Template/Pro forma for Submission

NMHS-Himalayan Institutional Project Grant

NMHS-FINAL TECHNICAL REPORT (FTR)

Demand-Driven Action Research and Demonstrations

NMHS Grant Ref. No.:	**NMHS 2020-21_MG70-01**	**Date of Submission:**	2	4	1	2	2	0	2	4
			d	**D**	**m**	**m**	**Y**	**y**	**y**	**Y**

"DEVELOPMENT OF SITE SPECIFIC AND APPROPRIATE CROP/ENTERPRISE BASED MODELS SUITABLE FOR DIFFERENT AGRO-ECO SITUATIONS OF KASHMIR"

Project Duration: *from* (**16.06.2020**) *to* (**31.07.2024**)

***Submitted to*:**

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NMHS-Final Technical Report (FTR)

Demand-Driven Action Research Project

DSL: Date of Sanction Letter

1	6	0	6	2	0	2	0
d	d	m	m	y	y	y	y

DPC: Date of Project Completion

3	1	0	7	2	0	2	4
d	d	m	m	y	y	y	y

Part A: Project Summary Report

1. Project Description

i.	Project Grant Ref. No.:	NMHS 2020-21_MG70-01							
ii.	Project Category:	Small Grant		Medium Grant	√	Large Grant			
iii.	Project Title:	**Development of site specific and appropriate crop/enterprise based models suitable for different agro-eco situations of Kashmir**							
iv.	Project Sites (IHR States/ UTs covered)	Jammu & Kashmir (UT) and Ladakh (UT)							
v.	Scale of Project Operation:	Local		Regional	√	Pan-Himalayan			
vi.	Total Budget:	Rs. 8086520 (in Cr)							
vii.	Lead Agency:	NMHS							
	Lead PI/ Proponent:	Dr. Imtiyaz Jahangir Khan Assistant Professor-cum-Junior Scientist Division of Environmental Sciences Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K) Shalimar Campus - 190 025 Srinagar, J&K, Email.ijk_786@rediffmail.com							
	Co-PI/ Proponent:	Dr. Zahoor Ahmad Bhat Associate Professor-cum-Senior Scientist Division of FLA Faculty of Horticulture SKUAST-Kashmir, Shalimar 190 025, Srinagar, J & K							
viii.	Implementing Partners:	1. Department of Agriculture 2. Department of Horticulture 3. Krishi Vigyan Kendras of Kashmir							
	Key Persons (Contact Details, Ph. No., E-mail):	Dr. Bilal (Programme Co-ordinator, Gurez)							

2. Project Outcomes

2.1. Abstract/ Summary

Background: With 84.33 million scheduled tribes, or 8.6% of the country's population, India has the second-largest tribal population in the world. The tribal areas of Kashmir valley and Ladakh happen to be the most disadvantaged regions due to their economic, social and regional specificities. **Objectives/ Aim**: The project seeks to address the issue by developing customized agricultural models that optimize the use of local resources, enhance productivity and promote sustainability in different agro-ecological zones. **Methodology:** PRA tools, multi-stage proportionate sampling and data collection methods were followed to validate the data. **Approach:**-We conducted our research as per field surveys and statistical analysis.

Results: After studying 08 districts, 30 villages were selected on the basis of high tribal populations. The tribes, primarily dependent on forests, agriculture, and labor, live below the poverty line with limited resources. About 45% of the workforce is engaged in farming and livestock rearing. New varieties of seeds (fodder and pulses), vegetables, fruits, vermi-compost, floriculture, ornamental plants, mushroom units, improved agricultural tools, poultry birds, bee hives, sewing machines were provided to the farmers as a result of which money, labour and space were saved which results in increasing the income of farmers. The increase in income was 41, 4.5, 37.54, 58.6, 31.48, 17.3, 45.94 and 38.20 % when provided new seed varieties; tools and equipment's; poultry; bee hives; mushroom units; floriculture units; fruit and vegetable seedlings and vermicomposting units respectively. Further different trainings were given to farmer community particularly women that lead to financial independence and capacity to support their families.

Conclusions: This study supports the idea of expanding the use of modern agricultural technologies which enhanced the profitability of family farms. To help family farms adopt these technologies and boost productivity, several measures should be implemented: (1) Understand farmers' needs when developing new technologies to ensure better alignment with agricultural demands. (2) Establish a feedback and service evaluation mechanism to reduce costs and increase technology adoption. (3) Encourage family farms to join agricultural cooperatives for better exchange of knowledge and promotion of new methods. (4) Organize farmer visits to successful farms adopting new technologies and create platforms for information exchange. (5) Select younger, more educated farmers as model households for technology adoption to encourage wider acceptance. This study differs from previous research

by examining the impact of multiple agricultural technologies on farm income, provided evidence of the link between new technology adoption and increased revenue. Recommendations: The study recommends use of improved crop types, promoting high-yielding fodder seeds, vegetable cultivation under poly houses especially during winters, and high-quality fruit varieties, alongside utilizing farmyard waste for mushroom production and introducing cold water fisheries. It also suggests developing sustainable poultry, enhancing cattle farming with feed banks, and improving water resource management through establishment of low cost ponds, irrigation infrastructure repair and expansion.

2.2. Objective-wise Major Achievements

S#	Objectives	Major achievements (***in bullets points***)
1.	Development of site specific and appropriate crop /enterprise based models suitable for different agro-ecological situations	• Site-specific models developed: 30 models • No. of villagers benefited =713
2.	Integrating as many of the enterprises as possible from crop production, animal husbandry, horticulture, fisheries, value addition, etc.	• Integration of enterprises : Fruit crops; Field Crops; Vegetables; Mushroom; Poultry; Vermicomposting units; Low cost water ponds; Floriculture; Greenhouses; Cutting and tailoring; Agroforestry, Honey bee colonies, agricultural tools, etc.
3.	Socio-economic upliftment of farmers, women, youth and tribal populations of project area by demonstrating region specific IFS models	• Increase in average income of farmers = Rs.30-40 / day • Average yield increased from 40-50 % • No. of trainings & awareness programs conducted = 37

2.3. Outputs in terms of Quantifiable Deliverables*

S#	Quantifiable Deliverables*	Monitoring Indicators*	Quantified Output/ Outcome achieved	Deviations, if any, & Remarks thereof:
01	Development of site specific and appropriate crop /enterprise based models suitable for different agro-ecological situations.	• 30 number of models to be established. • Upliftment of socio-economic conditions of hill women and farmers (Net income/family) • Number of beneficiaries of SC & ST community /village/ (600) • No. of reports/research articles and papers published • Raising the overall farm productivity • Presentations at national and international conferences	• Models established 30 numbers. • Net increase in income @ 40-50 % per family. • Target achieved: Number of beneficiaries of ST/villager were 713 • • 04 • 30% • • 04	ANNEXURE (II and III)
02	Integrating as many of the enterprises as possible from crop	Increase in yield of crops and other different enterprises of farmers	Fruit crops = 25 % Field Crops = 30% Vegetables= 40%	ANNEXURE (II and III)

	production, animal husbandry, horticulture, fisheries, value addition, etc.	(~30 % increase). Doubling the income of farmers (~100% from present level).	Mushroom= 60% Poultry= 30% After successful interventions, farmer's income raised to double.	
03	Socio-economic upliftment of farmers, women, youth and tribal populations of project area by demonstrating region specific IFS models.	Horizontal/vertical spread of models Involving unemployed youth, women of SC / ST communities, farmers through various trainings & awareness programs by which the spread of technology both in vertical and horizontal directions	• 37 No. of trainings/awareness programmes were carried out. • 10 Entre-preneurships were established	ANNEXURE (IV) ANNEXURE (V)

*As stated in the Sanction Letter issued by the NMHS-PMU.

2.4. Strategic Steps with respect to Outcomes (in bullets)

S#	Particulars	Number/ Brief Details	Remarks/ Attachment
1.	New Methodology/ Technology developed, *if any*:	NA	NA
2.	New Ground Models/ Process/ Strategy developed, *if any*:	30 models developed	ANNEXURES (II & III)
3.	New Species identified, *if any*:	NA	NA
4.	New Database established, *if any:*	NA	NA
5.	New Patent, *if any*:		
	I. Filed (Indian/ International)	NA	NA
	II. Technology Transfer, *if any*:		
6.	Others, *if any*	NA	NA

3. New Data Generated over the Baseline Data

S#	New Data Details	Status of Existing Baseline	Addition and Utilisation New data
1	30 models developed	30 models were developed for agro-eco situations of Kashmir and Ladakh	ANNEXURE (II & III)

4. Demonstrative Skill Development and Capacity Building/ Manpower Trained

S#	Type of Activities	Details with number	Activity Intended for	Participants/Trained			
				SC	**ST**	**Women**	**Total**
1.	Workshops	**-**	Farmers and unemployed youth	**-**	**-**	**-**	**-**
2.	On-Field Trainings	**27**	Farmers	**-**	**500**	**600**	**1100**
3.	Skill Development	**10**	Unemployed women	**-**	**200**	**200**	**200**
4.	Academic Supports	**08**	Masters & Ph.D. Candidate	**-**	**-**	**04**	**08**
	Others (if any)	**-**	**-**	**-**	**-**	**-**	**-**

Note: Further details may be summarized in DPR Part-B. Supporting materials may be enclosed as annexure/ appendix separately to the FTR.

5. Linkages with Regional & National Priorities (SDGs, INDC, etc.)/ Collaborations

S#	Linkages /collaborations	Detail of activities	(No. of Events Held)*	No. of Beneficiaries
1.	Sustainable Development Goals (SDGs)	• Awareness on 'No to plastics' • Solid waste Management	10 30	1000 100
2	Climate Change/INDC targets addressed	• Celebrations on world environmental day, ozone day, Dal walk, etc.	06	2100
3.	Any other:	8 students enrolled in M.Sc. and Ph.D	00	08

6. Project Stakeholders/ Beneficiaries and Impacts

S#	Stakeholders	Support Activities	Impacts in terms of income generated/green skills built
1.	Line Agencies/ Gram Panchayats	Provided inputs, manpower, other logistics and assisted in site and beneficiary identification	Helped in socio-economic development of farmers, youth and women.
2.	Govt Departments (Agriculture/ Forest/ Water):	-do-	Helped in socio-economic development of farmers, youth and women
3.	Villagers/ Farmers:	Assisted in conducting PRA at each site and carrying all project proceedings in all selected areas.	Helpful for identification and selection of farmers, sites for model development
4.	SC Community:	N.A.	NA
5.	ST Community:	Assisted in conducting PRA at each site and carrying all project proceedings in all selected areas.	Helpful in farmers income and entrepreneurship development
6.	Women Group:	Interaction and identification of target women farmers for group development and management approach.	Skill development and self-employment for women folk of tribal women.
	Others, *if any*:	Eight students enrolled in masters and Ph. D degree programme.	Helpful for identification of niche areas for socio-economic development

7. Financial Summary (Cumulative)

Please attach the consolidated and audited Utilization Certificate (UC) and Year-wise Statement of Expenditure (SE) separately, *ref*. **Annexure I.**

8. Major Equipment/ Peripherals Procured under the Project** (*if any*)

S#	Name of Equipment	Quantity	Cost (INR)	Utilisation of the Equipment after project
1.	Camera	01	0.60 lakh	Office
2.	Laptop	01	0.80 lakh	-do-
3.	Printer with accessories	01	0.25 lakh	-do-

Details should be provided in details **(*ref.* **Annexure III &IV).**

9. Quantification of Overall Project Progress

S. No.	Parameters	Total (Numeric)	Remarks/ Attachments/ Soft copies of documents
1.	IHR States/ UTs covered:	02	
2.	Project Sites/ Field Stations Developed:	30	*Annexure(II & III)*
3.	Scientific Manpower Developed (PhD/M.Sc./JRF/SRF/ RA):	13	*Annexure (V)*
4.	Livelihood Options promoted	10	*Annexure (VI)*
5.	Technical/ Training Manuals prepared	01	-
6.	Processing Units established, if any	03 (photos)	-
7.	No. of Species Collected, if any	*N.A*	-
8.	No. of New Species identified, if any	*N.A*	-
9.	New Database generated (Types):	*N.A*	-
	Others (if any)	-	-

10. Knowledge Products and Publications:

S#	Publication/ Knowledge Products	*Number*		*Total Impact Factor*	*Remarks/* Enclosures
		National	International		
1.	Journal – Research Articles/ Special Issue:	03	01	5.0	-
2.	Book – Chapter(s)/ Monograph/ Contributed:		-	-	-
3.	Technical Reports:	1	-	-	-
4.	Training Manual (Skill Development/ Capacity Building):	1	-	-	-
5.	Papers presented in Conferences/Seminars:	02	-	-	-
6.	Policy Drafts/Papers:	01	-	-	-
7.	Others, if any:		-	-	-

11. Recommendation on Utility of Project Findings, Replicability and Exit Strategy

Particulars	Recommendations
Utility of the Project Findings:	• This project approach is a location specific and knowledge intense approach. • The empirical findings of this study provide credence to the idea that expanding the use of modern agricultural technologies will boost the profitability of family farms. • To create a farmer's demand-oriented agricultural new technology service system. • Identifies barriers to adoption and provide appropriate solutions. • Strengthens, livelihoods by improving access to services, knowledge and resources.

	• Encourage the incorporation of family farms into agricultural cooperatives and make use of cooperatives. • Choose demonstration households for new technology marketing wisely. • To enhance adoption of agro-ecological smart technologies for environmentally sound, ecologically balanced and economically remunerative approaches for sustainable rural development.
Replicability of Project/ Way Forward:	• There are opportunities and limitations in the adoption or transformation of technology, and depending on their nature, they must be treated differently in various contexts. • Development professionals must help communities strengthen their ecological and social infrastructure demands.
Exit Strategy:	• The construction of social and ecological infrastructure can result in a positive feedback cycle, project evaluation that can lead to real sustainable community development and the full empowerment of farmers and the organizations that support them. • The linkages were developed with line departments and Krishi Vigyan Kendras of respective areas for monitoring of project sites.

PRINCIPAL INVESTIGATOR (NMHS-Project) Division of Environmental Sciences

(PROJECT PROPONENT/ COORDINATOR)

Place: SKUAST-K

Date: 21/01/2025