

Farmer Participatory Appraisal of Laser Land Levelling

to improve water productivity

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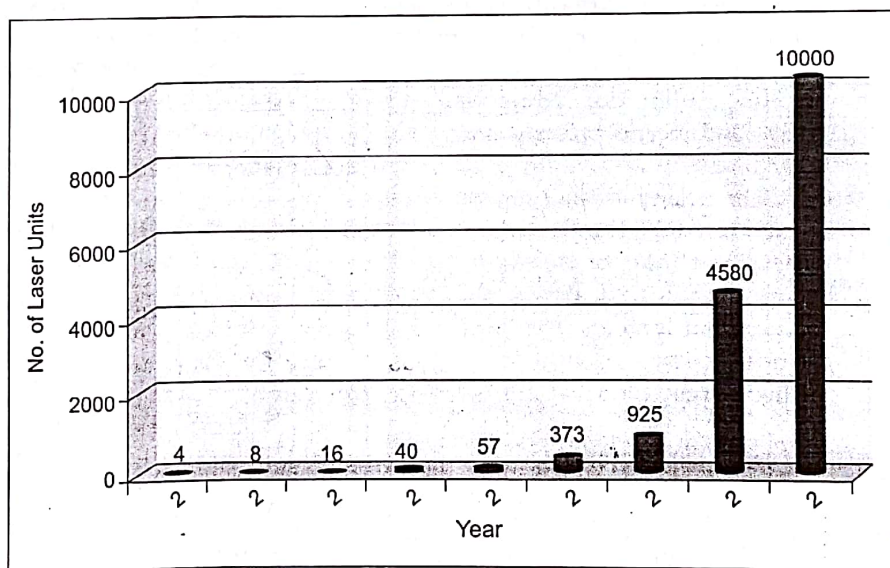
ON farm water management and crop productivity can be improved significantly with precise leveling of fields. Precise land leveling involves smoothing and grading of land to provide a level surface for uniform application of irrigation water and nutrients. It enables efficient utilization of scarce water resources through elimination of depressions and elevated spots in the fields. Level fields allow for a more uniform flood depth, using less water and reducing pumping costs.

Land leveling always improves water, labour and energy resources utilization. However, leveling operations under certain situations may be disruptive for some cultural practices and major topographical changes may sometimes reduce crop production in the cut areas. Therefore, leveling is usually limited to lands, which can be graded economically to slopes, normally not exceeding 2%. The depth of top soil that can be disturbed without reducing productivity often limits the extent of leveling in shallow soils.

Laser Land Levelling

Effective land leveling is meant to optimize water-use efficiency, improve crop establishment, reduce the irrigation time and efforts required in crop production. New equipments are being continually introduced having improved capability for more precise land leveling operations. Of these, the

most significant current advancement has been the laser beam guided land leveling equipment. Laser leveling involves a process of smoothing the land surface by ± 2 cm from its average elevation using laser equipped drag buckets so as to achieve a leveled surface having a constant slope of 0 to 0.2%. This activity requires a large horsepower



Progress of laser leveler custom services in Indo-Gangetic plains of India

An uneven land surface leads to poor crop production and low water productivity since undulations lead to water logging in low-lying areas and moisture deficit at higher elevated areas. Non uniform distribution of irrigation water significantly influences soil moisture, nutrient distribution and salts in the surface soil layers which directly impact the germination, establishment and productivity of crops. Uneven field surface leads not only to loss of significant amount of irrigation water, but also development of salinity patches in the elevated parts and excessive leaching of nutrients from the root zone in lower spots of undulated fields.