Dissemination of Conservation Agriculture Practices in the Indus Basin- ASP Model for Smallholder Mechanization

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Conservation Agriculture (CA)-Rationale

- A powerful tool for meeting future food demands and contributing to sustainable agriculture and rural development
- Improve the efficiency of inputs, sustain crop yields, protect and revitalize soil, biodiversity and the natural resource base resulting enhanced and improved livelihood of resource poor farmers
- Provide ecological foundation to optimize resource use while protecting and enhancing eco-system processes over the long tem

Indus Basin-Main Challenges

- Low agricultural productivity
- Increasing population pressure
- Dwindling land for agriculture
- Shrinking water resources
- Limiting/diminishing energy resources
  - ✓ Shortage of electricity
  - ✓ High cost of Diesel
- High water losses in irrigation system
- Over exploitation of groundwater

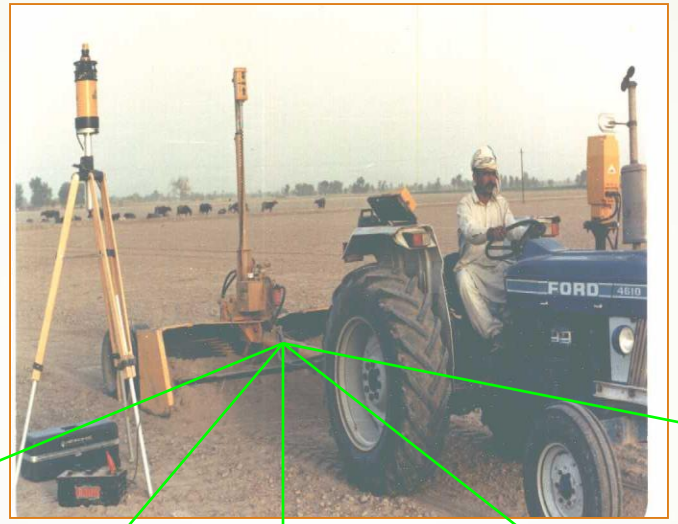
Rice Production Constraints

- Insufficient water availability
- Improper water management
- Undulated topography
- Sub-optimal plant population
- Imbalanced use of fertilizers
- Deterioration of soil fertility
- Inhumane & laborious method of transplanting

Conservation Agriculture Practices(CAPs)

- LASER Land Leveling
- Residue Management (ZT Drill, Happy Seeder)
- Raised Bed Planting
- Direct Seeded Rice Drill

LASER Land Leveling-A Gateway to CA Mechanization



Zero Tillage

Cotton on Beds

Rice on Beds

Wheat on Beds

SRI Technology

LASER Land Leveling Process

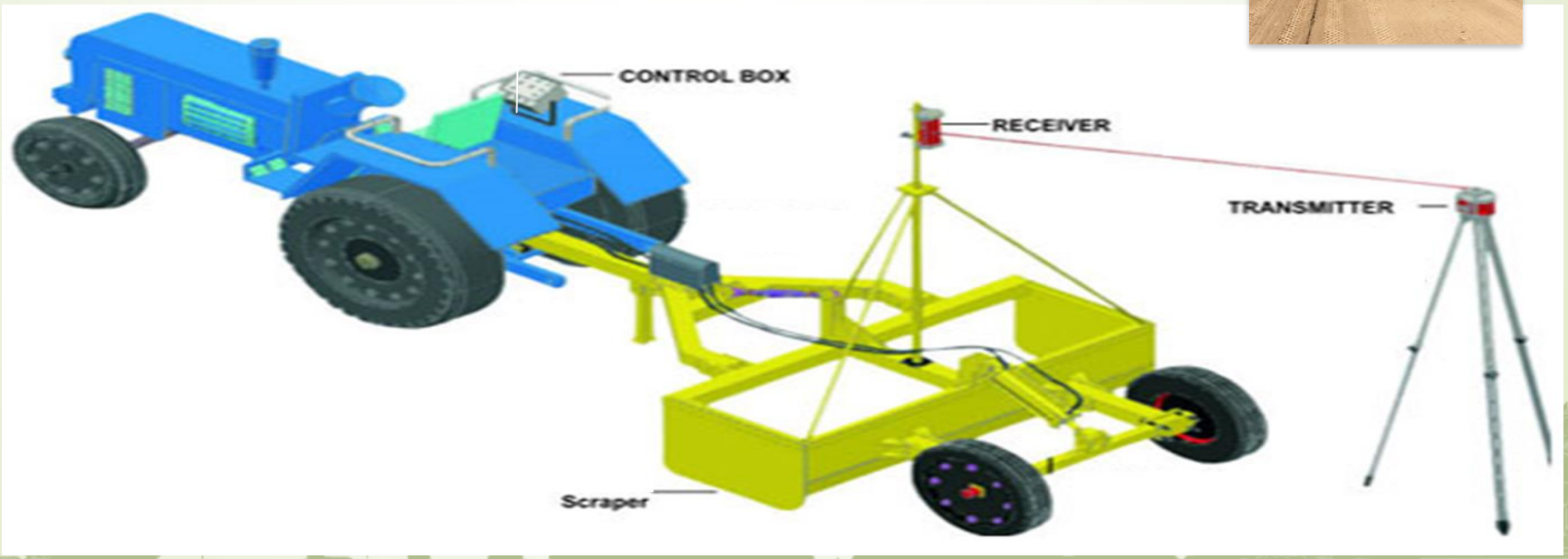
Unleveled Field

Surveying and Planning

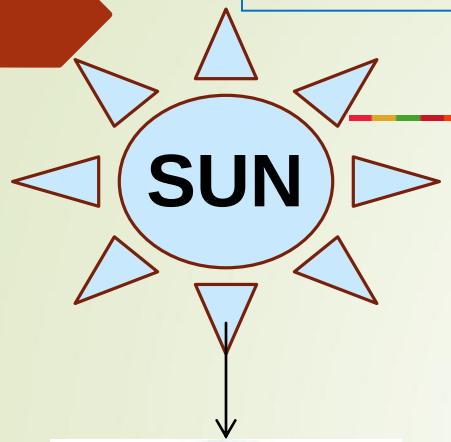
Rough Land Leveling

LASER Leveling

LASER Leveled Field



Dissemination "Triple S" Model



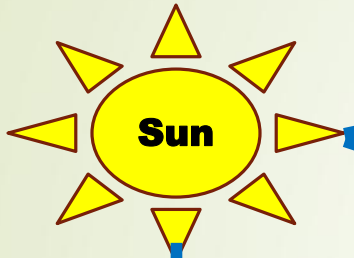
International: CGIAR Centres
National: Universities, Research organizations, Public Sector
Private Sector: NGOs, SACAN

Technical Experts: Public Sector Agri. Departments, Machinery Service Hubs, NGOs, Manufacturers, R & D Organizations and SACAN

Agri. Service Providers (ASP)

Public/Private Sector, Manufacturers
ASPs as Small Scale Rural Entrepreneurs

Application of "Triple S Model"
for Conservation Agriculture Practices



Local Institutions: Universities Research Institutions,(Federal, Provincial),Private Sector, Local NGOs

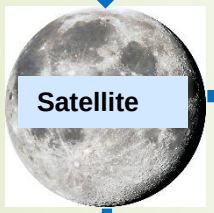
Technical & Logistic Support: RWC, IRRI, CIMMYT, IWMI

Acquisition of Technology

International Institutions: Universities, CGIAR Centers (CIMMYT), IWMI, IRRI, NGOs/Private sector.

Assessment and Development

Funding: Public Sector, Donor agencies like ADB, WB, JBIC etc.



Support from Research Institutions, NGOs, Farmers

Indigenization, Demonstration and Fine Tuning

Technology Transfer Center (TTC)

Capacity Building of Professional, ASPs and farmers through FTCs, FFSs

Support from Universities, Education & Research Institutions, NGOs

Support from electronic, print and mass media including Radio, local Newspapers, TV

Up Scaling (ASPs)

Support from local community, political figures, and progressive farmers

RCT Package (LASER, ZT, Residue Management, SAG, SRI)

Agri. Service Providers (ASP)

Wide Scale Adoption

Dissemination of Laser Tech. "Triple-S" Model

- Acquisition (1984)
  - ✓ Technology introduced by importing one LASER land leveling unit from USA
- Pilot Testing and Indigenization (1985-91)
  - ✓ Equipment tested and various components indigenized
- Demonstration and Dissemination(1992-2004)
  - ✓ Rental service started to introduce and promote the technology amongst farming community by operating 193 units through field formations of the Punjab agriculture department
- Diffusion and Adoption(2004 onwards)
  - ✓ Private sector (ASPs) incentivized through provision of Rs. 160,000 (2005-06 to 2007-08) subsidy on purchase of laser unit - 2,500 service providers created
  - ✓ Subsidy increased to 225,000 (2012-2015) - 5,000 additional ASPs created under World Bank funded Punjab Irrigated-Agriculture Productivity Improvement Project (PIPIP)
  - ✓ Additional 4,000 units are being provided to ASPs from provincial ADP – about 2,400 provided so far
- Currently, Around 15,000 LASER Land Levers are Being Operated by ASPs with Combined Capacity to Annually Level About 1.5 MHA

Adoption Status
Conservation Agriculture Practices (CAPs)

Laser Land Leveling	Raised Bed Planting	No Till Farming (ZTD)	Residue Management (Happy Seeder)	Direct Seeded Rice (DSR Drill)
15000 Units	850 Units	8450 Units	32 Units	450 Units
6.5 MHa	0.1 MHa	0.69 MHa	1000 Ha	20000 Ha

Main Constraints for CA Adoption

- Constraints encompass intellectual, financial, technical and policy related support
- Lack of know-how and traditional mindset
- Inadequate policies and lack of institutional support
- Non-Availability of appropriate equipment, machinery and suitable chemicals
- Despite the obvious benefits, CA does not spread automatically, unless promoted
- Lack of locally generated experimental data on CA
- Prevailing policies are unsupportive to CA-practices
- Poor capacity building of HR to cater CA development and dissemination actors

Way Forward

- Being knowledge and management intensive, CA requires the support of both research and extension agents to support small farmers to compete climate change
- Innovative participatory approaches are inevitable to develop supply-chains for producing CA equipment targeted at small holders
- Community resilience towards climate change is necessitated to cope with day to day problems
- The out-scaling of proven technology, improved use and dissemination of existing know-how will drive global impacts
- CA practices be tagged to address poverty endemic areas to reduce climate change risks and manage vulnerability
- Improved and greater levels of meccanization in South Asia will help manage this region more effectively with regional support of ESCAP and CSAM

South Asian Conservation Agriculture Network (SACAN)

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THANKS