



Inception Report

Output 1

Sustainable Agriculture Technology (SAT) ADPC Climate Innovation Challenge (ADPC CIC)

31 January 2021

The report is prepared by Pro Nature Alliance R&D for the ADPC Climate Innovation Challenge.

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General Information

Project Name	ADPC Climate Innovation Challenge
Assignment	Implementation of PNA's Sustainable Agriculture Technology (SAT)
Firm Name	Pro Nature Alliance R&D
Report	Inception, Output 1
Location	Punjab and Sindh Pakistan
Submitted by:	Ms. Ifra Sadia, CEO, PNA

List of Abbreviations

ADPC	Asian Disaster Preparedness Centre
CIC	Climate Innovation Challenge
CSA	Climate Smart Agriculture
FCDO	The Foreign, Commonwealth & Development Office
GHG	Green House Gasses
KII	Key Informant Interview
M&E	Monitoring and Evaluation
MNFSR	Ministry of National Food Security and Research
PARCC TF	Program for Asia Resilience to Climate Change Multi Donor Trust Fund
PNA	Pro Nature Alliance R&D
RAPs	Regenerative Agriculture Practices
SAT	Sustainable Agriculture Technology
WB	World Bank

Introduction

Pro Nature Alliance R&D (PNA) is working to provide nature based sustainable solutions to developing public policy; developing & implementing innovative initiatives on climate change and food systems; developing profitable and competitive agribusinesses; developing & implementing public and private sector projects on women entrepreneurship and rural prosperity; and undertaking research. PNA specialize in climate-smart, value chain-based approaches that ensure food security, adequate nutrition, and women's empowerment and prosperity. We also provide advisory solutions to agribusinesses to reduce their cost of production and increase quality and productivity for an enhanced profitability. Along with supporting local organizations through technical assistance in the implementation of development programs.

PNA was successful in obtaining a grant to conduct a trial for its Sustainable Agriculture Technology (SAT) from the Asian Disaster Preparedness Centre's (ADPC), Climate Innovation Challenge (CIC). The CIC is being administered under the overall framework of the World Bank's Program for Asia Resilience to Climate Change Multi Donor Trust Fund (PARCC TF Grant) funded by the United Kingdom's The Foreign, Commonwealth & Development Office (FCDO).

PNA's SAT is based on Regenerative Agricultural Practices (RAPs). SAT is a climate-smart technology that has been developed and customized keeping in view the Pakistani context. SAT is a combination of 3 innovative technologies backed by climate smart practices:

- The customized raised bed maker which makes 42-inch permanent raised bed with water furrows on soft soil
- Organic mulcher which makes organic mulch which reduces weeds and saves the soil from heat and cold stress
- Customized precision planter for 7 by 7 row to row (for wheat, customizable for maize and other crops) and seed to seed distance

As per the grant agreement with ADPC CIC, PNA will conduct the SAT trial on 1,000 acres in different agro- ecological and cropping zones in Punjab and Sindh (with the limitation that all trail activities be completed from 20 December 2021 to 31 July 2022).

The SAT trail will result in:

- Training of 100-200 farmers on SAT (of which 20-30 will be women)
- Reduced water usage of crop in comparison to baseline- 20-30% reduced quantity of water used
- 30-40% less input cost for the crop in comparison to baseline.

- Lower land development cost due to no tilling
- Reduced usage of seed in comparison to the baseline (at least 10% less Maize seed use in comparison to the baseline)
- 20-30% less cost of production in comparison to the baseline for the concerned crop
- Lower GHG emission through no till and conservation of moisture and carbon in the soil (Qualitative)
- Production of safer food and ultimately revival of soil physiology/ biota (Qualitative)

Start-up Activities

As per the agreement with ADPC CIC, PNA commenced its activities on 20 December 2021. As per the grant timeline, the PNA team immediately started mobilization activities for the conducting the trial of the Sustainable Agriculture Technology (SAT) which are detailed in the subsequent sections.

1. Team Mobilization

PNA mobilized the following key personnel that were needed to conduct the SAT trial:

Names	Position
Mr. Sohail Manzoor	Team Leader and Capacity Building/ M&E Expert
Dr. Ihsan Ul Haq	Technical Advisor
Ms. Ifra Sadia	Operational Management and Backstopping
Mr. Shahid Hussain	Field and Farmer Outreach Expert
Mr. Binyamin Shaukat	Field and Technical Manager
Ms. Qandeel Piracha	Gender Mainstreaming and Communications
Ms. Kinza	Social Media and Communications
Mr. Hamza Hassan	M&E/ Baseline Expert
Mr. Hafiz Mh Yasin	Finance and Accounting
Mr. Mh. Nazim	Procurement and Compliance
Mr. Abu Bakr Khan	Field Expert
To be engaged on an as needed basis	Other Field Supervisors and Machinery Drivers

Methodology for Conducting Baseline Study (including data collection instruments)

PNA's M&E experts will closely monitor the trial and document the outcomes. Upon grant initiation, PNA will conduct a quick secondary data review of partner farms. In parallel, the field team will pretest the questionnaire developed and revise it based on feedback received. The team will conduct a rapid baseline study of different crops which are being grown using conventional methods at our partner farms. Upon the completion of the crop cycle, the team will measure the results of the SAT and produce an impact assessment in comparison to the baseline. The entire process will be overseen by the PNA Team Lead and M&E team.

PNA aims to work with 5 partner clusters/ farms for the SAT trial and at each partner farm/ cluster, the baseline team will gather data using Key Informant Interviews (KIIs) and FGDs. PNA's field teams have a great depth of experience and knowledge in conducting baseline and monitoring assessments. However, the M&E team will provide them with a refresher training before initiating the baseline study. They will be given training on study tools, methodology, sample size, research ethics and teamwork, augmented by hands-on data collection exercise

KIIs will be conducted with at least 2 members of the farms technical/ management team and at least 3-4 farmers who are working in the field. Based on the level of literacy, the field team may also conduct Focus Group Discussions with the farmers who are working in the field to gather the data where needed. During this time, the team lead will also conduct spot quality-assurance checks to ensure adequate performance of field team involved in data collection.

After gathering the data, the M&E team will undertake validation, verification and monitoring of the field investigations. The collected data will be analysed and reported using a variety of software's as needed.

Summary of Steps to Follow for Rapid Baseline Assessment of Partner Farms

- Review any secondary data available for partner farms based on location
- Develop a plan including activities timeline for conducting the baseline study
- Pretest the data collection tool developed in the field, revise and finalize
- Train field staff to ensure data is captured properly in the field
- Create data entry template
- Conduct the baseline study on partner farms
- Team lead to conduct spot quality-assurance checks to ensure adequate performance of field team involved in data collection
- Clean and enter the data gathered

- Validate and interpret data
- Develop baseline report

Clusters/ Partner Farms Selected

The PNA team had shortlisted seven locations and partner farmers in Punjab and Sindh before the initiation of the CIC grant. Upon initiation of the grant, the PNA field team visited these seven locations in Punjab (Bhera, Rahimyar Khan, Bahawalpur, Muzafferghar) and Sindh (Thatta and Tando Mh Khan). The team evaluated the land and met with the potential partner farmers and their technical teams. Five clusters/ partner farmers were finalized, based on the following criterion:

- Agro-climatic zones
- Condition of the land and readiness for SAT
- Presence of progressive farmer who is willing to adopt a new technology and convert his/ her land to it
- Willingness to be a part of the SAT trial and share the costs as needed by PNA
- Crop diversity from January to June
- Availability of crop area given grant timeline of January to July
- Necessity to wrap up all activities until July 2022 as per ADPC CIC grant

Based on the criterion laid out above, five locations were finalized covering more than 1,000 acres in Sindh and Punjab. The following table provides details of the location selected:

#	Agroecological Zone	Location of Partner Farmer	Acres	Crops
1	Cotton Zone-South Punjab	Rahimyar Khan Cluster	250 to 350	Maize and Cotton
2	Irrigated- Central Punjab	Bhera Cluster	100 to 150	Onion and Maize
3	River Delta- Sindh	Thatta Cluster	200 to 300	Cotton and Vegetables
4	Arid- South Punjab	Muzafferghar Cluster	200	Fodder Crops, Vegetables and Cotton
5	Irrigated- Central Sindh	Tando Mh Khan Cluster	50 to 100	Cotton and Vegetables
			800 to 1100	

Of this total, 1,000 acres will be finalized upon signing of the agreements with the partner farmers selected by PNA. The agreements will clearly lay out the roles and responsibilities of PNA and our partner farmers for conducting the SAT trials. PNA will provide our partner farmers with pneumatic planters of our SAT (precision planter with mulcher). PNA will request ADPC CIC for title transfer of the planters to our partner farmers once procurement has been done by PNA. This will be supplemented by training, technical support and some support in seed (where needed for risk mitigation of farmers). While our partner farmers, as their part of the trial, will cover all other costs for the SAT trial.

This includes procuring by themselves from vendors, the raised bed maker of our SAT (PNA will give them the specs as per our SAT), all associated labour costs, land costs, input costs, water costs, remaining seed cost etc.

Status of Work Plan Implementation to Date

The following table provides an update on the timelines committed to ADPC CIC by PNA and the progress made to date by PNA.

#	Activity	Status As of 30 Jan 22	Dec	Jan	Feb	Mar	Apr	May	Jun	July
1	Grant Agreement signing with CIC	Completed	Grant Implementation Started on 20Dec2021	Grant Agreement Signed on 15 Jan2022						
2	Mobilization of Core Team	Completed								
3	Develop Methodology for Baseline Study including Survey Instruments	Completed								
4	Finalize location of 1,000 acre total clusters in Sindh and Punjab	Completed								
5	Submission of Output 1- Inception Report based on activities completed to date	Completed		31-Jan-22						
6	Develop and sign contracts/ agreements with farmers of trials	Ongoing								
7	Order to vendor and manufacturing of SAT machines	Ongoing								
8	Baseline study of selected areas	Ongoing								
9	Submission of Output 2- Interim Report				15-Feb-22					
10	Translation and Printing of Farmer training	Ongoing								



	manual in Urdu									
11	Selection of 1-2 community coordinators per cluster for Master Training on SAT by PNA experts	Ongoing								
12	5 Day training (2 classroom, 3 field) of Master trainers by PNA Experts in Islamabad									
13	4 Day training (1 classroom, 3 field) of farmers in each community on SAT by Master Trainers/ Community Coordinators and PNA Experts						100-200 farmers trained of which 20-30 are women			
14	Submission of Output 3- Mid Term Report					End March 2022				
15	Maize trial using SAT (sowing from 10Jan to 10 Feb and harvesting from 10May to 10June)	Ongoing							At least 500 acres of Maize produced on SAT	
16	Mango plantation using SAT								Mango produced on SAT	
17	Vegetables and other fodder crops using SAT								Vegetable/ fodder crops produced on SAT	
18	Late Wheat (if found) using SAT								Late wheat produced on SAT	

19	Awareness and Communications Activities to promote SAT (social media, video making etc.)								
20	Technical Backstopping of Field Team by PNA Experts	Ongoing							
21	Submission of Output 4- Final project, closeout and impact assessment								Draft 1 submission by 10 July 2022



Baseline Survey Form

Name and Designation of PNA Staff Filling out Baseline Form	
Date	
Name of Farm and total area (please mention vacant land and area under cultivation separately in acres)	
Address	
Geo Location	
Name and CNIC of Owner and Farm Manager	
Contact Information	
# of farmers working on the farm	
# of women farmers working on the farm	
Source of water- rainfed or irrigated (tubewell, karez, canals)	
Cropping System	
Crops Grown and area for each crop (acres)	
Are they currently using: Hard Pan Breaker, Precision Planter, Laser Leveler, Raised Bed Maker, Organic Mulcher etc.? What machines does the farm have?	
Other Details/ Notes:	

For each crop currently being grown, fill in the table below- **information for conventional system only (this will be used as baseline information for comparison with SAT results)**

Information Source and Designation:	
Description	Crop Name: _____
Seed variety used:	
Visual appearance of Crop:	
Cost of Land preparation- per Acre- PKR	
One time Cost (laser levelling etc.)- per Acre- PKR	
Number of Seed used per Acre- Kg	
Seed Cost- per Acre- PKR	
Source of Water	
Water Usage- per Acre	
Cost of Water- per Acre- PKR	
Amount of Fertilizer, Pesticides and other inputs used per Acre	
Input Costs (Fertilizer, Pesticides etc.)- per Acre- PKR	

Harvesting & threshing- per Acre- PKR	
Land rent- per Acre- PKR	
Other and Labor Costs- per Acre- PKR	
Total CoP per Acre- PKR	
Yield per Acre in Mounds	
Sale Price per Mound- PKR	

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Cost of Water- per Acre- PKR	
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Input Costs (Fertilizer, Pesticides etc.)- per Acre- PKR	
Harvesting & threshing- per Acre- PKR	
Land rent- per Acre- PKR	
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