

Southern Punjab Poverty Alleviation Project (SPPAP)

Impact of Laser Land Leveling (May 2022)

A Government of Punjab initiative, financially assisted by the International Fund for Agriculture Development (IFAD), implemented by the National Rural Support Programme (NRSP)

66%

Small landholding farmers of the project area first time got access to land precision by using modern agriculture implements (laser land leveler) through Community Service Provider (CSP) component under SPPAP. Now they are able to enhance water use efficiency and other input efficiencies (even distribution of seeds and fertilizers) which results in more stable crops and improved crop yields.

Methodology

13

CSPs were selected who received laser land leveler in the financial year 2020-21 and served in their respective area.

94

Farmers participated in focus group discussions (13 meetings) to whom CSP provided laser land leveling services

Bahawalpur :	4
Rajanpur :	4
Rahim Yar Khan :	3
Muzaffargarh :	1
Bahawalnagar :	1
Total :	13

Data collected from records maintained in CSP's register (no. of farmers served, no. of acres treated for land precision, the existing market rate of land leveling service in the area, and the subsidized rate charged by CSP to small land holding farmers)

CSP register records were verified through interviews of randomly selected beneficiaries (farmers) 58 interviews were conducted.

725

Farmers got access to laser land leveling, out of this 481 were small landholding farmers

2,992

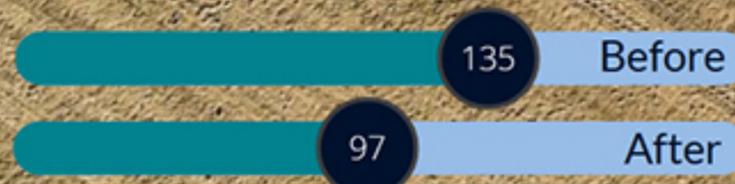
Acres precise through laser land leveling

Impact assessment is based on wheat crop season of the year 2021-22

Time Saved in Irrigation



An average of 38 minutes i.e. 28% time saved per acre in one-time irrigation after land precision through laser land leveling.



Cost saved - Fuel (diesel) consumption in irrigation



Cost reduced on diesel consumption per acre for an entire season of wheat crop.

Description	Numerals
An average no. of irrigation times in a wheat crop season (no. of water)	5
An average diesel consumption per hour (no. of liters)	2.5
One liter diesel cost (Market rate fixed at the time of data collection - in PKR)	146
An average diesel cost incurred on irrigation per acre in a season - Before laser land leveling (in PKR)	4,076
An average diesel cost incurred on irrigation per acre in a season - After laser land leveling (in PKR)	2,925
Net saving per acre in terms of diesel consumption to irrigate per acre (in PKR) - 28%	1,151

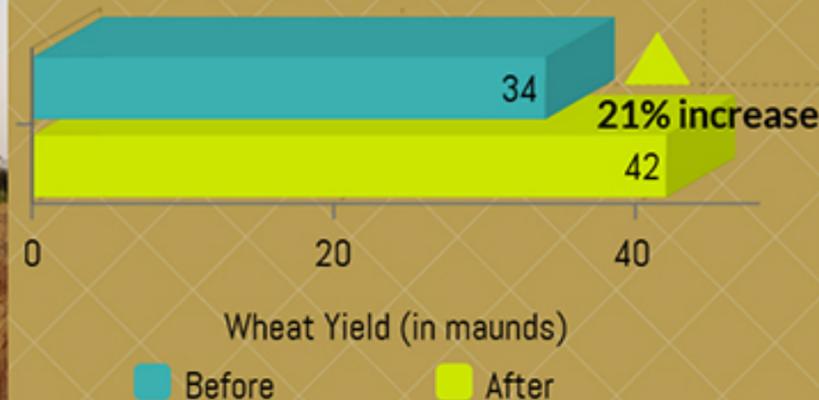


Water Saved

- According to farmers, the treatment of land precision through laser land leveling saved water, on an average 15 to 18 % of water was saved per acre of irrigation. The same quantity (15 -18%) of irrigation water was lost during application at the farm due to uneven fields (Focus group discussion).
- Precision land leveling has proved to be highly beneficial in enhancing water application efficiency 25% of water saved to irrigate an acre and a 23% increase in yield per acre was observed (An impact assessment study was carried out by Punjab Irrigated Agriculture Productivity Improvement Project (PIPIP) during 2018 for evaluation of laser land leveling), an initiative of On Farm Water Management (OFWM), Government of Punjab.



Increased Yield



An average 21% increase in wheat crop yield was reported in the study through the data collected from informants (farmers)

How yield increased - Words of farmers

Uneven field

- Excessive irrigation in low-lying areas results in extra soil moisture which makes the soil less productive
- Less irrigation at higher levels of fields adversely affects germination and crop stand due to low soil moisture
- Land losses - 3 - 5 % of the land remains uncultivable due to uneven distribution of water within the field.

Precise/Even field

- Land precision through laser land leveling reduces water loss by making irrigation more precise which results in an even or equal land coverage without waterlogging or runoff.
- Evenly distribution of water to all the plants eventually strengthens the stem of plants which reduces chances of early plant death which earlier happened due to over or under watering in case of uneven fields.
- Precision of land increase the cultivable area of field 3 - 5 % which results in more condensed plantation and production.

Small Landholding Farmers

- Small land holding farmers having land less than three acres first time got access to laser land leveling through CSP under SPPPAP. Existing service providers in the market often ignore small landholding farmers and prefer farmers having at least 4 - 5 acres of land. In rare cases, if the market service provider agreed, he often did not provides service in time due to that, small-scale farmers had to face late cultivation. **Small landholding farmers got land precision services through CSP on an average 14% subsidized rate from the market rate.**
- The community service provider is socially bound to provide his service to all the small-scale farmers, now the farmers having 0.5 acres of land also have access to laser land leveling at a discounted rate compared to the market rate.

Community Service Provider

124%

Income against the CSP share. Each CSP has earned an average PKR 328,785 during the one year after procurement of agriculture implements.

71%

An average income of CSP against the total cost (PKR 466,154) of agriculture implements (laser land leveler)

Description	Numerals (in PKR)	%
Project Share (fixed)	200,000	43%
CSP Share (an average)	266,154	57%
Total Cost (an average)	466,154	100%