



## AFoCO-NIFoS Joint Research Project Document

<b>Project code</b>	<i>AFoCO/019/2020</i>
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<b>Research Project Profile</b>				
<b>Research Title</b>	<b>Assessment of adelgid diversity and distribution in conifer forest of Bhutan to mitigate future outbreaks</b>			
<b>Research Duration</b>	Start date: 1 <sup>st</sup> October, 2020 End date: 30 <sup>th</sup> September, 2022			
<b>Implementing Institution</b>	Ugyen Wangchuck Institute for Conservation and Environmental Research, Department of Forests and Park Services, Ministry of Agriculture and Forests			
<b>Country</b>	Bhutan			
<b>Research Site</b>	Major Conifer growing Districts (Bumthang, Gasa, Paro, Haa, Thimphu, Punakha, Wangdiphodrang, Trashigang, Trashigang, Trashigang, Trashigang)			
<b>Main objective</b>	<ul style="list-style-type: none"> <li>• To determine the species of adelgids found in Bhutan.</li> <li>• To survey and assess the distribution of adelgids in conifer forest of Bhutan.</li> <li>• To develop management strategies for controlling the spread of adelgids in conifer forest of Bhutan.</li> <li>• To train forestry professionals and local communities in identification, survey and control of the insect.</li> <li>• To monitor the spread of the insect.</li> </ul>			
<b>Thematic Areas</b>	<ul style="list-style-type: none"> <li>• Forest disaster management</li> <li>• Climate change and forestry</li> </ul>			
<b>Budget and source of finance</b>	Total: <u>US\$ 60,976</u> AFoCO: <u>US\$ 32,862</u> National: <u>US\$ 28,114</u> (in-kind) Others: N/A			
<b>Proponent Profile</b>				
<b>Name/ Position</b>	Dr. Kaka Tshering Position: Principal Forestry Officer			
<b>Organization</b>	Ugyen Wangchuck Institute for Conservation and Environmental Research, Department of Forests and Park Services, Ministry of Agriculture and Forests			
<b>Address</b>	Ugyen Wangchuck Institute for Conservation and Environment Research, Lamai Goempa, Bumthang, P.O. Box no 155. Bhutan			
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## Section D. Research Budget of Objectives/Outputs/Activities

### 1. Work Plan and Schedule

Outputs	Performance Indicator	Responsible Person/ Body	Annual Timeline									Remarks
			2020	2021				2022				
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
<b>Objective 1: Determine the species of adelgids found in Bhutan</b>												
<b>Output 1: Species of adelgids in Bhutan Authoritatively determined</b>												
<i>A.1: Analysis of adelgids samples (including transportation and laboratory analysis)</i>	<i>Analysis report/ communication</i>	<i>UWICER</i>										
<i>A.2: Procure insect preservatives(alcohol and collection vials)</i>	<i>alcohols and 5 ml vials procured</i>	<i>UWICER</i>										
<b>Objective 2: To survey and assess the distribution of adelgids in conifer forest of Bhutan</b>												
<b>Output 2: Scientific paper published on diversity and distribution of adelgids in Bhutan</b>												
<i>B.1: Survey of adelgids in the conifer zone of Bhutan*</i>	<i>Survey to be completed by winter 2021 and spring 2022</i>	<i>UWICER / field offices</i>										
<i>B.2: Draft manuscript on diversity and distribution of adelgids in Bhutan and submit to relevant peer review journal</i>	<i>Manuscript submitted to scientific journal</i>	<i>UWICER</i>										
<b>Objective 3: Develop management strategies for controlling the spread of adelgids in conifer forest of Bhutan in consultation with experts and users (field officials)</b>												
<b>Output 3: Preparation of technical brief containing adelgids species and its control measures for adoption into forest strategies and management plans</b>												
<i>C.1: One day writeshop on the preparation of technical brief on adelgids</i>	<i>Technical brief prepared</i>	<i>UWICER</i>										

C.2: Packaging and printing of Technical brief	Technical brief packaged and printed	UWICER																	
<b>Objective 4: Build capacity of forestry professionals and local communities in identification, survey and control of the insect</b>																			
<b>Output 4: Forestry staffs and local community level forest managers are trained in identifying forest health problems and improve forest health to reduce insect outbreak</b>																			
D.1:Conduct of ToT (Training of Trainers) for at least 20 individuals from Filed division, Parks and Community forestry on pest detection, surveillance, specimen collection and reporting	TOT conducted/Training report	UWICER																	
D.2: Second level training in the field and park office by 20 ToT to at-least 2 staffs by each trainer	Training completed/Training report	UWICER																	
<b>Objective 5: To Monitor the spread of the insect</b>																			
<b>Output 5: Insect pest and outbreak will be incorporated into the already existing SMART system</b>																			
E.1: insect detection reporting will be incorporated into Spatial and Monitoring and Reporting Tool System (consultation meeting will be held for core group members)	consultation meeting conducted/insect reporting interface incorporated into SMART	FPED																	
E.2: Conduct ToT (Training of Trainers for pest and disease component in SMART), using the pest interface in SMART	TOT conducted on SMART/Training report	FPED																	

NOTE\*: Survey of adelgids is part of the regular activity of the Department of Forests and Park Services (DoFPS)

## 2. Budget Plan

Activity	Allocation by Unit				Allocation by Year/ Quarter								
	Unit Cost (USD)	Quantity	Unit	Total Cost	2020	2021				2022			Total Cost
					Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
<b>Objective 1: Determine the species of adelgids found in Bhutan</b>													
<b>Output 1: Authoritative determination of species of adelgids found in Bhutan</b>													
<i>A.1: Analysis of adelgids samples (including transportation and laboratory analysis)</i>	629	8 batches of samples	8	5,029		1,257			1,886	1,886			5,029
<i>A.2: Procure insect preservatives (20 liters alcohol)</i>	15	20 litres	20	300	300								300
<i>A.2: Procure insect preservatives( 2000 nos of 5 ml collection vials )</i>	0.1	2000 X 5ml vials	2,000	200	200								200
<b>Objective 2: To survey and assess the distribution of adelgids in conifer forest of Bhutan</b>													
<b>Output 2: Scientific paper published on diversity and distribution of adelgids in Bhutan</b>													
<i>B.1: Survey of adelgids in the conifer zone of Bhutan*</i>													
<i>B.2: Draft manuscript on diversity and distribution of adelgids in Bhutan and submit to relevant peer review journal</i>	2,554	1	1 manuscript	2,554						2,554			2,554
<b>Objective 3: Develop management strategies for controlling the spread of adelgids in conifer forest of Bhutan in consultation with experts and users (field officials)</b>													
<b>Output 3: Preparation of technical brief containing adelgids species and its control measures for adoption into forest strategies and management plans</b>													
<i>C.1: One day writeshop on the preparation of technical brief on adelgids</i>	544	1	Technical brief prepared	544								544	544

<i>C.2: Packaging and printing of Technical brief</i>	1,000	1	Technical brief packaged and printed	1,000								1,000	1,000
<b>Objective 4: Build capacity of forestry professionals and local communities in identification, survey and control of the insect</b>													
<b>Output 4: Forestry staffs and local community level forest managers are trained in identifying forest health problems and improve forest health to reduce insect outbreak</b>													
<i>D.1: Conduct of ToT (Training of Trainers) for at least 20 individuals from field division, Parks and Community forestry on pest detection, surveillance, specimen collection and reporting</i>	250	20	20 participants	5,000		5,000							5,000
<i>D.2: Second level training in the field and park office by 25 ToT to at-least 2 staffs</i>	250	44	44 participants	11,000			3,667	3,667	3,666				11,000
<b>Objective 5: To Monitor the spread of the insect</b>													
<b>Output 5: Insect pest and outbreak will be incorporated into the already existing SMART system</b>													
<i>E.1: Insect detection reporting will be incorporated into Spatial and Monitoring and Reporting Tool System (consultation workshop will be held for core group members)</i>	715	1	1 workshop	715	715								715
<i>E.2: Conduct ToT (Training of Trainers for pest and disease component in SMART), using the pest interface in SMART</i>	150	20	20 participants	3,000			3,000						3,000
<b>Subtotal (Objective 1~xx) (I)</b>				<b>29,342</b>	<b>1,215</b>	<b>6,257</b>	<b>6,667</b>	<b>3,667</b>	<b>5,552</b>	<b>4,440</b>		<b>1,544</b>	<b>29,342</b>
<b>Program Support (12% of subtotal) (II) Financial Regulations 3.4</b>				<b>3,520</b>									
<b>Total (I + II)</b>				<b>32,862</b>									

NOTE\*: Survey of adelgids is part of the regular activity of the Department of Forests and Park Services (DoFPS).



### 3. National Contribution in Kind

Sl no	Contribution type	Amount in Nu.	Amount in US \$	Source of Budget
1.	Salary for two research			
	Kaka Tshering (Lead researcher)	1,070,880 (Nu. 44,620 X 24 Months)	15,298	RGoB (Royal Government of Bhutan)
	Tsherwang Norbu (Research Team member)	831,888 (Nu. 34,662 X 24 Months)	11,884	RGoB
2.	TA/DSA for field work for two person	50,000	714	RGoB
3.	Vehicle and Transport	15,240	218	RGoB
	<b>Total</b>		<b>28,114</b>	

