PROCEEDINGS OF
18th RESEARCH ADVISORY GROUP (RAG) MEETING
[9th October, 2018]

हिमालयन वन अनुसंधान संस्थान
HIMALAYAN FOREST RESEARCH INSTITUTE
(भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्)
(Indian Council of Forestry Research & Education)
(पर्यावरण एवं वन मंत्रालय, भारत सरकार की एक स्वायत्त परिषद्)
(An Autonomous body under the Ministry of Environment & Forests, Government of India)
कॉनिफर कैम्पस, पंथाघाटी, शिमला-171013 (हिमाचल प्रदेश)
Conifer Campus, Panthaghati, SHIMLA-171 013 (Himachal Pradesh)

BACKGROUND

It is beyond any doubt that more than half of the country's geographical area is already affected with resource degradation of one kind or the other and accordingly, management of the natural resources on sustainable basis has become all the more important in working out the economies of developing countries while compared to the developed nations. In view of this, Forest Managers and the scientists as well are already in for a daunting task of managing and conserving the natural resources since, forest degradation is invariably also affecting the livelihood generation, poverty alleviation and environmental services as well.

In the above context, it is necessary not only to reduce further exploitation and degradation but also to actively restore and rehabilitate the degraded eco-systems with technologies that recognize the complexity of socio-economic and environmental factors and processes. Further, it has also been realized that there is a strong need to involve different stakeholders for management of natural resources through capacity building and institutional support and to integrate scientific techniques and modern research tools with the traditional knowledge/ wisdom so as to ensure implementation of the self sustainable development programmes. *Indian Council of Forestry Research & Education* (ICFRE) had finally decided to take the advice of various stakeholders and accordingly, decided to form a **Research Advisory Group** (**RAG**) at the Institute level so as to have the required input by involving related stakeholders for giving a direction to the *forestry research* against the projected programmes and themes of the Ministry of Environment, Forest and Climate Change and of the Council as well.

In view of the above, *Himalayan Forest Research Institute (HFRI), Shimla* is also striving hard, of-course, through directed input of the members of its Research Advisory Group (RAG), where related stakeholders are involved for giving a directed approach to the *forestry research* against the projected programmes and themes– for devising strategies for re-establishment of the natural ecosystems and approve the health status of the growing stock. Catalytic task of this Institute here becomes more onerous and urgent in helping the State Forest Departments towards management of these massive and open to all resources through *Research & Development*.

With this background, there is no doubt that even well managed ecosystems including forests are perpetually posing several environmental problems and accordingly, some strategies are essentially required to be in place for the management of natural ecosystems, those are in the process of retreat.

ROLE OF RESEARCH ADVISORY GROUP (RAG)

With a view to promote better coordination and to infuse utility oriented forestry research input and also to advise the Director of the Institute in the matter of formulating and planning of the various research activities so as to face the challenging needs of forestry research, **Research Advisory Group (RAG)** for the Institute has been formed as per the guidelines, where different stakeholders have been involved with a view to make use of the available resources more judiciously on the applied forestry research projects.

In view of the project prioritization methodology being followed by different regional Institutes of *Indian Council of Forestry Research & Education (ICFRE)*, the role of **Research Advisory Group (RAG)** gains significance, which mainly revolves around the **objective evaluation of the ongoing research projects** and **recommendations of the Annual Research Programmes** of the Institutes.

FUNCTIONS OF RESEARCH ADVISORY GROUP (RAG)

RAG advises the Director of the institute on the following important research relted issues;

1. provide direction in *forestry research* of the Institute within overall framework of research priorities as set by *ICFRE*,
2. examine, vet and recommend *forestry research* proposals and programme of the Institute for the consideration of Research Policy Committee of *ICFRE*,
3. formulate and review five years research plan on rolling basis of the Institute,
4. carry out any other function related with *forestry research* assigned by the Institute from time to time,
5. decide shedding and divesting, non-viable programmes/ projects,
6. consider and advise on regional requirements,
7. ensure balance amongst research theme of the institute,
8. evolve a balance portfolio of research projects amongst various disciplines of the institute,
9. to utilize the expertise of all scientists i.e. works to be distributed in such a manner that productive potential of researcher may be utilized and
10. to review state-wise distribution of field work.

COMPOSITION OF RESEARCH ADVISORY GROUP (RAG)

On the recommendations of Director, Himalayan Forest Research Institute, Shimla, the following **Research Advisory Group (RAG)** for the Institute after involving different stakeholders has been approved by the Director General, *ICFRE*.

LIST OF MEMBERS OF RESEARCH ADVISORY GROUP (RAG)

S. No.	Name	Designation	Address
A.	**Chairman-Director of the Institute:**		
1.	Dr. Vindhya Prasad Tewari	Director	Director, Himalayan Forest Research Institute (HFRI) Conifer Campus, Panthaghati, Shimla – 171 013 **Phone:** 0177-2626778 (O) 9418422769 (M) **Email:** dir_hfri@icfre.org
B.	**Head of the Research Wing of the Forest Departments of Concerned States or their Representatives:**		
B-1.	**Himachal Pradesh:**		
1.	Sh. Ajay Kumar Lal, IFS	APCCF (Research)	Himachal Pradesh Forest Department Karnodi, Sunder Nagar, District Mandi (H.P.) **Phone:** 01907-264113 (O) 094184-65098 (M) **Email:** aklal87@gmail.com rt.apccf@gmail.com
2.	Sh. Alok Nagar, IFS,	CCF (Projects)	Chief Conservator of Forest (Projects) Himachal Pradesh Forest Department (HPFD) Talland, SHIMLA-171 001 (HP) **Phone:** 94180-07426 (O) **Email:** apnagar@gmail.com
B-2.	**Jammu & Kashmir:**		
1.	Sh. N.P. Singh, IFS	Director	*The Director,* *State Forest Research Institute,* *SFRI Complex, Sonwar,* *Near Woodland School* *Srinagar (J & K)* Phone: 0194-2465231, 2479621(O) **Email:** directorsfri123@gmail.com n.p.singh1959@gmail.com
2.	Sh. N.P. Singh, IFS	CCF (Projects)	Chief Conservator of Forest (Projects) Jammu & Kashmir forest Department (JKFD), Forest Complex, Sheikh Bagh, Near Lal Chowk, Srinagar, J&K Phone: 0194-2465231, 2479621(O) Email: n.p.singh1959@gmail.com

C.	**ADG (Research Planning)/ DG ICFRE's Representative:**		
1.	Dr. Vimal Kothiyal	ADG (RP)	ADG (RP) & Scientist-G ICFRE, Dehradun **Phone:** 0135-2753290 (O) 094129-88641(M) **Email:** adg_rp@icfre.org
D.	**02 Senior Scientists of the Institute:**		
1.	Dr. Rajesh Sharma	Scientist-G & Head	Genetics & Tree Improvement Division Himalayan Forest Research Institute (HFRI), Conifer Campus, Panthaghati, Shimla – 171 013 **Phone:** 0177-2816176 (O) 94181-64067 (M) **Email:** sharmar@icfre.org
2.	Dr. R.K. Verma	Scientist-G & Head	Forest Ecology & Climate Change Division Himalayan Forest Research Institute (HFRI), Conifer Campus, Panthaghati, Shimla – 171 013 **Phone:** 0177-2816110 (O) 94181-89326 (M) **Email:** vermaraj@icfre.org
E.	**01 Senior Forest Officer of the Institute:**		
1.	Sh. Satya Prakash Negi, IFS	CF	Head, Extension Division Himalayan Forest Research Institute (HFRI), Conifer Campus, Panthaghati, Shimla – 171 013 **Phone:** 0177-2816102 (O) 88942- 22211 (M) **Email:** spnegi@icfre.org
F.	**01 representative of the Universities Imparting Education in Forestry and Allied Subjects at the Level of Dean or Head of the Department:**		
1.	Prof. Satish Bhardwaj,	Head	Head, Department of Environmental Sciences, College of Forestry, University of Horticulture and Forestry, Nauni, Solan – 173 230 (HP) **Phone:** 94181-44092 (M) Email: sbhardwajswm@rediffmail.com
G.	**01 Representatives from a Funding Organization:**		
1.	Prof. (Dr.) Tanuja Manoj Nesari	Dy. Director	Chief Executive Officer, National Medicinal Plants Board, Ministry of AYUSH, Govt. of India, Room No. 309, 3rd Floor, B-Block, AYUSH Bhawan, GPO Complex, INA, New Delhi -110023 **Phone:** 011-24651828; 24651827(O) **Email:** infor-nmpb@nic.in

H.	**02 Representatives of Forest Based Industries:**		
1.	Sh. Nand Lal Sharma	Proprietor	Nanda Herbals, Village Mansari, Post Office. Haripur, District Kullu (H.P.) **Phone:** 098160-57660 (M) **Email:** nandamedicinal@gmail.com
2.	Sh. Sudhir Sood,	Proprietor	Resin and Turpins, Kotla Nallah, Mid Hills, Lala Jagnath Sood Complex, Rajgarh Road, Solan-173210 (HP) **Phone:** 94180-23227 (M) Email: sudhirsood@midhills.in
I.	**01 Eminent Forester Outside ICFRE:**		
1.	Sh. Kunal Satyarthi, IFS	Member Secretary	Himachal Pradesh Council of Science, Technology and Environment (HIMCOSTE), 34, SDA Complex, Kasumpati SHIMLA – 171 009 Phone: 0177-2620998 (O) 94103-94349 (M) Email: kunalsatyarthi@gmail.com
J.	**01 Eminent Scientist Outside ICFRE:**		
1.	Prof. (Retd.) T.D. Verma	Ex- Professor and Head	Shamati, Solan Distt. Solan – 173213 (HP) **Phone:** 94184-89742 (M) **Email:** t.d.verma16@gmail.com
K.	**01 Representative of ICAR/CSIR/NMPB:**		
1.	Dr. R.K. Sud	Sr. Principal Scientist	Division of Agrotechnology of Medicinal, Aromatic and Commercially Important Plants, Institute of Himalayan Bio-resource Technology (IHBT) P. Box No. 06, Palampur -176061 Distt. Kangra (HP) Phone: 94183-18965 (M) Email: rksud@ihbt.res.in rkesud@gmail.com
L.	**01 Representative of Sister Research Organizations:**		
1.	Dr. S.S. Samant	Scientist	Scientist In-charge, GB Pant National Institute of Himalayan Environment & Sustainable Development , Kullu Unit MOHAL, Distt. Kullu (HP) **Phone:** 01902-225329 (O) 98163-16318 (M) Email: samantss2@rediffmail.com
M.	**01 Representative of Progressive Farmer/Prominent NGO/JFM/Local Government/Grass Root Level Organization:**		
1.	Sh. Subhash Chander	Progressive Farmer	S/o Sh. Sewa Ram Village Galhar, Tehsil Nagsani Distt. Kishtwar -182204 (J&K) **Phone:** 9622356662 (M) Email: nkc_galhar@rediffmail.com

N.	**06 Subject Matter Experts from Outside ICFRE Institutes Covering the Subject Areas of the Institutes:**		
1.	Dr. Dharam Pal Walia	Principal Scientist and Incharge	ICAR Regional Research Station, Tuti-Kandi Facility Shimla -171004 **Phone:** 98171-63305 (M) **Email:** dpwalia@rediffmail.com
2.	Dr. Rajan Bawa	Retired Professor	H.No. 354/12, Shakti Kunj Above Sainik Guest House SOLAN (HP)-173212 **(Mob.No. 94180-03030)** **Email:** rbawauhf@yahoo.co.in
3.	Prof. Anand Sagar	Head	Department of Biosciences Himachal Pradesh University Summer Hill, **SHIMLA-171005** **(Mob.No. 98168-07646)** **Email:** as_bio@rediffmail.com
4.	Prof. Sushma Sharma	Scientist	Department of Biosciences Himachal Pradesh University, Summer Hill, **SHIMLA-171005** **(Mob. No. 98162-91637)** **Email:** sushma_bio_sci@rediffmail.com
5.	Prof. Bhupendar Gupta	Scientist	Department of Silviculture and Agroforestry College of Forestry, University of Horticulture and Forestry, Nauni, **SOLAN-173230 (HP)** **(Mob. No. 94183-20280)** **Email:** bhupenderg@ymail.com
6.	Dr. R.S. Rana	Principal Scientist	Centre for Geo-informatics Research and Training/ Department of Agronomy CSK HPKV Palampur 176062 (HP) **(Mob.No. 94181-06167)** Email: ranars66@gmail.com Ranars66@rediffmail.com
O.	**Member Secretary:**		
1.	Dr. Ranjeet Singh	Scientist-G	Group Coordinator Research, Himalayan Forest Research Institute (HFRI), Conifer Campus, Panthaghati, Shimla – 171 013 **Phone:** 0177-2626801 (O) 94181- 59199 (M) **Email:** groupco_hfri@icfre.org

The following Hon'ble members of Research Advisory Group (RAG) were unable to attend the meeting, may be due to their other official/ administrative assignments / commitments coinciding with this date of meeting;

- Sh. N.P. Singh, IFS, APCCF (Projects), J&K Forest Department and Director, State Forest Research Institute (SFRI), J&K
- Prof. (Dr.) Tanuja Manoj Nesari, CEO, National Medicinal Plants Board, Ministry of AYUSH, Govt. of India, New Delhi.
- Sh. Kunal Satyarthi, IFS Member Secretary, Himachal Pradesh Council of Science, Technology and Environment (HIMCOSTE), Shimla.
- Prof. Sushma Sharma, Scientist, Department of Biosciences, Himachal Pradesh University, Summer Hill, Shimla
- Prof. Anand Sagar, Head, Department of Biosciences, Himachal Pradesh University, Summer Hill, Shimla.

PROGRAMME OF THE RAG MEETING

Date: **9th October, 2018**
Venue: **Conference Hall, Himalayan Forest Research Institute**
Conifer Campus, Panthaghati, SHIMLA-171 013 (H.P.)

09.00 AM – 9.30AM	**Reception & Registration of the delegates**
INAUGURAL SESSION	
09.30 AM - 10.00	**Welcome Address:** Dr. Ranjeet Singh, GCR, HFRI, Shimla
	Opening Remarks by: Dr. V.P. Tewari Director, HFRI, Shimla
	Brief Presentation on HFRI Achievements and Outlay of the Meeting: Dr. Ranjeet Singh, GCR, HFRI, Shimla
INAUGURAL TEA : 10.00 AM to 10.20 AM	
SESSION-I	
10.20 AM – 12.00 NOON	**Presentation of the New Multi-disciplinary Research Proposals proposed to be initiated from April, 2019 onwards by the Scientists of various research divisions of the institute, subject to their final approval by Research Policy Committee (RPC):** • Air pollution tolerance of woody vegetation and physico- chemical properties of soil along the highway from Shimla to Hamirpur. **Dr. Ranjeet Kumar, Scientist-E** • Studies on effect of AM inoculations on the active ingredients contents and biomass production in *Angelica glauca* Edgew. and *Valeriana jatamansi* Jones. **Dr. Ashwani Tapwal, Scientist-E** • Bionomics of Sal Borer, *Hoplocerambyx spinicornis* Newman (Coleoptera: Cerambycidae) in Nahan Forest Division for Developing early-warming System. **Sh. Subhash Chandra, Scientist-D** • Developm ent of seed technology and propagation techniques of *Betula utilis* D. Don and *Sorbus lanata* (D. Don) Schauer. **Sh. Pitamber Singh Negi, Scientist-C**
SESSION-II	
12.00 NOON – 01.15PM	**Presentation of Research Activities/ Highlights and Review of the Ongoing Research Projects being implemented by various research divisions and their extension/changes, if any:** • Division of Forest Ecology & Climate Change: (03-Plan) • Division of Forest Protection (01-Plan) • Division of Genetics & Tree Improvement: (03-Plan) • Division of Silviculture and Forest Management: (03-Plan)
01.15 PM- 01.25PM	**Concluding remarks by RAG Members and Chairman**
01.25PM –01.30PM	**Vote of Thanks:** Dr. Ranjeet Singh, GCR, HFRI, Shimla
	LUNCH : 01.30 PM

INAUGURAL SESSION

Himalayan Forest Research Institute (HFRI), Shimla organized **Research Advisory Group (RAG)** meeting on **9th October 2018** in the Conference Hall of the institute. At the outset, **Dr. Ranjeet Singh, Group Coordinator Research (GCR)** initiated the day's proceedings and formally welcomed the **Research Advisory Group (RAG)** members present in the Conference Hall and representative of worthy Director General, ICFRE, Dehradun, Dr. Vimal Kothiyal, Assistant Director General (Research Planning), ICFRE Dehradun, who attended the meeting through Video Conferencing alongwith Dr. Shailendra Kumar from RP Division, ICFRE, Dehradun. Dr. Ranjeet Singh apprised the house that this is the **19th meeting of Research Advisory Group (RAG)** of this institute – which is an apex body of the institute – and based on the already identified research programmes, this body recommends the new research proposals, prepared by the scientists of the institute, for their final approval by the **Research Policy Committee (RPC)** of ***ICFRE***. He further added that this meeting provides an opportunity not only to review the progress of ongoing projects, examination and prioritization of new research proposals but, also to take maximum benefits of the expertise of Hon'ble RAG Members on various research issues. With this brief introduction, he requested, **Dr. V.P. Tewari, Director, HFRI** and **Chairman, RAG** to formally welcome the Hon'ble members of RAG for this meeting. Dr. Tewari explained the importance and cause behind the organization of this meeting. He apprised the house that on the basis of recommendation of Regional Research Conference, held at this institute on 20th April, 2018, some new research proposals has been formulated, which will be presented by the scientists of this institute before the house and ongoing projects with some changes will also be presented. He requested all the Hon'ble Members of RAG present in the Hall and Dr. Vimal Kothiyal to give their comments and suggestions on the research proposals being presented before the house so that the proposal be more qualitative, effective and useful. He further hoped that the importance and quality of the research proposals will be increased after incorporating the comments and suggestions given by the Hon'ble members of RAG.

Introductory Presentation including Outlay of the Meeting:

To set the stage rolling further for conducting this important RAG meeting, as per the instructions of *ICFRE* headquarters, the member secretary once again repeated the

essentiality of the meeting and the role of Hon'ble members of RAG during conduct of the same.

Thereafter, **Dr. Ranjeet Singh,** Group Coordinator (Research) made a brief presentation research activities and various achievements of the institute. In his second presentation, Dr. Singh also highlighted the formation of RAG, its objective to bring innovation in research projects being presented and review of ongoing projects for its continuation, dropping or modification, if any. He also informed about the evaluation criterion of the new research proposals. Dr. Singh further added that RAG is an apex body of the institute, which is constituted after seeking specific approval from the Director General, *Indian Council of Forestry Research & Education (ICFRE),* Dehradun. This body is responsible for advising the Institute to take up forestry research on some important, relevant and burning issues, those are highly desirable and beneficial for the mandated state, he informed. RAG has also the mandate of reviewing the ongoing projects and making suggestions for successful completion of the research projects. During his presentation Dr. Singh also informed that ICFRE has identified 4 major thrust areas with 36 relevant themes and further pointed out that whatever research ICFRE and its regional institute are carrying out, it must reach the end users/ consumers, only then it will be of relevance to the society in general. He further informed that like many other government organizations, ICFRE presently is being funded by the Ministry of Environment, Forests and Climate Change, Government of India, New Delhi.

Director, HFRI informed in detail about the evaluation criterion of the new research proposals. He further informed that only the proposals scored 80% or above will go to the **Research Policy Committee** (RPC) of ICFRE for further discussion and final approval.

Dr. Vimal Kothiyal also added that this year ICFRE has formulated 31 AICRP projects and submitted under CAMPA funding for their approval. He further added that only worth proposals be sent to RPC meeting. Director, HFRI also informed that these AICRP projects has been prepared by young scientists (from B to C) for encouraging them to generate revenue. A target of Rs. 1.00 crore has been given to HFRI for earning revenue. Dr. Kothiyal also explained that the stand alone proposals will be subsumed in AIRRP projects, which was decided in the last year's RPC.

SOME CLIPPING OF THE RAG MEETING

AGENDA ITEM NO. –I

Presentations of the New Research Proposals, proposed to be initiated from APRIL, 2019 onwards by various research divisions subject to approval by the Research Policy Committee (RPC):

Starting with the Agenda Item No. I, **Group Coordinator Research** briefed about the new research proposals to be presented before RAG for seeking necessary comments/ recommendations for further submission to the **Directorate of Research (ADG-RP)** at *ICFRE*, Headquarters, Dehradun. He further informed the Hon'ble members that this year the research divisions of this institute are presenting **04 New Research Proposals,** those are merge well with the thrust areas and themes of the council. In addition, all these proposals are in accordance with the recent guidelines of ICFRE, Dehradun.

The Member Secretary further informed the Hon'ble members that the scientists, those who will present their research proposals will be invited as per the details below;

S. No.	Title of the New Project	Name of PI	Thrust Area and Theme	Duration	Budget (Rs. in Lakhs)
1	2	3	4	5	6
(A)	**Forest Ecology & Climate Change:**				
1.	Air pollution tolerance of woody vegetation and physico- chemical properties of soil along the highway from Shimla to Hamirpur	**PIs:** Dr. Ranjeet Kumar, Scientist-D	Biodiversity conservation and ecological security *Environment Management*	3 Years (April, 2019-March 2022)	**10.38**
(B)	**Forest Protection Division:**				
2.	Studies on effect of AM inoculations on the active ingredients contents and biomass production in *Angelica glauca* Edgew. and *Valeriana jatamansi* Jones	**PIs:** Dr. Ashwani Tapwl, Scientist-E	Managing forests and forests products for livelihood support and economic growth *Application of microbes in the Forestry*	5 Years (April, 2019-March 2024)	**26.33**
3.	Bionomics of Sal Borer, *Hoplocerambyx spinicornis* Newman (Coleoptera: Cerambycidae) in Nahan Forest Division for Developing early-warning System	**PIs:** Dr. Subhash Chandera, Scientist-D	Managing forests and forests products for livelihood support and economic growth *Integrated pests and disease management*	3 Years (April, 2019-March 2022)	**17.57**
(C)	**Silviculture & Forest Management:**				
4.	Development of seed technology and propagation techniques of *Betula utilis* D. Don and *Sorbus lanata* (D. Don) Schauer	**PIs:** Sh. Pitamber Singh Negi, Scientist-C	Managing forests and forest products for livelihood support and economic growth *Seed Science and Technology (A)*	5 Years (April, 2019-March 2024)	**32.18**

After presentation of each of the research proposals, lot of discussions were held and the suggestions/ comments given by the Hon'ble members have been provided at the relevant places of the documents **(Form-5 : Tables: 5-8).**

AGENDA ITEM NO.: II

Presentation of Research Activities/ Highlights and Review of the Ongoing Research Projects being implemented by various research divisions and their extension/changes, if any:

Once the presentations pertaining to **Agenda Items No. II** were over, the Member Secretary informed the august house that the detailed presentation of each of the ongoing research projects being implemented by the institute under PLAN will be made by the individual PIs. Subsequently, the scientists/ PIs of the respective ongoing research projects presented the research activities as carried out by them under these research projects (PLAN) as per the details below;

1]. RESEARCH PROJECTS UNDER PLAN BUDGET:

A]. DIVISION OF FOREST ECOLOGY & CLIMATE CHANGE:

1.	Ecological Studies in Alpine Pastures of District Shimla, Himachal Pradesh. **Dr. R.K. Verma, Scientist-G**
2.	Carbon sequestration potential of existing land use system in Lahaul Valley, Himachal Pradesh. **Dr. R.K. Verma, Scientist-G**
3.	Analyzing impact of control burning on plant diversity and soil properties in chir pine forests. **Dr. Ranjeet Kumar, Scientist-E**

B]. DIVISION OF FOREST PROTECTION:

4.	Studies on changing forest insect pest status of high altitudinal transitional zones and their management in Himachal Pradesh **Dr. Ranjeet Singh, Scientist-G**

C]. DIVISION OF GENETICS & TREE IMPROVEMENT:

5.	Standardization of grafting technique in *Cedrus deodara* (Roxb.) G.Don) **Dr. Rajesh Sharma, Scientist-G**
6.	Identification, Ecological Assessments for Selection & Screening of Superior and Insect-Pest Resistant Clones of Salix for their Cultivation, Production Trends and Conservation in the Cold Deserts of Himachal Pradesh and Jammu & Kashmir. **Dr. Rajesh Sharma, Scientist-G**
7.	Characterisation of the Hill Bamboo species (Ringal) of the North-Western Himalayas for their conservation and Genetic Improvement **Dr. Rajesh Sharma, Scientist-G**

D]. DIVISION OF SILVICULTURE & TREE IMPROVEMENT:

8.	Survey and evaluation of Silvipastoral systems in Himachal Pradesh and its role in sustaining community livelihood **Dr. Swarn Lata, Scientist-C**
9.	Standardization of Agro-Techniques and Evaluation of Growth Parameters of *Juniperus polycarpos* C. Koch under Nursery and Field Conditions. **Sh. Pitamber Singh Negi, Scientist-C**
10.	Community dependency on Oak forests for fodder and comparative analysis of different Oak species of Himachal Himalayas for nutritive value and leaf biomass production. **Dr. Sandeep Sharma, Scientist-G**

All the Hon'ble members of RAG showed satisfaction on the methodology followed and progress made by all the PIs under their respective research projects during the year.

As requested by the PI-Dr. Rajesh Sharma, the committee also recommended that the required changes in the project **at S. No. 6** may be allowed by the RPC**.**

Other related and relevant details of the Ongoing research projects under PLAN funded have been provided in the following pages in **Annexure-2 (Information Required on ICFRE Plan Projects for RPC-2019) – Form-1-Tables:1-4, Forms-2, 3 and 4.**


CHAIRMAN
RAG


हि.व.अ.सं.
HFRI


Project Title:
Identification, Ecological Assessments for Selection & Screening of Superior and Insect-Pest Resistant Clones of Salix for their Cultivation, Production Trends and Conservation in the Cold Deserts of Himachal Pradesh and Jammu & Kashmir
PRI. INVESTIGATORS:
Dr. Rajesh Sharma (Coordinator)
Dr. Ranjeet Singh, Dr. Sandeep Sharma,
Dr. Ranjeet Kumar, Dr. Vaneet Jishtu,
Project Associates:
Ms. Shilpa, Sh. Akhil Kumar, Sh. Sunil Warnan Bhondge (ACTOs), Sh.Dushyant Kumar (TO)
Date of Start : April 2017
Date of Completion : March 2024
ICFRE-DEHRADUN HP
Budget : 54.88 Lakhs


ICFRE
ICFRE-DEHRADUN
11:02
IP-H323


CHAIRMAN
RAG










Dr. Sandeep Sharma
Scientist- G, HFRI
Repporteurs

Annexure-2

Information Required

on

ICFRE Plan Projects for

RPC 2019-20

Form-1

Thrust area wise list of ongoing Research Projects and detailed budget for 2019-20:
Ongoing Projects

Table 1: Thrust area I-Managing Forests and Forests Products for livelihood support & economic growth

Thrust area wise list of ONGOING RESEARCH PROJECTS												
Thrust area I: Managing Forests and Forests Products for livelihood support & economic growth												
S. No.	**Project title/PI/Duration (Start and end year)**	**Total approved budget outlay (Rs. in lakhs)**	**Cumulative expenditure till March 2018**	**Approx. expenditure during 2018-19**	**Details of budget required for 2019-2020 (Rs. in lakhs)**						**Required / engaged Manpower (RA/ SRF/ JRF/ PA/ FA etc.)**	**Remarks: [Extension granted; modification in a) objectives; b) budget outlay**
					Budget required for 2019-20 (Sum of 6 to 10)	**Sub Head wise breakup for 2019-20**						
						Consumables (M&S)	**Research expenditure (FRE)**	**Travel And conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		
1	**2**	**3**	**4a**	**4b**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
I) Institute: Himalayan Forest Research Institute (HFRI), Shimla												
i.	Survey and evaluation of silvipastoral systems in Himachal Pradesh and its role in sustaining community livelihood. [HFRI-059/Th.-1/SFAF-FF-10(AGE-07)/PLAN/ 2016-21] **PI:** Dr. Swarn Lata, Scientist-C **Duration:** 05 years (2016-2021) **Theme:** *Social Forestry, Agro-forestry/Farm Forestry/ Sustainable Forest Management*	**25.00**	**4.512**	**2.71**	**3.07**	0.03	0.02	0.95	-	2.07	**JRF- 01**	--

ii.	Standardization of agro-techniques and evaluation of growth parameters of *J. polycarpos* C. Koch under nursery and field conditions. [HFRI-065/Th.-01/S(A)-03(STI-21)/PLAN/ 2016-21] **PI:** Sh. P.S. Negi, Scientist-C **Duration:** 05 years (2016-2021) **Theme:** *Silviculture (A)*	**19.48**	**5.42867**	**3.57**	**4.96**	0.30	1.75	1.05	-	1.86	**PA - 01**	--
iii.	Studies on changing forest insect pest status of high altitudinal transitional zones and their management in Himachal Pradesh**. [**HFRI-063/Th.-01/IPDM-18(FPT-14)/PLAN 2016-21] **PI:** Dr. Ranjeet Singh, Scientist-G **Duration:** 05 years (2016-2021) **Theme:** *Integrated Pest and Disease Mangement*	**25.00**	**6.74**	**4.02**	**5.32**	0.20	0.40	0.80	-	3.78	**JRF- 01** **PA - 01**	--
iv.	Community dependency on Oak forests for fodder and comparative analysis of different Oak species of Himachal Himalayas for nutritive value and leaf biomass production as influenced by lopping, aspect, altitude and crown architecture	**28.94**	**7.19468**	**7.11**	**10.48**	1.00	0.69	3.00	-	5.79	**JRF- 01** **PA - 02**	--

	[HFRI-067/Th.:01/SF,AF, FF (10)/ (STI-22)/PLAN/2017-20] **PI:** Dr. Sandeep Sharma, Scientist-G **Duration:** 03 years (2017-2020) **Theme:** Social Forestry, Agro-forestry /Farm Forestry											
v.	Analyzing impact of control burning on plant diversity and soil properties in chirpine forests. [HFRI-062/Th.-03/FFG-04(E&BC-21)/PLAN 2016-20] **PI:** Dr. Ranjeet Kumar, Scientist-E **Duration:** 04 years (2016-2020) **Theme:** *Forest Fire & Grazing(A)*	**11.00**	**4.302**	**2.83**	**2.97**	0.25	0.10	0.70	--	1.92	**JRF- 01**	No

Table 2: Thrust area II- Biodiversity conservation and ecological security

Thrust area wise list of ONGOING RESEARCH PROJECTS												
Thrust area II- Biodiversity conservation and ecological security												
S. No.	**Project title/PI/Duration (Start and end year)**	**Total approved budget outlay (Rs. in lakhs)**	**Cumulative expenditure till March 2018**	**Approx. expenditure during 2018-19**	**Details of budget required for 2019-2020 (Rs. in lakhs)**						**Required / engaged Manpower (RA/ SRF/ JRF/ PA/ FA etc.)**	**Remarks: [Extension granted; modification in a) objectives; b) budget outlay**
					Budget required for 2019-20 (Sum of 6 to 10)	**Sub Head wise breakup for 2019-2020**						
						Consumables (M&S)	**Research expenditure (FRE)**	**Travel And conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		
1	**2**	**3**	**4a**	**4b**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
I) Institute: Himalayan Forest Research Institute (HFRI), Shimla												
vi.	Ecological studies in Alpine	**9.25**	**2.9305**	**1.82**	**2.74**	0.10	0.08	0.70	-	1.86	**PA - 01**	--

	pastures of District Shimla, Himachal Pradesh. [HFRI-060/Th.-02/BC-10(E&BC-19)/PLAN/ 2016-20]. **PI:** Dr. RK Verma, Scientist-G **Duration:** 04 years (2016-2020) **Theme:** *Biodiversity Conservation*											

Table 3: Thrust area III- Forest and Climate Change

Thrust area wise list of ONGOING RESEARCH PROJECTS												
Thrust area III- Forest and Climate Change												
S. No.	**Project title/PI/Duration (Start and end year)**	**Total approved budget outlay (Rs. in lakhs)**	**Cumulative expenditure till March 2018**	**Approx. expenditure during 2018-19**	**Details of budget required for 2019-2020 (Rs. in lakhs)**						**Required / engaged Manpower (RA/ SRF/ JRF/ PA/ FA etc.)**	**Remarks: [Extension granted; modification in a) objectives; b) budget outlay**
					Budget required for 2019-20 (Sum of 6 to 10)	**Sub Head wise breakup for 2019-20**						
						Consumables (M&S)	**Research expenditure (FRE)**	**Travel And conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		
1	**2**	**3**	**4a**	**4b**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
I) Institute: Himalayan Forest Research Institute (HFRI), Shimla												
vii.	Carbon sequestration potential of existing land use system in Lahaul Valley, Himachal Pradesh. [HFRI-060/Th.-03/CCF-03(E&BC-20)/PLAN 2016-21] **PI:** Dr. R.K. Verma, Scientist-G **Duration:** 05 years (2016-2021) **Theme:** *Climate Change & Forests*	**20.80**	**4.3206**	**2.67**	**3.21**	0.20	0.15	1.00	-	1.86	**PA - 01**	--

Table 4: Thrust area IV- Forest Genetic Resource Management and Tree Improvement

Thrust area wise list of ONGOING RESEARCH PROJECTS												
Thrust area IV- Forest Genetic Resource Management and Tree Improvement												
S. No.	**Project title/PI/Duration (Start and end year)**	**Total approved budget outlay (Rs. in lakhs)**	**Cumulative expenditure till March 2018**	**Approx. expenditure during 2018-19**	**Details of budget required for 2019-2020 (Rs. in lakhs)**						**Required / engaged Manpower (RA/ SRF/ JRF/ PA/ FA etc.)**	**Remarks: [Extension granted; modification in a) objectives; b) budget outlay**
					Budget required for 2019-20 (Sum of 6 to 10)	**Sub Head wise breakup for 2019-20**						
						Consumables (M&S)	**Research expenditure (FRE)**	**Travel And conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		
1	**2**	**3**	**4a**	**4b**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
I) Institute: Himalayan Forest Research Institute (HFRI), Shimla												
viii.	Standardization of grafting technique in *Cedrus deodarae* (Roxb.) G.Don. [HFRI-064/Th.-04/VP-05(STI-20)/PLAN 2016-19] **PI:** Dr. Rajesh Sharma, Scientist-G **Duration:** 3 years (2016-2019) **Theme:** *Silviculture (A), Vegetative Propagation*	05.96	**3.55**	**1.28**	**NA**	--	--	--	--	--	--	**Released budget (4.83)**
	The research project will end during March, 2019. Hence, no budget for the year 2019-20 required											
ix.	Characterization of the Hill Bamboo Species (Ringhal) of the North-Western Himalayas for their Conservation and Genetic Improvement A collaborative project in between HFRI, Shimla and FRI, Dehradun **PI:** Dr. Rajendra Meena, Scientist-D, FRI, Dehradun	**Total Cost= 46.08** **HFRI Component= 11.56**	**2.84**	**4.73**	**3.06**	0	0.45	0.05	0	2.06	**JRF- 01**	--

	Co-PI: Dr. Rajesh Sharma, Scientist-G **Duration:** 03 years (2017-2020) **Theme:** *Conservation of Forest Genetic Resources*											

Form-2

Thrust area wise Ongoing Projects with change request (Note: ***Projects reflected here may not be added in ongoing projects list to avoid duplicity*****)**

S. No.	Title of the project/ PI/ Duration (Start and end year)	Change request with justification	RAG's comments	Total approved budget outlay (Rs. in lakhs)	Cumulative expenditure till March 2018	Approx. expenses during 2018-19	Balance available (Rs in lakhs)	Budget required for 2019-20 (Rs in lakhs)						Required / engaged Manpower (RA/SRF/ JRF/ PA/ FA etc.)	Remarks: [No of Extension granted; modification in a) objectives; b) budget outlay
								Budget required for 2019-20 (Sum of 7 to 10)	Consumables (M&S)	Research Expenditure (FRE)	Travel And Conveyance (Res)-TE	Capital (Scientific Equipments)	Fellowship		
1	2	3	4	5	4a	4b	4c	6	7	8	9	10	11	12	13
	Thrust area I: Managing Forests and Forests Products for Livelihood Support & Economic Growth														
	NA														
	Thrust area II: Biodiversity Conservation and Ecological Security														
i.	Identification, Ecological Assessments for Selection & Screening of Superior and Insect-Pest Resistant Clones of Salix for their Cultivation, Production Trends and Conservation in the Cold Deserts of Himachal Pradesh and Jammu & Kashmir [HFRI-066/Th.:02&04/BC(10) : CFGR(02)/ (E&BC-	PI has made a request to delete the following two objectives under the project; **1.** Assessment of goods and ecosystem services provided by Salix based agroforestry system. **2.** To develop dynamic growth models for the	RAG recommended the proposal for final approved by RPC of the council.	**54.88**	**7.47**	**9.83**	**5.55**	**14.85**	1.90	2.25 +50 = 2.75	2.20	0.50	7.50	**JRF-01 PA-03**	**0.50 for extension activities allotted in the 3rd year**

	21)/ PLAN/ 2017-24] **Project Coordinator:** Dr. Rajesh Sharma, Scientist-G & Head, GTI Division **PIs:** Dr. Ranjeet Singh, Scientist-G Dr . Sandeep Sharma, Scientist-G Dr Vaneet Jishtu, Scientist-D **Duration:** Seven years (2017-2024) **Theme:** • *Biodiversity Conservation* • *Conservation of Forest Genetic Resources*	species. The above listed objectives was the part of the project to be undertaken by SKUAST, but, the ICFRE only approved the component of HFRI thereby, the component of SKUAST has been deleted from the project. The PI also requested to change the title of the project as; **Identification, Ecological Assessments for Selection & Screening of Superior and Insect-Pest Resistant Clones of Salix for their Cultivation and Conservation in the Cold Deserts of Himachal Pradesh and Jammu & Kashmir.**													
	Thrust area III: Forest and Climate Change														
	NA														
	Thrust area IV: Forest Genetic Resource Management and Tree Improvement														
	NA														

Form-3

Thrust area wise summary of ongoing projects of ICFRE Institutes for 2019-20

Thrust Area Wise Abstract of Ongoing Research Project Proposals										
NAME OF THE INSTITUTE: Himalayan Forest Research Institute (HFRI), Shimla		**Man Power Engaged**								
THRUST AREA	**No of Projects**	**RA**	**SRF**	**JRF**	**PA**	**FA**	**TA**	**Con.**	**DEO**	**Total**
Thrust Area I	05	--	--	04	03	01	--	--	--	**08**
Thrust Area II	01	--	--	--	01	--	--	--	--	**01**
Thrust Area III	01	--	--	--	01	--	--	--	--	**01**
Thrust Area IV	02	--	--	01	--	--	--	--	--	**01**
Total Projects	**09**	--	--	**05**	**05**	**01**	--	--	--	**11**
RA: Research Associate, SRF: Senior Research Fellow, JRF: Junior Research Fellow, PA: Project Assistant, FA: Field Assistant, TA: Technical Assistant, Con: Consultant DEO: Data Entry Operator										

Note: Give number only. Figures should match with Form 1 (Tables 1-4).
This table will not include ongoing projects submitted for change request (Form 4)

Form-4

Thrust area wise summary of ongoing projects submitted for CHANGE REQUEST 2019-20

Thrust area wise abstract of ongoing research projects for change request										
NAME OF THE INSTITUTE		**Man Power Engaged**								
THRUST AREA	**No of Projects**	**RA**	**SRF**	**JRF**	**PA**	**FA**	**TA**	**Con.**	**DEO**	**Total**
Thrust Area I	--	--	--	--	--	--	--	--	--	--
Thrust Area II	**01**	--	--	01	03	--	--	--	--	**04**
Thrust Area III	--	--	--	--	--	--	--	--	--	--
Thrust Area IV	--	--	--	--	--	--	--	--	--	--
Total Projects	**01**	--	--	**01**	**03**	--	--	--	--	**04**
RA: Research Associate, SRF: Senior Research Fellow, JRF: Junior Research Fellow, PA: Project Assistant, FA: Field Assistant, TA: Technical Assistant, Con: Consultant DEO: Data Entry Operator										

Note: Give number only. Figures should match with Form 2.

Form-5
(Tables 5-8)

Thrust area wise new project proposals for 2019-20

I) Institute:

Table 5: Thrust area I-Managing Forests and Forests Products for livelihood support & economic growth

<table>
<tr><td colspan="2">Project No. 1.</td></tr>
<tr><td colspan="2">Project title: Studies on effect of AM inoculations on the active ingredients contents and biomass production in Angelica glauca Edgew. and Valeriana jatamansi Jones</td></tr>
<tr><td>ICFRE Thrust Area:
• Managing Forests and Forests Products for livelihood support & economic growth</td><td>ICFRE Theme:
• Application of microbes in the Forestry</td></tr>
<tr><td>Score on Technical criteria of Project Assessment (out of 100):

87.11</td><td>Index Score project (project prioritization score)

834.26</td></tr>
<tr><td>Name & Designation of the PI / Co-PI:
PI:
Dr. Ashwani Tapwal , Scientist-E

Co-PI:
Dr. Sandeep Sharma, Scientist-G

Name of Divisions:
Multi-disciplinary project and involves the following research divisions:
• Forest Protection Division
• Silviculture and Forest Management</td><td>Budget outlay of the Project (Rs in lakhs): Rs. 26.33 lakhs

Duration (start & end date): April, 2019-March, 2025

No. of years: 05 Years</td></tr>
<tr><td colspan="2">Long term objectives of the project:
• Utilization of AM fungi to enhance the yield and a.i. content of temperate medicinal plants.
Short term objectives of the project:
i. To study root colonization of AM fungi associated with wild A. glauca and V. jatamansi.
ii. To isolate, identify and study the diversity of AM fungal spores from the rhizosphere soil.
iii. To identify dominant AM fungi and their multiplication with compatible host in pot cultures.
iv. To study the response of selected AM fungal species on growth and yield of selected medicinal plant species.
v. To determine the effect of inoculation of AM fungi on essential oil and active ingredients during cultivation.</td></tr>
<tr><td colspan="2">Summary of Comments of RAG:
Dr. Ashwani Kumar, Scientist-E, Forest Protection Division started his presentation on research project titled “Studies on effect of AM inoculations on the active ingredient contents and biomass production in Angelica glauca Edgew. and Valeriana jatamansi Jones” and threw light on problem statement, Review of literature, objectives, Research methods, Action plan, project cost, Predicted outcome and extension plans of the project proposed. During the presentation he said that herbal medicines are gaining popularity as an alternative over allopathic drugs due to tremendous increase in antibiotic resistance in microorganisms and side effects of synthetic antibiotics. The increased demand of medicinal plants have resulted in their over exploitation from wild and resulted in population decline of many high valued medicinal plants. Therefore, efforts are required to cultivate the medicinal plants of economic importance. Angelica glauca and Valeriana jatamansi are important medicinal and aromatic plants species in temperate zone of western Himalayan region. At present, one of the prominent issues in medicinal plants cultivation is the biomass production and quality produce on the basis of active ingredient contents.</td></tr>
</table>

Once, the PI finished his presentation, the following suggestions were made for the refinement of the proposal before submission to RPC.

- Sh. S.P. Negi, IFS, HFRI enquired about the selection of *A. glauca* and *V. jatamansi* for studies as cultivation techniques are already available. Beside this, as per the MoEF, 2010 report, 10 species listed for cultivation and those species are more important. In response, Dr. Ashwani Tapwal replied that his work is on different aspect for the improvement of temperate medicinal plants.
- Dr. R.K.Sud, Sr. Principal Scientist, IHBT, Palampur quarried at what stage and how much time species will be inoculated? He asked for standardization of methodology and need for the equipments for the studies of essential oils as market demand of essential oils of these two species is very high. Beside this, he also suggested for the collaboration with other institutes for this proposed study. In response Dr. V.P. Tewari, Director HFRI said equipments are very costly but we have other institutes having equipments for these studies and we can take services from them.
- Dr. Vimal Kothiyal, ADG, ICFRE inquired about the need of JRF- additional manpower in this project as we have technical staff and 100% utilization of technical staff is needed. The PI responded that for laboratory work and maintaining AM culture etc dedicated staff is required in the project.
- Dr. Rajan Bawa, Retd. Professor, UHF Nauni said culture of AM fungi associated with wild *A. glauca* and *V. jatamansi* should be maintained in the laboratory and given to progressive farmers for the performance trials for growth and yield of selected medicinal plants and this can be further spread to farmers. He also suggested to calculating economic output from the farmers adoption point of view.
- Sh. Subhash Chander, Progressive farmer, J&K. said these two species are very important from economic point of view and studies on these species is needed to be carried out.
- Sh. Alok Nagar, IFS, CCF HPSFD enquired about the percentage of fulfilling the market demand of these two species coming from wild and cultivation and the PI responded his query.
- Sh. Nand Lal Sharma, Prorietor, Nanda Herbals, Kullu shared his experience of field and said in the field *Valeriana jatamansi* has shown good results till first two years after that started drying in Lahaul valley of the state. In response to his experience Dr. Bhupinder, Principal Scientist, UHF, Nauni said this may be due to decrease in soil supporting capacity.

Whether the project has been modified as per RAG comments (if yes, give details):

The Hon'ble member of RAG recommended project for its onward submission to RPC. Accordingly, Dr. Ranjeet Singh, GCR of the institute suggested the PI to include all suggestions given by the RAG members.

Benefits of the project for the society (Not more than 100 words):

The demand for herbal medicines both for internal consumption and export purposes has been continuously increasing in the country day by day. As per the report of WHO still 80% population of developing countries depends upon traditional system of medicine, for their primary health-care needs. More pressure was exerted in the recent past on economically and medicinally important plant species, thus paving way for many such species towards their extinction. *A. glauca* and *V. jatamansi* are such medicinal plant found in higher temperate to alpine zone of the Western Himalayas between 2000-3200 m altitude. Due to overexploitation and unscientific extraction from the natural habitat, the population of these medicinal plants has come down drastically in last couple of decades. Mycorrhizae are known to enhance the growth and secondary metabolites of host plants. The outcome of the project activities will certainly help in improving the yield and a.i. contents of these important medicinal plant species during cultivation in farmer's field. The a.i. contents and essential oils of the medicinal plants, while under cultivation will be targeted to remain under the acceptable limits of the industries.

Project No. 2.	
Project title: Bionomics of Sal Borer, *Hoplocerambyx spinicornis* Newman (Coleoptera: Cerambycidae) in Nahan Forest Division for Developing early-warning System.	
ICFRE Thrust Area: Managing Forests and Forests Products for livelihood support & economic growth	**ICFRE Theme:** **1.** *Integrated pests and disease management*
Score on Technical criteria of Project Assessment (out of 100): 79.47	**Index Score project (project prioritization score):** 834.63
Name & Designation of the PI / Co-PI: **PI:** Sh. Subhash Chander, Scientist-D **Co-PI:** Dr. Ranjeet Singh, Scientist-G **Name of Divisions:** • Forest Protection Division	**Budget outlay of the Project (Rs in lakhs):** Rs. 17.57 lakhs **Duration (start & end date):** April, 2019-March, 2022 **No. of years:** 03 Years

Long term objectives of the project:

1. Identification of biological one factor for developing fore-warning system.

Short term objectives of the project:

1. To study the bionomics of Sal borer, *Hoplocerambyx spinicornis* for searching out factors contributing for the build-up / decline of pest population and developing forewarning system.

2. Survey toestablish the damage thresholds and economic threshold requiring action to prevent loss.

3. Natural enemy complex and their role in keeping the pest population below economic threshold level.

Summary of Comments of RAG:

Dr. Subhash Chandra, Scientist-E, Forest Protection Division, started his presentation on research project titled "**Bionomics of Sal Borer, *Hoplocerambyx spinicornis* Newman (Coleoptera: Cerambycidae) in Nahan Forest Division for Developing early-warning System"** and threw light on Importance of the project, Review of literature, objectives, Research methods, Action plan, project cost and predicted outcome of the project. In his presentation he said Sal forest is well known to harbor maximum biodiversity and being semi-evergreen, constitutes an important ecosystem, which provides cool and calm environment. Collection of Sal seed is an economical activity, which generate large scale employment in rural areas. The Sal borer, *Hoplocerambyx spinicornis* Newman is a serious bark and wood borer in the pure Sal forests in the Indian subcontinent. Presently, the scenario of pest management in this type of forest ecosystem is changing due to changing climatic conditions and other bio-ecological considerations including forest ecosystem services. There is an urgent need to solve such acute and chronic problems. After the presentation discussion on the project held and queries were raised on various issues pertaining to project proposal.

Once, the PI finished his presentation, the following suggestions were made for the refinement of the proposal before submission to RPC.

- Sh. Ajay Kumar Lal, IFS, APCCF (Research) Himachal Pradesh Forest Department, Sunder Nagar enquired about the selection of study site, why Nahan forest division is selected instead of Paonta forest division which is more vulnerable to the Sal Borer attack. The PI replied that past history revealed that the problem of Sal borer was most pronounced in Nahan Forest Division as per the literature available.
- T.D. Verma Retd. Prof. UHF Nauni informed about the epidemic took place in nineties when 9 lakh mature Sal trees were cut down and asked the PI that it is not mentioned in review of literature. Beside this, he also pointed out that to study the early warning system lot of field work is required but, the project period is not

sufficient for such type of studies.

- Dr. R.K.Sud, Sr. Principal Scientist, IHBT, Palampur said integrated pest management package needs to be developed for the Sal forest of Nahan forest division and he also stressed that three year period is not sufficient to study the bionomics of Sal borer, *Hoplocerambyx spinicornis* for searching out factors contributing for the build-up / decline of pest population and developing early-warning warning system. He also questioned about the multiplication of Sal borer, *Hoplocerambyx spinicornis.* In response T.D. Verma Retd. Prof. said Sal borer attack only in stress trees and multiplies by laying eggs on bark.
- Dr. Rajan Bawa, Retd. Professor, UHF, Nauni quarried about the time period of Sal borer attack and its alternate host. In response Dr. Subash Chander said time period of Sal borer attack is June –August and it is a host specific insect.
- Dr. R.S. Rana, Principal Scientist, CSK HPKV, Palampur quarried about the parameters and authenticity of weather data collected during the study and he asked observatory data or weather station data will be collected in this project. In response Dr. Subhash Chandra said he will record data by installing the data logger in the proposed study site.
- Dr. V.P.Tewari, Director HFRI said literature review is not so much updated and needs to include the recent studies as most of the mentioned literature review on Sal borer is 20 years back except two recent reference of TFRI Jabalpur. Beside this, he also asked to relook statistical analysis and statistical design for the proposed study.
- Dr. Vimal Kothiyal, ADG, ICFRE said he is not much satisfied with the proposed project and inquired about the importance of species with reference to Himachal Pradesh and its forest cover. He also quarried about the Sal borer problem in H.P. and said importance of proposed project with respect to J.K & H.P need to be seen. He also suggested Dr. V.P. Tewari, Director, HFRI to involve Dr. Subhash Chander in AICP as he is recently transferred from TFRI Jabalpur to HFRI, Shimla.

Whether the project has been modified as per RAG comments (if yes, give details):

The Hon'ble member of RAG recommended project for its onward submission to RPC. Accordingly, Dr. Ranjeet Singh, GCR of the institute suggested the PI to include all suggestions given by the RAG members.

Benefits of the project for the society (Not more than 100 words):

Sal forest is well known to harbor maximum biodiversity and being semi-evergreen, constitutes an important ecosystem, which provides cool and calm environment. Timber, because of its excellent qualities, is used for different purposes. Collection of Sal seed is an economical activity, which generate large scale employment in rural areas (Namdeo & Pant, 1989). Unfortunately, this beautiful tree has been the victim of notorious pest, Sal heart-wood borer, *Hoplocerambyx spinocornis* Newn. (Coleoptera: Cerambycidae) with a long history of epidemics since 1906 (Stebbing). This problem was referred with time to time from state forest department to research organizations, attended and investigated and the borer epidemics were minimized, where ever, remedial measures adopted. Considerable work on its bio-ecology, chemical ecology and management has been done by various workers from time to time and brought out in the form of publication in reputed journals.

Presently, the scenario of pest management in this type of forest ecosystem is changing due to changing climatic conditions and other bio- ecological considerations including forest ecosystem services. There is an urgent need to handle such acute and chronic problem with more and accurate scientific information on this pest involving functionaries of concerned state forest department.

Project No. 3.	
Project title: Development of seed technology and propagation techniques of *Betula utilis* D. Don and ***Sorbus lanata* (D. Don) Schauer**	
ICFRE Thrust Area: Managing Forests and Forests Products for livelihood support & economic growth	**ICFRE Theme:** • *Seed Science and Technology (A)*
Score on Technical criteria of Project Assessment (out of 100): 82.28	**Index Score project (project prioritization score):** 841.23

Name & Designation of the PI / Co-PI: **PI:** Sh. P. S. Negi, Scientist-C **Co-PI:** Dr. Sandeep Sharma, Scientist-G **Name of Division:** Silviculture and Forest Management	**Budget outlay of the Project (Rs in lakhs):** Rs. 32.18 lakhs **Duration (start & end date):** April, 2019-March, 2024 **No. of years:** 05 Years

Long term objectives of the project:

- Production of nursery stock of *Betula utilis* and *Sorbus lanata* for their sustainable conservation in dry temperate areas of Himachal Pradesh

Short term objectives of the project:

1. To develop seed maturity indices for seed collection of *Betula utilis* and *Sorbus lanata.*
2. To investigate the dormancy in seeds and devise suitable pre-sowing treatments for enhanced germination.
3. To investigate seed storage behaviour and develop seed storage protocol for enhancing longevity.
4. To develop propagation techniques for raising nursery stock.

Summary of Comments of RAG:

Sh. Pitamber Singh Negi, Scientist C, Silvicultue and Forest Management Division, started his presentation on research project titled "**Development of Seed Technology and Propagation Techniques of *Betula utilis* D. Don and *Sorbus lanata* (D. Don) Schauer."** and threw light on problem statement, Review of literature, objectives, Research methods, Action plan, project cost, Predicted outcome and extension plans of the project. In his presentation he said *Betula utilis* and *Sorbus lanata* are socio-ecologically important tree species found in dry temperate areas of H.P. People are using these species in their day-to-day life since time immemorial. Natural population of these species is decreasing due to biotic pressure in their natural habitat and regeneration is quite low in western Himalayan region. So far, standardized technique for artificial regeneration of these species is not available at the field level.

Once, the PI finished his presentation, the following suggestions were made for the refinement of the proposal before submission to RPC.

- T.D. Verma Retd. Prof. UHF Nauni asked about the current status of *Betula utilis* trees in forests. In response Dr. Rajesh Sharma, Scientist, HFRI said that natural regeneration of this species is very low but Udaipur,Pangi and Keylong (H.P.) few very good patches of this species are available.
- Prof. Satish Bhardwaj, UHF Nauni asked the PI to put more light on the shifting trend of *Betula utilis* due to climate change. In response Sh. P.S.Negi said shifting trend is not available and trees are seen only in tree line. Dr. S.S. Samant, Scientist In-charge, GB Pant National Institute of Himalayan Environment & Sustainable Development, Kullu Unit added that based on ecological studies seedlings of this species are shifting and regeneration is very poor and publications are not available on this species.
- Dr. Bhupender Gupta, Principal Scientist, UHF Nauni asked about the dormancy studies on seeds and said morphological and physiological dormancy studies need to be specified in methodology of the proposal and including the details of stratification treatments.
- Dr. R. K.Sud, Sr. Principal Scientist, Institute of Himalayan Bio-resource Technology, Palampur asked why two species viz. *Betula utilis* and *Sorbus lanata* selected for proposed studies and is global literature is silent on these species. In response Dr. S.S. Samant and Dr. V.P.Tewari said focused studies on these two species are not available.
- Dr. Dharam Pal Walia, Principal Scientist and Incharge ICAR Regional Research Station, Shimla said *Betula utilis* is endangered species and there is need to

educate people about the importance of species. Beside this, stressed on artificial regeneration of plant through participation of community in adjoining areas of its distribution and also suggested for genetic diversity studies. ➢ Dr. Vimal Kothiyal, ADG, ICFRE said studies on these two species are already included in AICP and if AICP approves then this project will not be presented in RPC. Beside this, he also said that the project is related to seed technology and propagation but in methodology it is mentioned that vegetative propagules of *Betula utilis* and *Sorbus lanata* will be collected from the field for laying out propagation trials. In response Sh. P.S.Negi said both seeds and vegetative propagules will be tried for propagation of both the species.
Whether the project has been modified as per RAG comments (if yes, give details): The Hon'ble member of RAG recommended project for its onward submission to RPC. Accordingly, Dr. Ranjeet Singh, GCR of the institute suggested the PI to include all suggestions given by the RAG members.
Benefits of the project for the society (Not more than 100 words): *Betula utilis* and *Sorbus lanata* are important broadleaved species found in semi arid and dry temperate areas of Western Himalaya. The natural regeneration in *Betula utilis* and *Sorbus lanata* is quite low due to severe biotic interference in their natural zone of occurrence. Till date, little study has been conducted on seed maturity indices, seed collection time, pre-sowing treatments for better germination, seed storability behaviour and propagation techniques of *Betula utilis* and *Sorbus lanata*. The information on standard seeds and propagation techniques of these species is not available. The development of seed and propagation techniques of forestry species play a significant role in production of planting stock. The quality planting stock raised in the nursery when planted in the field for various plantation programme will subsequently result in enhancement of productivity of forest. Therefore, present research project is of immense significance so far raising of nursery stock and establishment & plantations of these important species is concerned. The outcome of the project work will generate information on seed and propagation techniques of *Betula utilis* and *Sorbus lanata* which will be useful for the local communities and field functionaries of SFDs in carrying out large scale plantations and in conservation of these important species.

Table 6: Thrust area II- Biodiversity conservation and ecological security

Project No. 4.	
Project title: Air pollution tolerance of woody vegetation and physico- chemical properties of soil along the highway from Shimla to Hamirpur	
ICFRE Thrust Area: • Biodiversity Conservation and Ecological Security	**ICFRE Theme:** • *Environment Management*
Score on Technical criteria of Project Assessment (out of 100): 78.0	**Index Score project (project prioritization score):** 778.8
Name & Designation of the PI / Co-PI: **PI:** Dr. Ranjeet Kumar, Scientist-E **Co-PI:** Dr. R. K. Verma, Scientist-G **Name of Division:** • Ecology & Biodiversity Conservation	**Budget outlay of the Project (Rs in lakhs:** Rs. 10.38 lakhs **Duration (start & end date):** April, 2019-March, 2022 **No. of years:** 03 Years
Long term objectives of the project: **1.** Development of strategies to mitigate the affect of air pollution.	

Short term objectives of the project:

1. To study phyto-diversity of forests along highway.
2. To study physico-chemical properties of soil.
3. To study seasonal variation in biochemical parameters and dust accumulation pattern on leaves of trees and shrubs.
4. To evaluate the air pollution tolerance index (APTI) values and screen out pollution tolerant tree and shrub species.
5. To recommend species for plantation along highways.

Summary of Comments of RAG:

Dr. Ranjeet Kumar, Scientist E, Forest Ecology and Climate Change Division, started his presentation on research project titled "**Air pollution tolerance of woody vegetation and physico- chemical properties of soil along the highway from Shimla to Hamirpur"** and threw light on problem statement, Review of literature, Objectives, Research methods, Action plan, Project cost, Predicted outcome and Extension plans of the proposed project. During the presentation he told that Himachal Pradesh is one of the states of India which is known for its beauty, thus inviting lots of domestic and international tourist every year. Vegetation is also adversely affected by anthropogenic activities like air pollution. Tourism & cement industries are main factors which influences the number of automobiles entering the state. Shimla-Hamirpur highway is one of the busiest highways of the state and therefore, has been selected for the proposed study. The main objective is to evaluate the Air Pollution Tolerance Index (APTI) & Anticipated Performance Index (API) values for various species planted or naturally occurring along this highway. Physico-chemical properties of soil will also be analysed. The study will be helpful in separating tolerant and sensitive plant species by estimation of the biochemical parameters.

Once, the PI finished his presentation, the following suggestions were made for the refinement of the proposal before submission to RPC.

- Dr. Rajan Bawa, Retd. Professor, University of Horticulture and Forestry, Nauni asked about the conifers air pollution tolerance capacity and said confers is not mentioned in review of literature. Then he enquired about the effect of dust accumulation on flowering, seed formation, germination, natural regeneration etc. and suggested to include studies on the effect of dust on the health of human and wild animal living in study area if possible. In response to the studies on the effect of dust accumulation on health of human and wild animals. Further Dr. Bawa also informed that two highly resistant weeds viz. *Lantana camera* are abundant along the Shimla-Hamirpur highway and asked whether pollution is also affecting these species and suggested for the identification of indicator species through floristic studies. Dr. Bawa also enquired about the vehicular exhaust pollution and suggested that 10 pockets (tin boxes of size 2-3 cm) can be fixed in different place to catch the dust for present study.

  In response to the suggestion given by Dr. Bawa on seed germination studies Dr. Ranjeet Kumar said it is possible only with collaboration with Silviculture Division of the institute. He also raised the issue of manpower in project and in response Dr. V.P. Tewari, Director, HFRI said apart from project staff we have support staff that can be used in this project.

- Dr. S.S. Samant, Scientist In-charge, GB Pant National Institute of Himalayan Environment & Sustainable Development, Kullu said some studies have already been done and can be referred in proposed studies. He said in this project proposal more focus has been given on air pollution instead of dust pollution as objective mentions study of dust accumulation impact. Hence studies on penology, leaf formation, germination etc. have to be conducted. Beside this, he also enquired about the time period of dust stay on leaf because wind and rain play important role.

- Sh. Ajay Kumar Lal, IFS, APCCF (Research) Himachal Pradesh Forest Department, Sunder Nagar enquired about the area of project activity and asked why you have selected Shimla-Hamirpur highway. In response Dr. Ranjeet Kumar said studies on Shimla-Sunder Nagar highway is already carried out and the movement of cement trucks is very high in Shimla-Hamirpur highway hence this study is proposed. Dr. Lal suggested to study the traffic volume in Shimla-Hamirpur highway to see the type and quantum of pollution in Highway.

- Dr. V.P. Tewari, Director, HFRI told that title of the project is specific and expertise available at HFRI is only in forestry.

- Dr. Bhupender Gupta, Principal Scientist, Department of Silviculture and Agroforestry, College of Forestry, University of Horticulture and Forestry, Nauni asked about phyto-diversity studies, as phyto-diversity means all herb, shrubs and tree in study area and suggested to select some trees and shrubs for the proposed studies. He also stressed that instead of studies on physio-chemical properties of soil, studies on the impact of dust on stomata number on leaves of shrubs and trees need to be correlated for dust resistance.
- Dr. Dharam Pal Walia, Principal Scientist and Incharge ICAR Regional Research Station, Shimla said suitable species should be recommended for plantation along highways as many tree species viz. *Casuarina* etc. are causing pollen allergies.
- Dr. R.K. Sud, Sr. Principal Scientist, Institute of Himalayan Bio-resource Technology, Palampur said budget need to be revised as dust measuring equipment is not included and many types of hand held equipments are available to measure the dust. He suggested to purchase the dust measuring equipment in this project. In response Dr. V.P. Tewari, Director HFRI said there is no restriction on budget but justification is required.
- Dr. R.S. Rana, Principal Scientist, Center for Geo-informatics Research and Training CSK HPKV Palampur suggested to put some geospatial data in this project as in this project Principal investigator is going to refer weather data during the proposed studies.
- Vimal Kothiyal, ADG, ICFRE asked why soil studies are proposed to be carry out in this project and also quarried from highway how much distance vegetation is impacted. In response Dr. Ranjeet Kumar said control will be at the distance of 100 m from road.
- Dr. Bawa Retd. Professor, UHF Nauni enquired how effect of vehicular exhaust will be isolated from dust pollution. Dr. Satish Bhardwaj, Professor, UHF Nauni suggested to buy Rs. 3 Lakh equipment for separating dust and gasses. Dr. HFRI replied that budget of the proposed project can be expended with proper justification.

Whether the project has been modified as per RAG comments (if yes, give details):
The Hon'ble member of RAG recommended project for its onward submission to RPC. Accordingly, Dr. Ranjeet Singh, GCR of the institute suggested the PI to include all suggestions given by the RAG members.

Benefits of the project for the society (Not more than 100 words):
Plants which are an important part of all ecosystems play a crucial role in monitoring and maintaining ecological balance. Plants are also most likely to be affected by pollution caused by traffic along national highways and essential base for all ecosystem. Air pollution receives one of the prime concern in India. Primarily due to rapid economic growth, industrialization and urbanization with associated increase in energy demands. Lacks of implementation of environment regulation are contributory to the bad quality of most of the Indian cities. The air pollution due to anthropogenic activities seriously affected human life and vegetation. Plants are initial acceptors and act as scavengers for air pollution, reduces the pollutant levels in the environment by absorbing various accumulated pollutants. Plants are most likely to be affected by airborne pollutants, and the effects are widely observed on the leaves. Bio-monitoring of plants is an important tool to evaluate the impact of air pollution.

Table 7: Thrust area III- Forest and Climate Change

Project No. **Nil**	
Project title	
ICFRE Thrust Area:	ICFRE Theme:
Score on Technical criteria of Project Assessment (out of 100):	Index Score project (project prioritization score)
Name & Designation of the PI/ Co-PI Name of Division:	Budget outlay of the Project (Rs in lakhs: Duration (start & end date): No. of years:
Long term objectives of the project:	

Short term objectives of the project:
Summary of Comments of RAG:
Whether the project has been modified as per RAG comments (if yes, give details)
Benefits of the project for the society (Not more than 100 words):

Table 8: Thrust area IV-Forest Genetic Resource Management and Tree Improvement

Project No. **Nil**	
Project title	
ICFRE Thrust Area:	ICFRE Theme:
Score on Technical criteria of Project Assessment (out of 100):	Index Score project (project prioritization score)
Name & Designation of the PI / Co-PI Name of Division:	Budget outlay of the Project (Rs in lakhs: Duration (start & end date): No. of years:
Long term objectives of the project: Short term objectives of the project:	
Summary of Comments of RAG:	
Whether the project has been modified as per RAG comments (if yes, give details)	
Benefits of the project for the society (Not more than 100 words):	

Form-6

Thrust area wise summary of New Research Projects proposed by the ICFRE Institutes for 2019-20

NAME OF THE INSTITUTE: ….		**Man Power (give number only)**									
THRUST AREA	**No of Projects**	**RA**	**SRF**	**JRF**	**JPF**	**PA**	**FA**	**TA**	**Con.**	**DEO**	**Total**
Managing Forests & Forest Products for Livelihood Support and Economic Growth	**03**	--	--	--	03	--	--	--	--	--	**03**
Biodiversity conservation & ecological security	**01**	--	--	01	--	--	--	--	--	--	**01**
Forests and Climate Change	**--**	--	--	--	--	--	--	--	--	--	**--**
Forest Genetic Resource Management & Tree Improvement	**--**	--	--	--	--	--	--	--	--	--	**--**
Total Projects	**04**	**--**	**--**	**01**	**03**	**--**	--	--	--	--	**04**
RA: Research Associate, SRF: Senior Research Fellow, JRF: Junior Research Fellow, PA: Project Assistant, FA: Field Assistant, TA: Technical Assistant, Con: Consultant DEO: Data Entry Operator											

Note: Give number only. Figures should match with Form 5 (Tables 5-8)

Form-7
(Tables 9-12)

Thrust area wise list of New Projects and Detailed budget for 2019-20

Table 9: Thrust area I-Managing Forests and Forests Products for livelihood support & economic growth

Thrust area wise list of NEW RESEARCH PROJECTS														
Thrust area I: Managing Forests and Forests Products for livelihood support & economic growth														
S. No.	**Project title/PI/Duration (Start and end year)**	**Total cost of the Project (Rs. in Lakhs)**						**Details of budget required for 2019-2020 (Rs. in lakhs)**						**Required Manpower (RA/SRF/ JRF/JPF/ PA/ FA etc.)**
		Total cost (Rs. in Lakhs) (sum of 4 to 8)	**Sub-head wise breakup of total cost**					**Budget required for 2019-2020 (Sum of 10 to 14)**	**Sub-head wise breakup for 2019-2020**					
			Consumables (M&S)	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		**Consumables (M&S)**	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
I) Institute: Himalayan Forest Research Institute, Shimla														
01	Studies on effect of AM inoculations on the active ingredients contents and biomass production in *Angelica glauca* Edgew. and *Valeriana jatamansi* Jones **PI:** Dr. Ashwani Tapwal , Scientist-E **Co-PI:** Dr. Sandeep Sharma, Scientist-G **Duration:** 5 Years (April, 2019-March, 2024)	**26.33**	1.4	8.8	4.0	0.4	11.13	**4.67**	0.5	0.7	1.0	0.4	2.07	**JPF-01**
02	Bionomics of Sal Borer, *Hoplocerambyx spinicornis* Newman (Coleoptera: Cerambycidae) in Nahan Forest Division for Developing early-warning System. **PI:** Sh. Subhash Chandra, Scientist-D **Co-PI:**	**17.57**	1.60	3.00	5.50	1.00	6.47	**5.67**	0.60	0.50	1.50	1.00	2.07	**JPF-01**

	Dr. Ranjeet Singh, Scientist-G **Duration:** 3 Years (April, 2019-March, 2023)													
03	Development of seed technology and propagation techniques of *Betula utilis* D. Don and ***Sorbus lanata* (D. Don) Schauer.** **PI:** Sh. P. S. Negi, Scientist-C **Co-PI:** Dr. Sandeep Sharma, Scientist-G **Duration:** 5 Years (April, 2019-March, 2024)	**32.18**	1.45	11.4 + Other Publication & Extension 0.75 + 1.00 = 13.15	6.45	--	11.13	**4.82**	0.25	1.50	1.00	--	2.07	**JPF-01**

Table 10: Thrust area II- Biodiversity conservation and ecological security

Thrust area wise list of NEW RESEARCH PROJECTS														
Thrust area II- Biodiversity conservation and ecological security														
S. No.	**Project title/PI/Duration (Start and end year)**	**Total cost of the Project (Rs. in Lakhs)**						**Details of budget required for 2019-2020 (Rs. in lakhs)**						**Required Manpower (RA/SRF/ JRF/ PA/ FA etc.)**
		Total cost (Rs. in Lakhs) (sum of 4 to 8)	**Sub-head wise breakup of total cost**					**Budget required for 2019-20 (Sum of 10 to 14)**	**Sub-head wise breakup for 2019-20**					
			Consumables (M&S)	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		**Consumables (M&S)**	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
I) Institute: Himalayan Forest Research Institute, Shimla														
01	Air pollution tolerance of woody vegetation and physico- chemical properties of soil along the highway from Shimla to Hamirpur	**10.38**	1.05	0.45	2.4	--	6.48	**3.423**	0.50	0.10	0.75	--	2.073	**JRF-01**

	PI: Dr. Ranjeet Kumar, Scientist-E **Co-PI:** Dr. R. K. Verma, Scientist-G **Duration:** 5 Years (April, 2017-March 2022)													

Table 11: Thrust area III- Forest and Climate Change

Thrust area wise list of NEW RESEARCH PROJECTS														
Thrust area III- Forest and Climate Change														
S. No.	**Project title/PI/Duration (Start and end year)**	**Total cost of the Project (Rs. in Lakhs)**						**Details of budget required for 2017-2018 (Rs. in lakhs)**						**Required Manpower (RA/SRF/ JRF/ PA/ FA etc.)**
			Sub-head wise breakup of total cost						**Sub-head wise breakup for 2017-18**					
		Total cost (Rs. in Lakhs) (sum of 4 to 8)	**Consumables (M&S)**	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**	**Budget required for 2017-18 (Sum of 10 to 14)**	**Consumables (M&S)**	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
I) Institute:														
	NA													

Table 12: Thrust area IV- Forest Genetic Resource Management and Tree Improvement

Thrust area wise list of NEW RESEARCH PROJECTS														
Thrust area IV- Forest Genetic Resource Management and Tree Improvement														
S. No.	**Project title/PI/Duration (Start and end year)**	**Total cost of the Project (Rs. in Lakhs)**						**Details of budget required for 2017-2018 (Rs. in lakhs)**						**Required Manpower (RA/SRF/ JRF/ PA/ FA etc.)**
		Total cost (Rs. in Lakhs) (sum of 4 to 8)	**Sub-head wise breakup of total cost**					**Budget required for 2017-18 (Sum of 10 to 14)**	**Sub-head wise breakup for 2017-18**					
			Consumables (M&S)	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**		**Consumables (M&S)**	**Research Expenditure (FRE)**	**Travel And Conveyance (Res)-TE**	**Capital (Scientific Equipments)**	**Fellowship**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
I) Institute:														
	NA													

Form-8

Table: Tentative total budget requirements (Ongoing, Ongoing with Change Request and New Research Projects) for 2019-20 of ICFRE Institutes (Rs in lakhs)

Institute: Himalayan Forest Research Institute, Shimla

Sl. No	Institutes	Consumables (M & S)	Research Expenditure (FRE)	Travel and conveyance (Res) - TE	Capital (Scientific Equipments)	Fellowship	Total (A)
		Requirements of research projects					
1	Ongoing Projects	1.88	3.14	7.45	-	17.42	**29.89**
2	Ongoing with CHANGE REQUEST	1.90	2.75	2.20	0.50	7.50	**14.85**
3	New Projects (For first year of the project)	1.85	2.80	4.25	1.40	8.283	**18.583**

Note: Total should match with Form No. 1(Tables 1-4), 2 and 7(Tables 9-12).

Form-9

Table: Budget required for 2019-20 for research activities other than research projects (Rs in lakhs)

Name of the Institute: Himalayan Forest Research Institute, Shimla (H.P.)

Sl. No	Proposed Activities	Consumables (M & S)	Research expenditure (FRE)		Travel and conveyance (Res) - TE	Capital (Scientific Equipments)		Maintenance of equipments used in research	RAG Meetings	Total
			General FRE	Engagement of unskilled / skilled worker (other than research projects)		Part of Approved research projects*	Not part of research projects			
1.	**e.g.** Maintenance of Nurseries	02.50	03.00	02.50	01.50	--	--	--		**09.50**
2.	Maintenance of plantation, research plots	--	01.50	01.50	01.00	--	--	--	--	**04.00**
3.	Maintenance of scientific equipments, labs	--	--	--	--	--	--	06.00	--	**06.00**
4.	Maintenance of field station	01.50	05.00	03.50	01.50	--	--	--	--	**11.50**
5.	Working Plan	--	--	--	--	--	--	--	--	--
6.	Seed bank	--	--	--	--	--	--	--	--	--
7.	Patent fees	--	--	--	--	--	--	--	--	--
8.	RAG Meeting	--	--	--	--	--	--	--	02.00	**02.00**
	Total	04.00	09.50	07.50	04.00	--	--	06.00	02.00	**33.00**

Note:

*Figure should match with requirement of research projects.

1. While giving the requirements, Institutes are requested to include their Research Centers also.
2. Justification: Provide proper detailed justification on separate sheet for the above budget requirement.
3. This table is for budget requirement for maintenance of nurseries/plantation/research plots, maintenance of scientific instruments, maintenance of laboratories, maintenance of field stations, laboratories, equipments, seed bank, patent fees and working plan etc.
4. Examples under proposed activities are given, may vary from Institute to Institute. The budget in this table will be discussed during RPC. Directors therefore are requested to come prepared.

CONCLUDING REMARKS

In the end of the meeting, **Dr. V.P. Tewari, Director, HFRI** and **Chairman** of the **Research Advisory Group** made his concluding remarks about the day's proceedings. He said that all the Hon'ble Members of RAG must be satisfied with the processes and progress made by the scientists under various research projects being implemented by them. He also showed his satisfaction on the new research proposals proposed during the year. He thanked **all the Hon'ble members of RAG** and the scientist involved for the related arrangements for making this important meeting of the Council in general and the Institute in particular a great success. Besides, he also thanked Hon'ble RAG members for their contributions in one way or other during the meeting. He was also quite appreciative of the Officers and Scientists for showing their keen interest in the activities of HFRI and shared his happiness after watching the enthusiasm he observed during the proceedings.

VOTE OF THANKS:

At the end, **Dr. Ranjeet Singh, Scientist-G, Group Coordinator Research and Members Secretary, RAG meeting** proposed a vote of thanks to the Hon'ble members of RAG and other distinguished participants for sharing their experience and providing best suggestions for fine tuning of the proposed research proposals. He added that the Scientists of this Institute will definitely be benefited from the fruitful interactions held during the day. He also thanked the Director, HFRI and the team of Research Coordination Division of the institute for making this event a grand success.

******