Abstracts

4th World Congress on Conservation Agriculture

4-7 February 2009, New Delhi, India



Innovations for Improving Efficiency, Equity and Environment

4th
World Congress on
CONSERVATION AGRICULTURE
New Delhi, India

ICAR

IFAD
Enabling poor rural people to overcome poverty

FAO

Rice Wheat

Productivity of Urdbean Genotypes under Delayed Planting Conditions

V.K. Singh[1], J.P. Sahu[1], Vivek Dixit[1] and Ashutosh Singh[2]
[1]Department of Agronomy and [2]Department of Soil Science, College of Agriculture, G.B. Pant University of Agri. and Tech., Pantnagar, 263 145, U.S. Nagar, Uttarakhand, India

Urdbean, being short duration crop is the most compatible pulse for diversification in rice-wheat cropping system. It can be grown as a catch crop between wheat and rice during summer season. The crop is also most suitable for contingent planting in the event of failure or delayed monsoon. However, selection of most productive urdbean genotypes under delayed planting situation is an important consideration. A field experiment was therefore, carried out in sandy loam soil during *kharif* season 2006-07 at Crop Research Centre of G.B.U.A.&T., Pantnagar to evaluate the urdbean genotypes under delayed planting conditions. The soil of the experimental site was neutral in reaction (pH 7.6) having medium organic carbon (0.57%), available phosphorus (15.5 kg ha^{-1}) and high available potassium (256 kg ha^{-1}) contents. Treatment consisting of three planting dates (July 25, August 9 and August 24) and six genotypes (Pant U-19, Shekha-2, Pant U-31, UPU 97-10, UPU 99-2 and UPU 02-3) were tested in split design as dates of planting in main plots and genotypes in subplot with three replications. Crop was planted 25 cm apart with application of DAP @ 100 kg ha^{-1} as basal two per-cent urea solution was sprayed at 35 and 45 days after planting. The crop had harvested as per maturity of the genotypes. Other agronomic management practices were adopted as per recommendations of the crop. Each subsequent delayed planting caused significant reduction in grain yield of urdbean. July 25 planting recorded 23.87and 50.37% August 9 and August 24, respectively. Pant U-31 registered significantly higher grain yield of urdbean than remaining genotypes, which were on par among themselves. Interaction between planting date and genotype was not significant.

Lessons Learned from the Diffusion of Direct Seeding, Mulch-Based Cropping Systems (DMC) in the Main Agro Ecological Zones of Madagascar

Rakotondramanana[1], O. Husson[2] and A. Rakotondralambo[3*]
[1]GSDM, lot VA 26 Y Ambatoroka, Antananarivo (101), Madagascar
[2]CIRAD/GSDM, lot VA 26 Y Ambatoroka, Antananarivo (101), Madagascar
Groupement Semis Direct de Madagascar, Lot II Y 39A bis Ampasanimalo, BP 5092, Antananarivo (101), Madagascar
*(*Email: aralambo@netclub.mg)*

Extension of Direct seeding Mulch-based Cropping systems (DMC) among small scale farmers have been tested in the main agro ecological zones of Madagascar for a period of up to 7 years. These agro-ecological zones include climates ranging from subtropical climate at sea level to contrasted tropical climate at high altitude. The extension was decided after more than 10 years of adaptation of DMC systems by the NGO TAFA in the same areas and training of key field extension workers and group of farmers. Reference sites testing different systems compared with conventional tillage are maintained in these areas and are being used for training of all stakeholders.

The GSDM which is a group of institutions involved in R&D was created in 2000 and aimed at capitalizing all knowledge on R&D related to DMC. A strategy document was written in 2004 and updated in 2007 for diffusion of direct seeding on permanent soil cover at national scale. Main focus of the document were training of all stakeholders, progressive diffusion based on community base level (terroir) and taking into account all aspect of the living conditions of the base communities after a short survey e.g. main commodities, importance of livestock and main sources of forages, use of inputs (farm manure, fertilizers, pesticides etc.) main constraints, sources of incomes, market, etc.. This strategy document has been approved by all members of the GSDM and its main partners.

Starting with a few farmers around the TAFA reference sites in 2001/2002, (5 ha, 29 farmers), the area under DMC is 3.8 ha with 7.7 farmers all over the country in 2007/2008. The main DMC adopted by farmers in the hills (*tanety*) under rainfed conditions are food crops (maize, rice) associated with legumes (*Dolichos lablab*, *Vigna unguiculata*, *Vigna umbellata*) in Alaotra lake; food crops (rice, maize) on residues of *Stylosanthes guianensis* in the Middle West and eastern coast; and cassava associated with *Brachiaria* sp or *Stylosanthes guianensis* in the eastern coast and to a lesser extent maize associated with *Vigna unguiculata* followed by cotton in the dry areas; in the low lands (paddy fields) rotation of rice with vetch (*Vicia villosa*) or with *Dolichos lablab* are very common especially in the Aloatra Lake. In the coastal area, rice is followed by *Vigna unguiculata*.

The main effects of DMC are mainly observed after 3 years of good biomass accumulation The effect is seen as an increase in yield, a drastic decrease of *Striga asiatica* (Middle West) and an increase in soil microorganisms (lombrics, worms). A key issue in extension of these knowledge (and know-how) intensive techniques is capacity building. Training on DMC techniques and farm analysis/diagnosis is a necessary, but not sufficient, condition to extension. It usually takes 3 years to build efficient extension teams able to perform a real advice at farm level, to propose efficient solutions to actual farmers' constraints, means and objectives. Extension is largely eased when DMC systems can be proposed to overcome a major constraint to agriculture (like Striga infestation in the Middle West), unreliable paddy field irrigation (Alaotra lake), possibility to reclaim uncultivated land, or systems with very limited inputs (all zones). Inversely, some conditions may slow down their extension: unreliable land tenure, poor access to credit and agricultural inputs, poor marketing channels, very small scale agriculture, etc. Farmers need to be helped to improve local socio-economic situation (promoting farmers' organizations, easing access to credit, etc.). Integration agriculture/livestock may be seen as constraints (in case of very high cattle pressure on natural resources) or an advantage for extension of DMC systems (increase of forages production through DMC). In all cases, the first 2-3 years of transition from conventional systems to DMC are crucial and require proper accompaniment of farmers by extension staff to help them to face new situations. After 3 years, extension workers support to farmers can be reduced.

Ecorestoration and Conservation in NW Himalayan Region: Biotechnological Options in Ginger and Saffron

R.K. Gupta
Sher-e-Kashmir University of Agricultural Sciences and Technology, Directorate of Research, Main campus, Chatha, 180 009, Jammu, India

Ever since dawn of civilization, the biological balance was maintained through traditional agricultural practices that looked sustainable over centuries. Today - the productivity is low in traditional agriculture present in low and mid hills in NW Himalayan region. Modern and high input agriculture that improved crop productivity in plains looks unsustainable since land, water and bioresources are shrinking. The J&K state has tremendous variability in spices, condiments and herbs having medicinal potential, including *Alliums, Brassicas*, chillies, ginger, saffron, kalazira, and other medicinal herbs. These crop genetic resources are adapted to its wide range of environments and farming systems. The conservation of locally adapted bioresources of Himalayan spices/herbs and their multiplication could help in ecorestoration in potential pockets. The agroclimatic specific sustainable ecorestoration strategies include multiplication of quality seed and planting material through traditional and tissue culture means and replanting in potential areas where cultivation has been wiped out.

Micropropagation protocols in various crops (including tomato, ginger, tuberose and lilium) have been standardized in our institution. A case study on ginger that can serve as model in crops is briefly described since it is vegetatively propagated and repeated planting in field becomes source of inoculums of pathogens for rhizome rot and other diseases has resulted in wiping out of cultivation in potential pockets. *In-vitro* multiplication can be effective for elimination of pathogens and round the year production of ginger plantlets but high cost of tissue cultured plants is hampering the commercialization.. The major components which lead to increased costs are expensive phytogel/ agar agar (commonly used gelling agent), sucrose (as carbon source) and high cost of initial infrastructure and further maintenance of