

New projects initiated during 2010-2011 AFRI

Sl.No.	Title of the project	PI	Thrust Area	Current Status
1	Development of technologies for multiplication of economically important desert plant - <i>Capparis deciduas</i> . (2010-15)	Dr. Sarita Arya	Genetic Improvement (Vegetative Propagation)	Studies were carried on macro (effect of IBA concentrations and size of cuttings) and micro propagation (effect of media, growth hormones) of <i>Capparis decidua</i> . So far no rooting has been obtained in the cuttings. MS medium supplemented with 4.0 mg/l BAP favoured high frequency(80%) multiple shoot(2-3shoots /explant) initiation and growth in 4-5 weeks. In vitro differentiated shoots are further multiplied on same fresh medium to carry out studies on critical factors influencing further in vitro high rate of shoot multiplication. After standardization of high frequency of shoot multiplication process, studies will be carried out for rooting.
2	Evaluation and selection of efficient strains of AM fungi & Rhizobium for <i>Acacia nilotica</i> and <i>Ailanthus excelsa</i> in western Rajasthan. (2010-13)	Dr. Neelam Verma	Forest Protection (Mycorrhiza, Rhizobia and Other useful microbes)	Survey and collection of rhizosphere soil & root samples from Nagaur, Bikaner, Barmer, Pali and Sirohi sites were collected. Isolation, identification & quantification of AM fungi are being carried out. Different species of <i>Glomus</i> & <i>Sclerocystis</i> were recorded. Soil samples were analyzed for pH, EC and percent soil organic carbon & phosphorous.
3	Identification of soil-vegetation relations and indicator species for assessment and rehabilitation in lower Aravalli. (2010-14)	Dr. G. Singh	Ecosystem conservation and management (Ecology & Environment)	With an objective of finding out relations between vegetation and soils and rocks from which soil is formed, five sites (two in Gujarat and three in Rajasthan) were selected along the Aravallis. Pit excavation for soil profile studies and rock sampling completed in all the

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				five sites. Trees and shrubs around each pit (25 pits at each site, 6' x 6' each pit of varying depth), were identified and measured.
4	Impact of <i>Prosopis juliflora</i> on biodiversity, rehabilitation of degraded community lands and as a source of livelihood for people in Rajasthan state. (2010-13)	Mrs. Seema Kumar	Ecosystem Conservation & Management (Ecology & Environment)	Bibliography on various aspects of research on <i>P. juliflora</i> is under preparation. Inventorization of sites in Jodhpur, Pali and Churu District have been initiated with GPS co-ordinates. Associated biodiversity recorded in different habitat was represented by 12 tree species, 11 other plant species and nine groups of invertebrate and vertebrates. Work on utilization aspect and data recording on various tree parameters has been initiated.
5	Induction of systemic acquired resistance in Rohida (<i>Tecomella undulata</i> (Sm.) Seem.) against stem canker. (2010-13)	Dr. Sangeeta Singh	Forest Protection (Insects, pests, diseases and control)	Stem canker is a serious disease of <i>Tecomella undulata</i> , that spoil the timber quality. In order to address this problem, studies were taken up for artificially induction of acquired resistance in this tree species by the use of chemicals and bioagents. Seedlings required for nursery experiment has been raised and are maintained. Site for laying out experiment in field has been finalized in Chohtan tehsil of Barmer District. Seven different fungi have been isolated from the infected samples. Identification upto genus level has been completed in case of <i>Botryodiplodia</i> spp. and <i>Alternaria</i> spp. The fungus has been inoculated on healthy trees for the pathogenicity test.

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6	Integrated management of khejri mortality for socio-economic upliftment in Rajasthan. (2010-15)	Dr. S. I. Ahmed	Forest Protection (Insects, pests, diseases and control)	<p>Survey was conducted in four districts (Nagaur, Sikar, Churu and Jhunjhunu) in Rajasthan and data has been recorded on the mortality. Percentage of Khejri mortality ranged from 18.08 to 22.67 % with an average mortality of 20.93 % in surveyed districts.</p> <p>Sites for laying out of experimental plots has been selected viz; Jodhpur, Nagaur, Churu, Sikar, Jhunjhunu and Jalore districts and treatments (T1- Chloropyriphos @ 1.5 ml./liter, Bavistin @ 1.5gm/liter- Powermin @ 2ml/liter (20 liter of solution /tree); T2- Phorate granules @ 20gm/tree, Trichoderma @ 10 gm/kg FYM (4 kg /tree); T3- Copper oxychloride @ 2gm/liter, Bavistin/carbendazin @ 1gm/liter, Chloropyriphos @ 1.5 ml./liter (20 liter/tree) T4- Control) in infected trees have been given.</p> <p>Disease escaped trees have been marked in the diseased areas for genetic studies and disease resistance/tolerance studies.</p> <p>For clonal propagation axillary bud break has been achieved using auxins & cytokinins in MS medium in 4 weeks period.</p> <p>Raised seedlings of <i>P.cineraria</i> for the grafting studies for the establishment of germplasm bank.</p> <p>Draft for preparation of pamphlets on Khejri mortality its preventive and interim</p>

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				control measures has been prepared for the farmers. Devised format and initiated documentation of the Khejri mortality and its socio-economic impact.
7	Study of salt tolerance through gene expression pattern analysis. (2010-15)	Dr. Tarun Kant	Genetic Improvement (Biotechnology)	The study aims to analyze expression levels of stress tolerance genes in identified halophyte. Final gene list has been drawn using ClustalW2 multiple sequence analysis (MSA) and phylogeny analysis (PHYMLIP) of coding sequences. <i>Lepidium sativum</i> has been shortlisted as the halophyte to be studied for gene expression analysis for the four identified genes (<i>NHX1</i> , <i>SOS1</i> , <i>HKT1</i> and <i>CLC-c</i>). Hydroponic system has been setup and tested. <i>Arabidopsis</i> and <i>Lepidium</i> seeds have been procured for further wetlab experimentations.