

Completed ICFRE Funded Research Projects 2009-10, AFRI

Sl. No.	Name of Project	PI	Thrust Area	Research Findings
1.	Management of potential insect pests and diseases of important medicinal plants grown in arid and semi-arid regions. (2006-10)	Dr. S.I. Ahmed, Scientist-F	Forest protection (Insect pests, diseases and control)	A check-list of five species of insect pests and three species of diseases has been prepared. Severe infestation of <i>Achaea janata</i> (Noctuidae), a semilooper has been noticed on all mehndi ( <i>Lawsonia inermis</i> ) growing areas at Sojat road (Pali). Bio-ecology of the key pests viz <i>A. janata</i> and <i>Aphid gossypii</i> have been studied. Charcoal root rot disease caused by <i>Rhizoctonia bataticola</i> was found to cause severe damage to mehndi plants with an ultimate loss of mehndi yield at Sojat. Soil treatment ( <i>Trichoderma</i> + Vermicompost + Phorate) and foliar Spray (Pratirodh) was found to be the best against mehndi defoliator ( <i>Achaea janata</i> ), aphid ( <i>Aphid gossypii</i> ) attack and leaf blight disease. The mean dry weight of the treated plot was recorded 2.47 kg with a net return of Rs.185 per sq mt. plot as compared to untreated control with mean dry weight 2.00 kg and net return of Rs.150/mt <sup>2</sup> plot. Seed treatment using <i>Trichoderma harzianum</i> @10g/kg seed + soil treatment with <i>Beauvaria bassiana-1</i> + Phorate granules was found to be the best against downy mildew and termites in Isabgol. The treated plot (5mx5m) yielded 104.88 kg stover/plot as compared to untreated 76.56 kg stover/plot with net return of Rs. 3670.80/- and Rs. 2679.60/- per plot, respectively. In mehndi, the treatment comprising, Bavistin (1.5%) + Monocrotophos (0.05%), was proved to be the most effective amongst all the other treatments wherein the pest damage reduced from 40% to 2.25%, while the diseases infection reduced from 50% to 3.5%. Ratan (1.5%) + Monocrotophos 0.05%) was found very effective against downy mildew disease,

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				whereas treatment of Bavistin (1.5%) + Monocrotophos (0.05%) was found the best against aphid attack on Isabgol at Sojat. The combination of Bavistin (1.5%) + Monocrotophos (0.05%) reduced pest incidence from 30% to 3.5% after the treatment. Combination of Ratan (1.15%) and Monocrotophos (0.05%) reduced disease incidence from 43 to 13% after the treatment.
2.	Mycorrhizal Dependency and Productivity of Economic Important Medicinal Plants (Mehndi & Ashwagandha) of Arid Zones. (2007-10)	Dr.K.K. Srivastava, Scientist-E	Forest Protection (Mycorrhizae, rhizobia & other useful)	<p>In mehndi, five AMF genera such as <i>Glomus</i>, <i>Gigaspora</i>, <i>Scutellospora</i>, <i>Sclerocystis</i> and <i>Acaulospora</i> and among the species of <i>Glomus</i> viz., <i>G. fasciculatum</i>, <i>G. aggregatum</i>, <i>G. mosseae</i>, <i>G. macrocarpum</i>, <i>G. microcarpum</i>, <i>G. intraradices</i>, <i>G. reticulatum</i>, <i>G. constrictum</i>, <i>G. multicaulae</i>, <i>G. geosporum</i> and <i>G. convolvulus</i> were recorded. <i>Glomus multicaulae</i>, first time reported on mehndi from Pushkar, Ajmer. <i>Sclerocystis indica</i> was recorded on mehndi and ashwagandha from Nagaur and Pushkar( Ajmer) respectively. The distribution of different AM species viz., <i>G. aggregatum</i> (35%); <i>G. mosseae</i> (15%); <i>G. fasciculatum</i> (20%); <i>G. macrocarpum</i> (10%); <i>Glomus</i> sp. (15%); <i>Scutellospora</i> (3%) and <i>Acaulospora</i> (2%) were recorded in ashwagandha, whereas in mehndi, distribution of AM fungi recorded as <i>G. fasciculatum</i> (55%), <i>G. aggregatum</i> (20%), <i>G. macrocarpum</i> (12%), <i>Glomus</i> sp. (8%), <i>Acaulospora</i> (5%), <i>Scutellospora</i> (3%) and <i>Sclerocystis</i> (2%) with the dominance of <i>G. fasciculatum</i>.</p> <p>The maximum root infection was recorded (85%) from Sojat (Pali) and minimum (46%) from Pushkar, Ajmer While in, ashwagandha maximum root colonization (78%) was recorded from Harima Krihifarm, Nagaur and minimum</p>

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				<p>(34%) from Ajmer. Root infection was recorded 54 per cent while, AM spores were found 210/100 gm soil. Both the species mehndi and ashwagandha were found highly mycorrhizal in nature. The root infection was found in the form of intercellular, intracellular hyphae, vesicles and arbuscular structures in the roots. In VAM inoculation experiments, the maximum (53.6cms) shoot length was recorded in T-3, where, seedlings were inoculated with pure culture of <i>G. fasciculatum</i>. However, all the treatments were found effective in all parameters <i>i.e.</i>, enhancing shoot height, basal stem diameter, number of spores/10gm of soil and percentage of infection in mehndi whereas, in case of ashwagandha, the maximum shoot height, basal stem diameter was recorded 70.5cms and 10.5mm respectively in inoculated seedlings with consortium inoculums with dominancy of <i>G. aggregatum</i>. Number of spores/10gm of soil and percentage of infection were also recorded high in <i>G. aggregatum</i> treatment as compare to other treatments.</p>