints

#### ***C1 – Key Lessons Learned***

- ?? Always seek a variety of solutions to a problem
- ?? Apply an integrated approach
- ?? Co-ordinate efforts among multiple institution
- ?? Use a democratic and participatory process

#### ***C3 – Limitations preventing spread***

- ?? Initial suspicion of strangers
- ?? Corrupt power structures in the area
- ?? Predominance of local indigenous languages

### D. Contact Point for Project/Initiative

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## E. Project Narrative

### **Bolivia: PRODINPO (Integrated development programme, World Neighbors, Northern Potosí)**

World Neighbors has been working in the high mountains of Bolivia (2800-4000 masl) in Northern Potosí on improving potato productivity since the 1980s. The sandy loam soils suffer from acute erosion, and high population densities have forced cultivation of slopes of up to 50 degrees. High rates of non-literacy, a lack of agricultural research and extension outreach, and deep local suspicion posed severe challenges for the project. In addition, the areas infant mortality rate was 200/1000; maternal mortality 100/1000, and average life span a mere 36 years.

At first the project sought to improve livestock and maize production. But after failures, farmers asked them to focus on potatoes. Their interest was in testing new varieties that might help to improve food security using traditional agricultural practices. Crop performance varies dramatically from one hillside to another, and from one ravine to another, and so learning to account for this variability was a central part of the project – which set out to build farmers' own capacity to experiment with new technologies, and to adapt them to their own circumstances. Communities elect their own farmer promoters to help spread lessons learned as well as be the conduit for improved training.

Farmers have evaluated many varieties of potatoes in on-farm trials, adopted uniform spacing and deep cultivation, tested green manures (especially lupins) and animal manures, and experimented with variations in seed size. Some 2000 farmers have improved potato production from about 4000 kg/ha to 10-15,000 kg/ha.

An example of the ways this project has broken away from the norms of agricultural practices centres on the adoption of lupins into crop rotations. The spread of *mucuna* (velvetbean) in central America, and its extraordinary effect on maize yields, prompted World Neighbors to send 13 farmer promoters from Bolivia and Peru to Honduras. *Mucuna* does not grow above elevation of 2800 masl, and would have been destroyed by the process of mounding of soil around potatoes towards harvest. But lupin was identified by Milton Flores as an alternative – it can fix 200 kg N/ha/year, and benefits soils when turned under as a green manure. Farmers were at first incredulous, but their long association with the benefits of experimentation persuaded them to test the practice. Potato yields immediately increased from 1780 kg/ha to 8500 kg/ha with lupins, and rose to 13,000 kg/ha when sheep manure was also incorporated. The cash outlay for lupins is \$18/ha, which compares with the \$170/ha for an equivalent amount of inorganic fertilizer.

The project has seen many social benefits, not least improved household food security and health. Once yields improved, many farmers actually reduced their field size, sometimes by as much as 90%, so as to focus their intense efforts. Reduced field size turned out to have great benefits for women – making it easier for them to continue to farm whilst men migrate to cities in search of work.

*Source: Ed Ruddell, Ruddell et al, 1999*

