

STATE FOREST RESEARCH INSTITUTE JAMMU AND KASHMIR

ANNUAL PLAN 2012-2013

INTRODUCTION:-

The Jammu and Kashmir State Forest Research Institute has been created in pursuance of Cabinet decision No. 2 dated: 10-01-1990 read with Govt. Order No: 10-FST of 1990 dated: 11-01-1990 with the mandate to undertake research in the fields of Biological Sciences, Soil Sciences, Forest Influence Sciences, Forest Management, Wildlife, Social Forestry, Forest Utilization etc. in all the three Agro-climatic regions, viz, Cold Desert Ladakh, temperate Kashmir & sub-tropical Jammu Shivaliks.

J&K is a hilly state and the forests are Coniferous as well as broad leaved. These forests, in addition to maintaining the environment, are also meeting the day to day requirements of the people. With the increase in population, both human as well as livestock, the forests are under tremendous pressure due to open grazing, heavy exploitation and other excessive biotic pressures. The situation has become so alarming that in most of the areas the forests are lacking in natural regeneration and are at different stages of degradation. Therefore augmentation of natural regeneration and eco-restoration of degraded forests with a view to increase productivity are the major concerns. The SFRI is charged with devising strategies for Eco-restoration, accelerated regeneration and introduction of high yielding, economically better suited species for enrichment of existing forests and plantation on new areas. Research on conservation of rare & threatened species by adopting in-situ and en-situ techniques is now becoming a new area of intervention.

The Govt. has set out a clear blue print for the SFRI vide letter No: FST/ Plan/ 10/ 2005 dated:-27-11-2007 to draw up a comprehensive & scientific plan for a real forest research institute on the pattern of Forest Research Institute, Dehradun. However, the institute has not been provided with requisite scientific manpower, which has restricted

the research activities and the same are only confined to raising of quality seedlings and some aspects of Tree Improvement, along with research on NTFP including medicinal plants.

Keeping in view the mandate as assigned to SFRI and above main concerns of forest management, the Institute has taken up a number of schemes and programmes in the past as well as during the current year. Work on these schemes will be carried forward during 2012-13 either towards maintenance of on-going nurseries and experimental units or for initiating new experimentation and other R&D works. The scheme wise details of proposal is given on the following pages.

<u>CAPITAL COMPONENT:-</u>	<u>Amount (Rs. in lacs)</u>
<p>1. <u>New Works:-</u></p> <p>a) There are a lot of technical innovations taking place in the field of forestry, especially in nursery techniques & plantations, which needs to be demonstrated & transferred to Forest Department & other user agencies after testing in local conditions. To accomplish this, forestry staff & other agencies involved in afforestation and reforestation are required to be trained. Since Forest Development Agency (FDAs) are coming up in big way in which villagers themselves are involved in plantation work, they are required to be provided with new idea & be trained to handle new technology. It is proposed to organize conferences, seminars, workshops, training camps & establishment of demonstration plots. Demonstration of raising of NTFP & MAPs and processing of medicinal herbs, etc. will also be taken up under this programme.</p>	50.050
<p>b) A new Research complex is being developed at Haran, in Ganderbal District to take up research and plant production in Kashmir region. A nursery has already been developed at Haran. Work will be continued in strengthening the research complex with laying out of clonal trials and other scientific experimental plantations.</p>	
<p>c) Herbal Gardens are being developed in financial year 2011-12 and further work will be taken up for establishment of such gardens and Field Research Stations at few other sites across the State.</p>	
<p>d) There are a large numbers of cattle in the State who are depended for pasturage on forests of the state. Virtually whole of the forest are open for grazing. Apart from this, there is annual movement of nomadic communities (Gujjars and Bakerwals) in the forest from high pasture lands to lower hills and back during the year. The constant grazing has resulted into the degradation of forests and loss of natural regeneration. There is need to conduct research on various methods of grazing such as rotational grazing, deferred grazing and various methods of range management so as to increase, the productivity of pasture lands & regeneration of principal coniferous species. It is proposed to take up this programme under new works during 2012-13.</p>	

<p>e) 50% of Geographical areas in J&K State is under high altitude cold desert of Ladakh. Cold desert is unique in rich Biodiversity both in Flora & Fauna. This area presents great opportunity in research areas of pasture, medicinal plants, wetlands, protected areas and endemic species etc. The area is primarily unexplored and it is proposed to take up research for year 2012-13 in this field.</p> <p>f) In the Plan, thrust on raising of demonstration plantation of high yielding bio-fuel species like Jatropha, Pongamia and Simaruba shall also be given on available forest, wasteland & agriculture lands.</p>	
<p>2. <u>Preservation Plot :-</u></p> <p>i) Maintenance of old Preservation Plots and setting-up of new Preservation Plots of rare and threatened species.</p> <p>Preservation Plot is a sample area of natural forest or plantation set apart for preservation in perpetuity without any operations in area, mainly for purposes of ecological observations, study of growth statistics, regeneration status and biodiversity studies. To carry out such studies, more than 40 preservation plots have already been laid out in different forest areas representing different agro-climatic zones and forest types all across the state. However these have not been provided protection by way fencing. Owing to increasing biotic interference it is proposed to fence the existing preservation plots in a phased manner as otherwise much higher allocation for the purpose would be required in addition of the proposed funds. Research activities and Data collection shall be continued under the scheme during the year 2012-13.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>3. <u>Study of Rare and Threatened Species:-</u></p> <p>Survey of rare & threatened Wild flora & fauna species in all the three ecological niche of subtropical, tropical & cold desert shall be undertaken. In addition, the standardization of nursery technique as well as plantation and management practices of rare and threatened species like <i>Taxus baccata</i>, <i>Berberis aristata</i>, <i>Dioscoria</i>, <i>Podophyllum</i>, <i>Inula racemeosa</i>, <i>Picorrhiza</i>, <i>Kuth</i>, <i>Chireyta</i>, <i>Valerina jatemensie</i> etc. will also be taken up.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>

<p>4. <u>Provenance Trial</u> A provenance trial is a plantation in which plants raised from seeds collected from number of well known seed sources (provenances) in the natural range of distribution of species are planted in a statistically designed experiment to study their comparative growth under similar environmental conditions. The trial is evaluated after about a quarter or half rotation of the species to find the best provenance. Seed from the provenance with highest desirable characters is then used for raising future plantations to get quality plantations thus increasing the productivity. A national provenance trial has already been taken in hand for <i>Dalbergia sissoo</i> at two locations and is being maintained and evaluated. Advance work for establishment of Provenance Trials of Chilgoza pine (<i>P. gerardiana</i>) in Jammu and Deodar in Kashmir have already been undertaken in the current year and same shall be laid out and maintained in nurseries in 2012-13.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>
<p>5. <u>Vegetative Propagation</u> Vegetative propagation is formation of a new plant from a vegetative part of the parent plant. This can be achieved by a number of techniques such as budding, grafting, layering, rooting of branch or root cuttings etc. The advantage is that the new plant is genetic replica of the mother plant. The technology is employed to multiply the selected clones having desirable qualities and also for species for which seed availability or viability is poor. Vegetative multiplication of <i>Taxus baccata</i>, Chinar, Anardana, Sissoo and other few species will be taken up in 2012-13.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>6. <u>Plant Introduction</u> Plant introduction means trial of a plant species outside its limits of natural zone of distribution. Introduced species are evaluated with regard to ecological suitability, growth, economic returns, adaptability, resistance to pests and diseases etc. before taking up their plantation in a big way. Species like <i>Robinia</i>, <i>Leucaena</i>, different clones of Poplars and Willows have been successfully introduced in the state in the past. Other species like Sal, <i>Santlum album</i>, <i>Cryptomeria japonica</i>, <i>Gmelina arborea</i>, <i>Hovenea dulces</i>, <i>Paulownia</i>, and some species of Bamboo need to be introduced and evaluated. It is proposed to introduce some of these species and few more clones of Poplar and Willow in the year 2012-13.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>

<p>7. <u>Forest Herbarium</u> :-</p> <p>Forest Herbarium is collection of different specimens of the plant parts and their preservation as well as display in such a way that all the characteristics of the plant can be studied at any given time without going to the forest. During the year 2012-13 an amount of Rs. 0.550 lac is proposed under this head which will be utilized for collection of plant specimens and seeds from forests and their preservation and display.</p>	<p align="center"><u>Amount</u> <u>(Rs. in lacs)</u> 0.550</p>
<p>8. <u>Forest Pathology and Entomology</u>:-</p> <p>During 2012-13, it is proposed to maintain and protect nurseries and plantations from insects, pests & fungal attack.</p>	<p align="center"><u>Amount</u> <u>(Rs. in lacs)</u> 0.550</p>
<p>9. <u>Seed Laboratory</u>:-</p> <p>Seed testing laboratories have been established at Jammu as well as Srinagar with machines and instruments required for the purpose. The equipment of these laboratories is used for testing of seed germination percentage, seed viability and purity of seed collected from known sources, SPAs, Orchards and other areas. The Labs will be maintained and experimentation will be undertaken in the year 2012-13.</p>	<p align="center"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>10. <u>Seed Production Areas</u>:-</p> <p>With the aim of improving the quality of seedlings by using improved seeds, "Seed Production Areas" have been delineated all over the state for important tree species representing different climate and forest types. However, inferior trees have not been removed from these SPAs and they presently act as "seed stands". Unwanted phenotypes are to be culled to prevent cross pollination. Seed from these areas are used for supply to different divisions as well as for other experimental trials. In the Financial year 2012-13, old SPAs will be maintained and two new SPAs one each of Spruce and Chilgoza pine will be established.</p>	<p align="center"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>11. <u>Seed Orchards</u>:-</p> <p>Seed orchard is a plantation of selected clones in a statistical design, which is especially managed to produce frequent, abundant and easily harvestable seeds. So far seedling seed orchards and clonal seed orchards for <i>Dalbergia sissoo</i> and <i>Acacia catechu</i> have been raised. It is proposed that during 2012-13 existing Seed Orchards will be maintained.</p>	<p align="center"><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>

<p>12. <u>Quality Seed Procurement:-</u></p> <p>Quality seed will be collected from existing SPAs and other best known sources to meet the needs of the institute, Forest Department and other user agencies. These seeds will be properly processed and tested before supply and utilization in the year 2012-13.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>13. <u>Forest Management:-</u></p> <p>In view of increase in the extent of open forests and ever increasing forest degradation, SFRI needs to carryout Research on Development in Conifer & Broad leaved Forests through assisted natural regeneration, plantation and Eco-restoration of Degraded Forests. Natural regeneration is considered the most cost-effective proposition of forest management. The crops resulting from natural regeneration are usually more resistant to the attacks by insects, pests and diseases. Increasing attention is being paid to the protection of natural forests and enhancement of their productivity. Cost effective measures supported by research results need to be evolved for the purpose. Study of natural regeneration and to assist the same has been adjudged as the top most research priority at national level as well as for J&K state. Accordingly, it is proposed to study the impact of different silvicultural treatments such as protection, soil working, patch sowing and plantation on regeneration of conifers and broad leaved species. For this purpose, experimental plots will be taken up at different locations in Jammu as well as Kashmir regions. Regeneration survey shall also be carried out in these areas.</p> <p>Attempts shall also be made for standardization of eco-restoration of degraded forests by carrying out trials and pursuing the cost-effective solutions to this problem. Eco-restoration of degraded forests is the priority for the state, where one third of the demarcated forests are facing degradation. It is proposed to take up studies in coniferous forests as well as in the Shivalik vegetation with regards to soil working methods, spacing and to standardize the cost-effective method for eco-restoration.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 38.775</p>

<p>14. <u>Agro-Forestry:-</u></p> <p>Agro-forestry has a very important place in the strategy for forest protection and livelihood generation in rural economy. To make agro-forestry click, the trees species introduced should be genetically superior, fast growing and there should be market for such products. It is proposed to initiate studies in different zones for evaluation of agro forestry models on the agricultural fields of farmers so that farmers are motivated to adopt superior techniques in their plantation schemes to get remunerative prices and market for the wood and non-wood products of desired/ preferred species over a period of time. The findings of our research would be extended to the user agencies and farmers through various extension methods in due course of time.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>15. <u>Non-wood Forest Products (Herbal nurseries and Herbal Gardens)</u></p> <p>Owing to increasing demand for herbal products, the non-wood forest products, which include medicinal and aromatic plants, are gaining importance day by day as more and more people are returning to herbal products because of side effects of the chemical products. A large portion of rural and other backward areas are depending economically on harvesting, processing and marketing of these products. J&K State has great potential of these products. State Forest Research Institute has taken in hand standardization of nursery techniques and agro-techniques of important medicinal plants growing in J&K state. It is proposed to set up at least one Herbal Garden in each District for production & supply of superior quality germ plasm to farmers.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 7.700</p>
<p>16. <u>Research Library and Documentation:-</u></p> <p>SFRI has a mandate to develop and maintain a good Library to facilitate the in-house research and to serve as reference library on forestry matters. SFRI also publishes research reports, bulletins for use of forestry professionals as a reference material to attend to forestry management problems. Library at state level as well as at regional level requires to be constantly equipped with latest publications.</p>	<p style="text-align: center;"><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>

<p>17. <u>Infrastructure Development:-</u></p> <p>The on-going research requires that the Mist Chambers, shade houses/Green houses, High Tech Nursery etc. need to be developed and maintained at the research stations on scientific and technical lines. Similarly, other infrastructure development activities like construction of Range offices, field research stations, experimental plots could further help in establishment and effective functioning of the Institute and funds shall be utilized for development and strengthening of infrastructure in SFRI.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 11.000</p>
<p>18. <u>Computer Center:-</u></p> <p>A computer data center is mandated to be developed at SFRI Regional centers of Jammu and Srinagar. Computer Centers shall be strengthened with the modern computers, peripherals and software to facilities the documentation and data processing of the various research observations.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 7.150</p>
<p>19. <u>Nursery Operation:-</u></p> <p>Good nurseries and quality planting material are backbone of success of plantation in the field. For this purpose, SFRI has established modern nurseries in different agro-climatic zones of the state. Under this scheme quality seedlings of important forest species are produced & supplied to the forest department & other user departments. An amount of Rs. 48.675 Lac is proposed for the year 2012-13 for production of 2.00 lac seedlings & maintenance of old seedlings till they obtain plantable size.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 48.675</p>
<p>20. <u>RSD Machinery & Equipments:-</u></p> <p>The SFRI has to develop & maintain the Research Station in different locations in both the provinces. Funds are proposed to be utilized for strengthening & maintenance of the research stations in 2012-13.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>
<p>21. <u>RSD Buildings:-</u></p> <p>The institute has to develop & maintain the buildings in different locations in both the provinces. There is a need for construction of range offices, guard huts and mali huts and funds in 2012-13 are proposed to be utilized in this direction.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 7.700</p>
<p>22. <u>RSD Furniture & Fixture:-</u></p> <p>A provision of Rs. 2.200 lac has been kept for the year 2012-13 under the scheme for strengthening of training halls, library, computer centres etc.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 2.200</p>

<p>23. <u>RSD Vehicle:-</u> A provision of Rs. 11.000 lac has been proposed for the year 2012-13 under the scheme for purchasing of a new vehicle & maintenance of existing vehicles.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 11.000</p>
<p>24. <u>Research Station Development:-</u> A provision of Rs. 1.100 lac is proposed for maintenance of Research Stations in different locations during the year 2012-13.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>
<p>25. <u>Maintenance of Capital Assets</u> A provision of Rs. 4.400 lac is proposed for maintenance of the SFRI Buildings in Janipur and Sonwar, Seed Laboratories in Jammu & Srinagar etc. for the year 2012-13.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 4.400</p>
<p>26. <u>Raw Material/ Drugs</u> A provision of Rs. 1.100 lac is proposed for procurement of chemicals, growth promoting hormones & rooting drugs etc. for the year 2012-13.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>
<p>27. <u>Land Acquisition:-</u> No provision has been kept for the year 2012-13 under the scheme.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 0.000</p>
<p>28. <u>Biotechnology:-</u> Research on tissue culture & ex-situ conservation techniques of rare & threatened plant species for which an amount of Rs. 1.100 lac is proposed for the year 2012-13.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 1.100</p>
<p>29. <u>Clean Development Mechanism</u> Capacity building through trainings and workshops, on issues of "Forests and Climate Change" shall be taken up under this scheme.</p>	<p><u>Amount</u> <u>(Rs. in lacs)</u> 4.950</p>
<p>Total</p>	<p>Rs. 220.00</p>

Director,
State Forest Research Institute
J&K, Jammu