

List of Completed Project: Extension Division

S.No.	Title of the Project	Name of Principal Investigator	Duration of the Project	Funding Agency	Project status	Project Objectives	Research Findings
1	Development of suitable agroforestry models in IGNP command area of Western Rajasthan.	Dr. Bilas Singh	2021-26	ICFRE	Concluded	- To study the effect of different tree species on crop production. - To assess change in soil physico-chemical properties under different tree-crop combinations. - To estimate the economics of different agroforestry models. - To screen best tree-crop combination for further replication.	<i>P. cineraria</i> could be grown upto 5 years without significant reduction in agricultural production. Outputs from the trees are the additional benefits. <i>Z. mauritiana</i> is more suitable for agri-horti system to produce higher net return (Rs. 20,000 – 25,000 ha⁻¹) in arid environment. - Production of fodder was 0.68 tones ha⁻¹ for <i>P. cineraria</i> and 0.11 tones ha⁻¹ for <i>T. undulata</i> and 0.21 tones ha⁻¹ from <i>Z. mauritiana</i> at 5 year of age. - SOC was improved by 10.77% in <i>P. cineraria</i>, 4.62% in <i>T. undulata</i>, 9.09% in <i>Z. mauritiana</i> and ~15% in <i>D. sissoo</i> systems top layer soil (0-30 cm) in agroforestry plots

							compared to the respective soil layer in the sole agriculture plot. Thus agroforestry is more beneficial than sole agricultural crop in term of carbon benefits.
2.	Quality teak production: Capitalizing on cloning.	Dr. Bilas Singh	2020-25	CAMPA	Concluded	Mass production of new clones and evaluation through multi-location trials.	Early growth performance of tissue culture clone plants shows promising results.
3.	Operationalization of Forestry Extension Strategy.	Dr. Bilas Singh	2020-25	CAMPA	Concluded	Forestry Extension activities to motivate and educate the stakeholders and people on conservation, development and management of forest, popularizing tree plantation and agro forestry models.	Six VVKs and 2 DV established and more than 30 trainings organized for different stakeholders in Rajasthan Gujarat and Dadra Nagar Haveli. Four TGM were organized. Pamphlets, information booklets, AFRI Darpan regularly published. Institute made four documentary films on forestry technologies.

							Prakrati programme, had carried out different out-reach activities to the students and 9166 students of KV & JNV of Rajasthan and Gujarat were benefited in last five years. Total 10,218 visitors in 213 groups visited Interpretation Centre to learn various techniques and technologies developed by the institute.
4.	Study on crop yield, soil fertility and gum production in <i>Acacia senegal</i> based traditional agroforestry system in arid region of Rajasthan.	Dr. Bilas Singh	2017-22	ICFRE	Concluded	• To study the effect of tree density on crop production in <i>A. senegal</i> based traditional agroforestry system. • To study the effect of tree density on soil fertility. • To monitor effect of tree	<i>Acacia. senegal</i> based traditional agroforestry systems of varying tree/hedge densities was more profitable than sole agricultural crop in arid region of Rajasthan. Integration of <i>S. senegal</i> plants in farmlands either naturally growing low density isolated trees or boundary hedge found favourable not only in

						density on gum yield on <i>A. senegal</i>. • To assess economic returns to the farmers from this agro-ecosystem system.	improving soil nutrient status but also making the people more resilient towards climatic adversities by providing multiple benefits and enhancing livelihood support to the local people.
5.	Productivity studies and growth & yield modeling in teak plantations in Gujarat State.	Dr. Bilas Singh	2012-16	Gujarat Forest Department	Concluded	• Construction of tree volume functions and their validation • To develop growth and yield models for sustainable management of plantations	Developed and validated volume equations produces highest accuracy with both variables, i.e. dbh and height. Mortality transition function, basal area transition function and stand volume (overbark and underbark) function are developed which gives accurate prediction of the growth and yield parameters..
6.	Study on the effect of tree on soil fertility and crop production in Rajasthan.	Dr. Bilas Singh	2016-19	Rajasthan Forest Department	Concluded	• To search and collect the existing literatures on agroforestry	Tree density ranges from 1.5 to 23.2 to trees ha⁻¹ in the state. All existing agroforestry

						of Rajasthan. • To select some case studies and collect field data on soil fertility and crop production. • To study the economic benefits under the cases studied under field conditions, and • To compile and collate the information related to agroforestry and the case studies in the form of a workable report.	systems reduced crop yield that ranged between 20% in Khejri based system to 60% in <i>S. oleoides</i> based agroforestry system. <i>D. sissoo</i> based system is most promising and profitable in agro-climatic zone Ib but only under irrigated condition. <i>A. nilotica</i> based system performs better in agroclimatic zones IIIa, IIIb and V. <i>Prosopis cineraria</i> based system is most promising and profitable in Ia, Ic, IIa, IIb agro-climatic zones. Grafted ber performed better in both irrigated and rainfed conditions, whereas pomegranate exhibited better returns in irrigated condition of Ia, Ic IIa and IIb zones. Performances of guava were better in zones IIIb and IVa and
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							V, whereas that of <i>C. reticulata</i> was in zones V, and mango in zone IVb. Soil fertility increases in the region with increase in rainfall and hence land productivity in the state.
7.	Managing Resources to enhance productivity of agroforestry system in dry areas of Rajasthan.	Dr. Bilas Singh	2012-17	ICFRE	Concluded	- To study the effect of tree pruning on root dynamics and crop production. - To study the effect of root barriers around tree species (root pruning) on soil.	Lopping and root barrier treatment was most beneficial in resources utilization use efficiency as well as higher production of <i>C. tetragonoloba</i> and <i>C. ciliaris</i> among the studied silvicultural treatments.
8.	Development of economically viable and integrated Agroforestry models for arid region.	Dr. Bilas Singh	2006-12	ICFRE	Concluded	- To study the effect of different tree species on the growth and yield of agricultural crops. - To study the	<i>Z. mauritiana</i> + <i>P. cineraria</i> could be grown upto 6 years without significant reduction in agricultural production. Outputs from the trees are the additional benefits. <i>C. mopane</i> is more suitable for rehabilitation of

						growth and biomass (fodder) of different silvicultural species under different combinations. • To study interaction effect of silvicultural species and horticultural species. • To study the effect of different tree species on soil fertility and soil physical characteristics.	degraded lands than its integration with agricultural crops because <i>C. mopane</i> is more competitive with crop.. • SOC was higher by 8% in top layer and by 13% in lower layer in agroforestry plots compared to the respective soil layer in the control plot. Thus agroforestry is more beneficial than sole agricultural crop in term of environmental benefits and economic benefits.