



Laser Land Levelling

Introduction

Laser leveling shifts soil from the high points of the field to the low points in the most accurate and effective way.

Laser leveling improves water distribution which:

- Increases grain yield and improves grain quality
- Results in better crop stands
- Reduces weed problems and results in uniform crop maturity.

How to laser level land:

Step 1: Plowing the field

Plow the field from the center of the field outwards. Plow when the soil is moist to prevent large clods. Cut up or remove surface residues to aid soil flow from the bucket.



Step 2: Mark the high and low spots in the field

A topographic survey should be conducted to record the high and low spots in the field. Add all the readings and dividing by the number of readings taken to calculate the mean height of the field. Then, using a field diagram and the mean height of the field, determine how to effectively move soil from the high to low areas.



Step 3: Leveling the field

Steps to level the field:

- The laser-controlled bucket should be positioned at the mean height of the field.
- The cutting blade should be set slightly above ground level (1-2 cm).
- The tractor should then be driven in a circular direction from the high areas to the lower areas in the field.
- As soon as the bucket is almost full with soil, turn and drive towards the lower area and once it is empty, drive to the higher area.
- Do a final leveling pass in long runs from the high end of the field to the lower end.
- Re-survey to make sure that the desired level of precision has been attained.



Benefits of Laser Leveling

Improves Weed Control

Improved water coverage from better land leveling reduces weeds by up to 40%. This reduction in weeds results in less time for crop weeding (as much as 75% savings on labor costs).

Seeding Practices

Land leveling improved the production of direct seeding which reduced labor requirements by 30 person days/ha.

Efficient Water Use

By improving the uniformity of the surface, less water is needed for complete coverage of the field. Accurately leveled fields need 10% less water.



Troubleshooting with Laser Leveling

Problem	Solution
Bucket will not raise or lower	Check that the transmitter is working
	Check hydraulic connections
	Check electric connections on solenoid
	Check pressure relief valve setting on control valve
	Check for contamination in oil lines
Bucket doesn't respond in certain parts of field	Line of vision between transmitter and receiver blocked
	Receiver the same height as tractor cabin
	Laser beam above or below the receiver height
Bucket will only move in one direction	Check hydraulic connections
	Check electric connections on solenoid
	Check pressure relief valve setting on control valve
	Check for contamination in oil lines
Bucket shudders when first started	Oil cold or no load in bucket
	Check pressure relief valve setting
Bucket raises and falls automatically	Check line of vision
	Check electronic connections on solenoid
	Check oil level in tractor hydraulic system
Field uneven	Traveling too quickly
	Raise and fall speed too slow
Field not level or slopes the wrong way	Check the levelness/calibration of the transmitter
	Soil too compacted for bucket to cut
Soil not flowing out of the bucket	Soil too wet
	Too much foreign matter in soil
Soil not flowing into the bucket	Too much crop/weed residue on surface
	Soil too compacted

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