

Conservation Agriculture in Dry Areas



Basic components of CA:

- Significant reduction in tillage
 - Retention of crop residues
 - Reduce compaction, and
 - Economically feasible diversified crop rotations
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- Above elements are not site specific
 - Represent unvarying objectives that extend CA technologies efficiently across production conditions.
 - Conservation tillage is not CA
 - Farmers benefit immediately through cuts in tillage and other input costs.

An Update on CA Proposal (ICARDA)

02 February 2007: 2nd Meeting of the RMC

- CN with potential linkage with AAAID. Conservation agriculture in dry areas - C. Piggin (Focal point)
- Staff turn over

Other side events

- Two multi-country proposals submitted to CACILM in October, 2007 for Central Asia and were endorsed by SC.

1. Conservation Agriculture
2. Crop Diversification and Intensification of C-W systems
3. One Bilateral Proposal on Diversification in CA platforms ready for submission to ADB Tashkent, (for Uzbekistan)
4. SLMR (2007-09) also has elements of CA
5. Some incremental support for CA work in Uzbekistan (ZEF-UNESCO)

AN Update on (CA) GPP Meeting of GFAR

December(11?), 07: 3rd GFAR Program Committee Meet on (CA) GPP
(Conservation Agriculture Global Partnership Program)

Recommendations:

- Revive CA GPP
- Mr. Antonio Schiavone, serves as contact for (CA) GPP in GFAR Secretariat
- Facilitated by John Dixon, Maarten and Eric (CIMMYT, ICARDA, FAO)
- Group involving CIMMYT, CIRAD, FAO and ICARDA to develop a proposal soon
- Seed money (?) Mark Holderness to communicate
- ICARDA Core Group: (RG,CM, MvG, EB and + other ICARDA staff)



CA in Dry Areas- Researchable Issues?

1. Genetic enhancement and CA:

- **Irrigated situations:**
 - Crop cultivars for O-till; Raised -bed and Surface seeding situations
- **Rainfed situations:**
 - Cultivars and range species – (seeding depth & surface crusting) - germination and emergence
- Dual purpose winter wheat (grain/ green fodder) to meet fodder shortages
- Seed systems of diversification crops and range species
- Self regenerating legumes e.g. *Tephrosia species* for arable and range lands and prostrate types for sloping lands (reduce erosion)



CA in Dry Areas- Researchable Issues? (contd.)

2. Irrigated systems:

- Improve surface seeding (W into C and R into W)
- Multi-crop planter prototypes for seeding into standing crops/ loose residues?
- How to fertilize in presence of surface residues? Can we do away with split applications of N ?
- How to resolve conflict for crop residues (Mulch vs. Livestock feed)? Explore possibilities for co-culturing of cover crops (legumes)?
- Find new niches for intensification/ diversification in cereal based, agri-horti/ forestry based systems for high value crops and legumes)
- Salinity management in raised bed systems and conjunctive use of low quality waters for crop production?
- Targeting of CA technologies – Use GIS and Remote Sensing tools.



CA in Dry Areas- Researchable Issues? (Contd.)

3. CA for sloping lands

- Up-down cultivation with controlled traffic on sloping lands (<10-12% slopes)?
- Rationale use of slopes?
- Irrigation/ runoff induced soil erosion?
- Snow catch technologies for CA platforms ?
- *In situ* decomposition of residues in traffic lanes for nutrient recycling and conserve soil?
- Combination of vegetative gully plugs and mechanical measures



CA in Dry Areas- Researchable Issues? (Contd.)

4. Agri-horti systems

- Irrigation methods for control of irrigation-induced soil erosion, grow cover crop to control weeds and soil loss
- Compatibility of under-story crop/ fodder /grain crops with main high value orchard crop (New niche for diversification)



CA in Dry Areas- Researchable Issues? (Contd.)



5. Rangelands (Open, Closed and CPR)

- Integrate CA and livestock systems in watershed approaches (small ruminants and large animal and flock structures etc.)?
(e.g. *Bracharia* -sorghum systems, Tree-grass agro-forestry system)
- Alley cropping technique on CA platforms. Type of Multiple use trees ?
- Reseeding techniques and how to populate legumes, P fertilization ?
- *Cost effective in situ* rainwater conservation techniques in rangelands?
(e.g. Vallerani, vertical mulches, Gai system)
- How to control overgrazing? Social consequences, conflicts? Agreements?
- Termites control;
(mechanical control vs. biological)?
- Carbon sequestration potential
- Fate of SOM?

CA in Dry Areas- Researchable Issues? (Contd.)

- **Dynamics of Weeds, diseases and Pests in CA to develop IPM practices**
- **Need for statistical tools and techniques needed (Farmer Participatory trials) – SAS software.**
- **Socio-economic and Policy Research**
- **Capacity Building and Knowledge Dissemination**