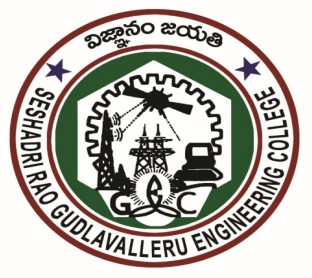
**Program Book for**

**Community Service Project**

****

**Name of the Student:** B. Sravanthi, Ch. Nikhitha, Vineetha,D. Udaya Bindu

**Name of the College :**Seshadri Rao Gudlavalleru Engineering College, Gudlavalleru

**Registration Number:**21481A0543,21481A0545,22485A0503,21481A0553

**Period of CSP: From: To: Name & Address of the Community/Habitation:** Kowthavaram ,Gudlavalleru mandal 521331

**Community Service Project Report**

*Submitted in accordance with the requirement for the degree of………….*

Name of the college: Seshadri Rao Gudlavalleru Engineering College, Gudlavalleru

Department: Computer Science and Engineering

Name of the faculty guide: Mr .A. V. P. Rajesh

Duration of CSP :From To:

Name of the student: B. Sravanthi, Ch. Nikhitha, Vineetha, D. Udaya Bindu

Programme of study :Smart agriculture

Year of study:2023

Register number: 21481A0543,21481A0545,22485A0503,21481A0553

Date of submission:

# Student’s Declaration

We, B. Sravanthi, Ch. Nikhitha, Vineetha ,D. Udaya Bindu students of Community Service Program, Reg. No. 21481A0543,21481A0545,22485A0503,21481A0553 of the Department of Computer Science and Engineering, Seshadri Rao Gudlavalleru Engineering College, Gudlavalleru do hereby declare that I have completed the mandatory community service from to in Kowthavaram under the Faculty Guideship of Mr. A. V. P. Rajesh, M.Tech, Assistant professor Department of Computer Science and Engineering in Seshadri Rao Gudlavalleru Engineering College, Gudlavalleru

(Signature and Date)

# Endorsements

Faculty Guide

Master of Trainer(S):

Head of the Department

Principal

# Certificate from Official of the Community

This is to certify that B. Sravanthi,Ch. Nikhitha, Vineetha,D. Udaya Bindu Reg. No. 21481A0543,21481A0545,22485A0503,21481A0553 of Seshadri Rao Gudlavalleru Engineering College, Gudlavalleru underwent community service in Kowthavaram from……………… to …………………..

The overall performance of the Community Service Volunteer during his/her community service is found to be (Satisfactory/Good).

Authorized Signatory with Date and Seal

**ACKNOWLEDGEMENTS**

I express my deep sense of gratitude to my institution Seshadri Rao Gudlavalleru Engineering College Which has providing us an opportunity to carry out this community service project (CSP). It is my privilege to express my sincere gratitude to Mr.A.V.P.Rajesh,M.Tech Asst.Prof of Department of computer Science and engineering, for valuable guidance, and untiring help. which enable me to complete work successfully.

I am thankful to the community and officials from the community for giving the necessary information and very thankful to all faculty members for their motivation and knowledge rendered though out our programme and to our non-teaching staff of our department.

I wish to thankful for all our friends, who have helped us in various stages and for giving valuable suggestions throughout the project. I wish to thank all the community people who helped in to do project in successful way. I also be grateful to grama sarpanch who give the permission to do our project in well manner.

**CHAPTER 1: EXECUTIVE SUMMARY**

The community service project is about smart agriculture. Smart farming is a management concept focused on providing the agricultural industry with the infrastructure to leverage advanced technology – including big data, the cloud, and the internet of things (IoT) – for tracking, monitoring, automating, and analyzing operations.Smart farming is growing in importance due to the combination of the expanding global population, the increasing demand for higher crop yield, the need to use natural resources efficiently, the rising use and sophistication of information and communication technology and the increasing need for climate-smart agriculture.

Smart farming systems also enable careful management of the demand forecast and delivery of goods to market just in time to reduce waste. Precision agriculture is focused on managing the supply of land and based on its condition, concentrating on the right growing parameters – for example, moisture, fertilizer or material content – to provide production for the right crop that is in demand.

**Learning objectives:**

>Make the best use of the resources available

>Minimize use of non-renewable resources

>Protect the health and safety of farmworkers, local communities and society

>Protect and enhance the environment and natural resources

>Protect the economic viability of farming operations

>Provide sufficient financial reward to the farmer to enable continued production and contribute to the well-being of the community

>Produce sufficient high-quality and safe food

>Build on available technology, knowledge and skills in ways that suit local conditions and capacity.

**Learning outcomes:**

* The communicative skills have been developed.
* I can identify the problem as engineer problem.
* I can give the solution for the problem.
* I am willing to be active in any social activities.
* I know how to give awareness to people.
* I can implement the prevention steps and future steps, which helps to the community.

I gain the knowledge and able to do solutions through various ways.

**CHAPTER 2: OVERVIEW OF THE COMMUNITY**

***The communities are:***

***Kowthavaram:***

Kowthavaram is a Village in Gudlavalleru mandal krishna District of Andhra Pradesh State, India.The total geographical area of village is 1,344 hectares. Kowthavaram has a total population of 7,927 peoples, out of which male population is 4,002, while female population is 3,925. Literacy rate of kowthavaram village is 64.46% out of which 67.65% males and 61.31% females are literate. There are about 2,013 houses in kowthavaram village. Pincode of kowthavaram village locality is 521331.

***Socio-economic conditions of the communities:***

The community is having enough schools for education. The people in the community goes to every work in the village and earn as sufficient .Climate change is evident, and it is impacting negatively on agricultural productivity. Farmers livelihoods in developing countries are the most affected.

Out of all these factors land tenancy, size of holdings, religion, technical improvement, agricultural research and extension service, a system of ownership, accessibility of workers and capital, irrigation facilities, and government strategies have a major impact on activities of agricultural productivity.

## 

**CHAPTER 3: COMMUNITY SERVICE PART**

**The activities done during the community service project are as follows:**

Firstly, I have taken the acceptance letter from our department and discussed about various topic with allotted guide. She helped me in the taking of the topic and thought the various things regarding the topic. Smart agriculture can integrate community service by engaging local communities in various ways. For instance, organizing workshops to educate farmers on the benefits of smart farming techniques or involving community members in data collection for precision agriculture. This not only enhances agricultural practices but also fosters a sense of community involvement and shared responsibility for sustainable farming.

Implementing smart agriculture in villages involves integrating technology to enhance traditional farming practices. This can include using sensors for soil moisture monitoring, drones for crop surveillance, and data analytics for informed decision-making. Additionally, promoting agricultural education and providing access to agricultural apps can empower farmers with valuable information

Companies specializing in agricultural technology provide the necessary hardware and software solutions. This includes sensors, drones, automation systems, and farm management software.

Policies and regulations can influence the adoption of smart agriculture. Governments may offer incentives or support programs to encourage farmers to embrace technology. Compliance with standards ensures the safety and sustainability of agricultural practices.

Universities and agricultural schools play a role in training the next generation of farmers and agricultural professionals in the use of smart technologies.

Farmers may need financial support to invest in smart agriculture technologies. Collaboration with banks or financial institutions can facilitate access to loans or funding for technology adoption

Utilizing GPS technology and sensors to precisely manage field variability in crops. This includes precise application of water, fertilizers, and pesticides based on real-time data

Implementing irrigation systems that adjust water usage based on real-time weather conditions and soil moisture levels.

**ACTIVITY LOG FOR THE FIRST WEEK**

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| --- | --- | --- | --- |
| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We interacted with project guide to discuss the topic regarding the CSP project | Discussion can bring 4 people different types of idea from the people and their thinking capabilities |  |
| **Day - 2** | After discussion, we have chosen the topic ‘SMART AGRICULTURE’. | Choosing one topic helps the team members to become unity |  |
| **Day –**  **3** | We met the project guide and discussed the topic and location to do the project | This enhances the positive relationship with their teacher developing stranger social-Emotional skills |  |
| **Day –**  **4** | We, team members discussed the topic briefly through resources like google, ChatGPT, google maps for location etc. | This interaction can benefit individuals who are introverted and helps them to build the confidence |  |
| **Day –**  **5** | We took permissions from gram panchayat of the village, and they granted the permission | We learnt how to communicate with higher officials |  |
| **Day –**  **6** | We have collected the more information about the agriculture lands of the village | Visited this new place during journey we experience life different lifestyles, cultures and traditions |  |

## 

**WEEKLY REPORT**

**WEEK – 1 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:**To identify and understand the farming methods of the village. |
| **Detailed Report:** |
| In this week we started the community service project.Then we found that farmers are still using traditional techniques in farming. |
| **.**Our guide has advised to introduce the smart agriculture to farmers and given the title of the project as “Smart agriculture”. |
| **.** So we reached the community to work and continue the project. |
| **.** Firstly, we have taken permission from farmers to do project by means of survey,sources,awareness,and collected the information from sachivalayam. |
| In the part of the project,we met the farmers of the village. |
| **.** We observed the methods of farming using in the village. |
| Farmers are unaware of smart technology in agriculture.Smart agriculture refers to the integration of advanced technologies and data-driven solutions into traditional farming practices |
| **.** Smart agriculture is used to enhance efficiency,productivity,and sustainability in agricultural operations. |
| **.** Benefits of smart agriculture include increased productivity,resource efficiency,cost savings,and ability to make more informed decisions. |
| **.** However there are some challenges such as intial implementation costs,the need for technical expertise. |
| There are also concerns about data privacy and security |
| **.** It utilizes technologies such as GPS sensors,and drones to optimize field-level management with regard to crop farming |
| Deploying sensors to collect real-time data on soil conditions |
| **.** There are many techniques in smart agriculture like precision farming,IoT sensors,Data analytics,Automation,Remote Monitoring,Smart irrigation,Farm management software,Connectivity |
| **.** Analyzing large sets of data to gain insights into crop performance,resource usage,and environmental conditions,facilitating data-driven decision making. |
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**ACTIVITY LOG FOR THE SECOND WEEK**

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| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We went to the village called “kowthavaram” by taking permission from guide to start project | During the journey we experience different lifestyles, culture and traditions |  |
| **Day - 2** | We visited different agricultural lands of the village | We learnt how to interact with new people by interaction with them |  |
| **Day –**  **3** | We interacted with the farmers of village and explained about the project | We learnt the value of hard work by seeing their successful qualified farming |  |
| **Day –**  **4** | Farmers discussed from how many years they are living in the village and the farming methods they are using | We learn principles and safety measures of farming |  |
| **Day –**  **5** | We explained almost the smart agriculture and using the present technology in agriculture | Changing our life according to the present agriculture |  |
| **Day –**  **6** | Farmers are unaware of the present technology usage in agriculture | Farmers also learns about new methods |  |

**WEEKLY REPORT**

**WEEK – 2 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:** Awareness to farmers about smart agriculture |
| **Detailed Report:** |
| **.** We visited different agricultural lands of the village. We interacted with the farmers of village and explained about the project |
| We learnt the value of hard work by seeing their successful qualified farming |
| **.** Farmers discussed from how many years they are living in the village and the farming methods they are using in the village |
| **.** We learnt principles and safety measures of farming. |
| **.**Farming using new techniques and methods is smart agriculture |
| **.** The goal is to improve efficiency, productivity, and sustainability in agriculture. |
| **.** **IoT Sensors and Devices:**  Integration of sensors to collect real-time data on soil conditions, crop health, and weather patterns. |
| **.**  Sensors makes us know about water level in the field. |
| **.** Farmers are unaware of the present technology usage in agriculture |
| Making farmers know about smart work than hard work. |
| Sensors are used to collect the information of the farm |
| **.** **Data Analytics:**  Use of data analytics and artificial intelligence to analyze large sets of data for insights into crop performance, resource utilization, and decision-making. |
| **.** Using data analytics there are many uses like crop performance and productivity increases. |
| **.** Implementation of irrigation systems that deliver water precisely where and when it is needed, reducing water wastage and improving crop yield. |
| Crop yield increases which gives utmost happiness to farmers. |
| So using of smart agriculture have many advantages. |
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**ACTIVITY LOG FOR THE THIRD WEEK**

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| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We asked about the source of water to the lands in that village | We available facilities and water systems in the village |  |
| **Day - 2** | Farmer explained about the problem they face about the water scarcity | We learnt the problems of farmers |  |
| **Day –**  **3** | We explained that usage of smart agriculture methods like water management | By teamwork unity is built in our team |  |
| **Day –**  **4** | Water management means we stored the water, and we get information when there is need of water using sensors | Using smart agriculture, we can do smart work than hard work |  |
| **Day –**  **5** | Using water management, we will save the water and we when there is a need | We must save the water for future generation also |  |
| **Day –**  **6** | Farmers cause to know about the smart irrigation | Learning different types of techniques |  |

**WEEKLY REPORT**

**WEEK – 3 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:** Problems of farmers regarding water scarcity. |
| **Detailed Report:** |
| **.** knowing about the source of water to the lands in that village |
| **.** We understood the problems of farmers regarding water. |
| **.** Water-related issues in villages, particularly in agricultural fields can pose significant challenges to farmers and the overall community. |
| Addressing these problems is crucial for sustainable agriculture and well-being of the community. |
| **.** **Water Scarcity:**  **Inadequate water availability for irrigation, leading to reduced crop yields and economic losses.** |
| **.** Implement water conservation measures, invest in efficient irrigation systems such as drip or sprinkler irrigation. |
| Explore rainwater harvesting techniques to capture and store rainwater |
| **.** Water management means we stored the water, and we get information when there is need of water using sensors |
| **.** Using water management, we will save the water and we when there is a need |
| Over extraction of ground water for irrigation leads to decline in water table. |
| **Lack of Water Infrastructure:**  **.**  **Insufficient infrastructure for water storage, transportation and distribution.** |
| **.** Climate change also affects the fields and unpredictable rainfall causes loss to farmers. |
| **.** Limited financial resources for implementing water management solutions. |
| **.** Precision Irrigation systems such as drip or sprinkler irrigation deliver water directly to the root zones of plants. |
| **.** These systems can be controlled remotely using sensors and data analytics. |
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**ACTIVITY LOG FOR THE FOURTH WEEK**

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| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We asked the farmers about the fertility of the soil | Ability of soil to sustain agricultural plant growth |  |
| **Day -**  **2** | Farmers told it is fertile and they apply organic manure for every year | Soil's ability to supply crop nutrients |  |
| **Day –**  **3** | We advise them to use the soil testing for better crop in agriculture | Portable and wireless soil testing device |  |
| **Day –**  **4** | Using soil testing devices, we come to know the nutrients which are locked in soil | The devices take only 5gm of dry soil as sample |  |
| **Day –**  **5** | We told that after knowing which nutrients are locking then they can use bio-fertilizers | Biofertilizers are substance that contain microbes |  |
| **Day –**  **6** | Farmers came to know about soil testing device | Learning about new devices |  |

**WEEKLY REPORT**

**WEEK – 4 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:** Discussing regarding soil fertility and soil testing devices. |
| **Detailed Report:** |
| **.** Knowing about the fertility of soil in the village . |
| **.**Soil fertility refers to the soils ability to provide essential nutrients to plants for optimal growth and development. |
| **.**Primary nutrients include Nitrogen,phosphorus,and potassium while secondary nutrients include calcium,magnesium and sulphur. |
| **.** Regular soil testing is crucial to assess nutrient levels and pH in the soil. |
| Collecting soil samples from different parts of the field and test them. |
| **Crop Rotation**  **.** Continuous cultivation of the same crop deletes specific nutrients. |
| **.** Crop rotation helps break pest and disease cycles and enhances overall soil health. |
| **.** After knowing which nutrients are locking then they can use bio-fertilizers |
| **.**There are sensors informs farmers regarding irrigation and soil health. |
| **.Automated Soil Sampling:** Automated equipment can efficiently collect soil smaples from various locations of the field. |
| **.** It also reduces labour and time associated with manual soil sampling,enabling more frequent and comprehensive soil testing. |
| **.** Data analytics and predictive modeling can help farmers choose crop varieties based on soil conditions and climate. |
| **.** Improves crop yield and quality by selecting varieties that are well-suited to specific soil types. |
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**ACTIVITY LOG FOR THE FIFTH WEEK**

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| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We asked about the pest management methods in the village | We learnt the pest management methods in village |  |
| **Day - 2** | Farmers told they will use more pesticides and fertilizers we said that they will be more chemicals, and which are harmful for health | More usage of chemicals causes harm to health of human |  |
| **Day –**  **3** | We explain smart technique drone monitoring by which is used for spraying fertilizers | Learnt about Drone monitoring |  |
| **Day –**  **4** | Farmers came to know that more usage of pesticides are harmful for human health | Learnt about effects of pesticides |  |
| **Day –**  **5** | We told about the vertical farming and its production in low space | Usage of vertical farming causes more productivity |  |
| **Day –**  **6** | Farmers came to know about drone monitoring | Learning new agricultural methods |  |

**WEEKLY REPORT**

**WEEK – 5 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:** Discussing regarding various pest management techniques |
| **Detailed Report:** |
| Effective pest management is crucial for maintaining crop health and maximizing agricultural productivity. |
| Smart agriculture technologies can play a key role in implementing sustainable pest management practices. |
| By integrating these techniques pests can be controlled. |
| Here are ways in which technology can be utilized for pest management: |
| **Pest Monitoring:** |
| **Technology Used:** IoT sensors, drones, and camera traps. |
| **How It Works:** These technologies provide real-time data on pest populations and help identify potential infestations. |
| **Benefits:** Early detection allows for targeted intervention, reducing the need for widespread pesticide application. |
| **Pest Identification:** |
| **Technology Used:** Image recognition software and machine learning. |
| **How It Works:** Images of crops are analyzed to identify pests and beneficial organisms. |
| **Benefits:** Rapid and accurate identification helps farmers make timely decisions about pest control measures. |
| It increases the productivity of the crop. |
| **Drones for Pest Control:** |
| **Technology Used:** Drones equipped with spraying devices. |
| **How It Works:** Drones can precisely apply pesticides to targeted areas. |
| **Benefits:** Reduces the amount of pesticides used and minimizes environmental exposure. |

**ACTIVITY LOG FOR THE SIXTH WEEK**

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| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We asked the farmers about the animals which are used in agriculture | Animals like buffalo, cow and ox are useful for agriculture |  |
| **Day - 2** | Wearable GPS devices on animals enable real-time tracking of their location. | GPS tracking helps us know about the live location of the animals |  |
| **Day –**  **3** | Farmers told that animals dung is useful for the field and its growth | Buffalo dung is used in fields as manure. |  |
| **Day –**  **4** | We told that Sensors can be attached to animals to monitor them | Sensors can be attached to animals to monitor vital signs such as temperature, heart beat |  |
| **Day –**  **5** | Farmers told that ear tags can be used to identify animals | Smart collars can be equipped with GPS |  |
| **Day –**  **6** | Animals illness should be found quickly and cure that giving proper treatment | Animals should be taken care first by identifying their problems. |  |

**WEEKLY REPORT**

**WEEK – 6 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:** Discussing aboutLive stock monitoring |
| **Detailed Report:** |
| Livestock monitoring involves the use of various technologies to track and manage the health, behavior, and well-being of animals in agriculture.. |
| **GPS Tracking:** Wearable GPS devices on animals enable real-time tracking of their location. This is particularly useful for monitoring grazing patterns and preventing theft. |
| Using GPS tracking we can know the location of animals. |
| This helps us to know about animals and its works in fields. |
| **Health Sensors:** Sensors can be attached to animals to monitor vital signs such as temperature, heart rate, and respiratory rate. Any deviations from normal values can indicate potential health issues. |
| Using sensors we can know the health condition of the animals. |
| By this we can know the health of the animal and we can save them from getting affected to various diseases. |
| **Smart Collars and Ear Tags:**  These devices often include sensors for monitoring activity levels, feeding behavior, and overall movement. |
| Smart collars can also be equipped with GPS for tracking and geofencing. |
| This helps us in many ways. |
| **Health Monitoring Systems:**  Automated health monitoring systems use sensors to detect early signs of illness or distress. |
| Continuous monitoring helps in early intervention and reduces the spread of diseases within the herd. |
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**ACTIVITY LOG FOR THE SEVENTH WEEK**

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| --- | --- | --- | --- |
| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We asked the farmers did they know about drone technology and its uses | Drones are powerful tools in smart agriculture |  |
| **Day - 2** | We told that drones are useful for detecting pests and diseases for crop | Drones can be used for Early detection of diseases, pests, and nutrient deficiencies. |  |
| **Day –**  **3** | Farmers asked how can we use the drones we explained that drones are used for spraying fertilisers and pesticides | Drones are also used for identification of pests and spraying the fertilizers |  |
| **Day –**  **4** | We also told that drones are used for irrigation management | Drones are useful for detecting the water levels and provides water for crop |  |
| **Day –**  **5** | We explained that drones equipped with sensors and cameras can identify variations in soil temperature | Drones are also used for identifying the variations in temperature |  |
| **Day –**  **6** | We told that drones can be useful for early detection of water leakage ensures water is used efficiently | We should not waste the water which is used for crops |  |

**WEEKLY REPORT**

**WEEK – 7 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:**Usage of drones in smart agriculture |
| **Detailed Report:** |
| **.** Drones, or Unmanned Aerial Vehicles (UAVs), have significantly impacted agriculture by introducing innovative tools for monitoring, data collection, and decision-making. |
| **.** Drones can be used for Early detection of diseases, pests, and nutrient deficiencies. |
| **.** Drones are also used for fertilization and pesticide application |
| The benefits of drones in precision agriculture are Optimal resource utilization, cost savings, and improved yield. |
| **.** Drones are also used for irrigation management and monitoring soil moisture levels and optimizing irrigation schedules |
| **.** They are used for spraying pesticides and fertilizers in field . |
| The benefits of drones in irrigation management are water conservation,reduced water usage, and improved crop health. |
| **.** Drones are also used for mapping and surveying of fields by creating high-resolution maps and 3D models of fields. |
| They are also used for livestock monitoring |
| Drones usage in livestock monitoring Improves herd management, detection of sick animals, and overall farm security. |
| By detecting sick animals we can easily identify their diseases and cure them |
| **.** Drones equipped with specialized sensors can detect subtle changes in plant color and physiology indicative of water stress. |
| **.** Early identification of water stress allows farmers to take corrective actions, such as adjusting irrigation levels or applying targeted treatments. |
| **.** Drones equipped with thermal cameras can identify variations in soil temperature, helping to detect leaks in irrigation systems. |
| **.** Early detection of leakage of water ensures that the water applied to the fields is used efficiently. |
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**ACTIVITY LOG FOR THE EIGTH WEEK**

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| **DAY**  **& DATE** | **BRIEF DESCRIPTION OF THE DAILY ACTIVITY** | **LEARNING OUTCOME** | **Person In-charge Signature** |
| **Day –**  **1** | We asked the farmers are they using machines for crop harvesting they said that some of them will use it | Machine power also helps farmers |  |
| **Day - 2** | We told that using of machines causes less human power and less labor cost | Usage of machines also reduces the expenses of farmers |  |
| **Day –**  **3** | We explained the advantages of smart agriculture | Learning the advantages of smart agriculture |  |
| **Day –**  **4** | In smart agriculture also there are some disadvantages which causes | Learning the disadvantages of  Smart agriculture |  |
| **Day –**  **5** | They also arranged session with other farmers of the village | We know how to interact with people in the society |  |
| **Day –**  **6** | On last day,we gave technical solutions to agricultural farmers | This develops creativity skills and teamwork in us. |  |

**WEEKLY REPORT**

**WEEK – 8 (From Dt………..….. to Dt… )**

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| **Objective of the Activity Done:** Discussing about machines used in agriculture |
| **Detailed Report:** |
| Various machines and equipment are used in modern agriculture to improve efficiency, increase productivity, and reduce manual labor. |
| **Tractors:** Tractors are versatile machines used for plowing, tilling, planting, and other field operations. |
| Equipped with various attachments and implements, such as plows, harrows, seeders, and sprayers. |
| **Combine Harvesters:** Combine harvesters are used for harvesting crops like wheat, rice, and corn. |
| They are used in harvesting crops. |
| **Sprayers:** Sprayers are used for applying pesticides, herbicides, and fertilizers. |
| Equipped with nozzles to disperse liquids evenly, and some modern sprayers use GPS technology for precision application. |
| **Fertilizer Spreaders:** Fertilizer spreaders distribute fertilizers evenly across the field. |
| Adjustable settings allow farmers to control the rate and pattern of fertilizer application. |
| **Drones:**  Drones are used for aerial surveillance and monitoring of crops. |
| They monitor the crops. |
| **Mobile Apps and Software:** Agricultural software and mobile apps assist in farm management, data analysis, and decision-making. |
| Provide farmers with tools for planning, monitoring, and analyzing various aspects of their operations. |
| There are some mobile apps which are useful for farmers. |
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**CHAPTER 5: OUTCOMES DESCRIPTION**

**Details of the Socio-Economic Survey of the Village/Habitation. Attach the questionnaire prepared for the survey.**

|  |  |
| --- | --- |
| 1.What is your age and gender? |  |
| Answer.45 years and male |  |
| 2.What is the highest level of education you have completed? |  |
| Answer: Secondary school. |  |
| 3.Have you adopted any smart agriculture practices or technologies in your farming activities? |  |
| Answer: Not yet, but considering exploring automated irrigation systems.  Water and Resource Management: |  |
| 4.If involved in agriculture, what crops or livestock do you primarily cultivate/raise? |  |
| Answer: Primarily cultivate rice and raise a few cattle. |  |
| 5.What challenges do you face in your agricultural activities? |  |
| Answer: Limited access to water during dry seasons; price volatility for crops. |  |
| 6.Do you see potential opportunities for improvement through the adoption of smart agriculture technologies? |  |
| Answer: Yes, believe smart technologies could help with water management and improve yields. |  |
| 7.How do you currently manage water resources for your agriculture activities? |  |
| Answer: Use a traditional irrigation canal system. |  |
| 8.Are you familiar with smart agriculture technologies? |  |
| Answer: Somewhat familiar, heard about sensors and precision farming.  Agricultural Practices: |  |
| 9.What traditional farming methods do you currently employ? |  |
| Answer: Use traditional plowing and manual irrigation methods. |  |
| 10.How connected do you feel to the local agricultural community? Are there community initiatives or cooperatives that you participate in? |  |
| Answer: Very connected; part of a local farmers' cooperative. Yes, actively participate in a cooperative for seed sharing. |  |
|  |  |

**Describe the problems you have identified in the community**

|  |  |
| --- | --- |
| Water Scarcity: |  |
| * Problem: Limited access to water resources, leading to inefficient irrigation practices.   Smart Agriculture Solution: Automated irrigation systems that optimize water usage based on real-time data, soil moisture sensors, and weather forecasts. |  |
| * Weather Uncertainty: |  |
| * Problem: Unpredictable weather patterns affecting crop yields and planning.   Smart Agriculture Solution: Weather forecasting models and data analytics that provide accurate weather predictions, helping farmers make informed decisions on planting, harvesting, and resource management. |  |
| Market Access and Price Volatility: |  |
| * Problem: Limited market access and price fluctuations impacting income.   Smart Agriculture Solution: Digital platforms and mobile applications connecting farmers directly to markets, providing price information, and facilitating fair trade. |  |
| Resource Management: |  |
| * Problem: Inefficient use of resources such as fertilizers and pesticides.   Smart Agriculture Solution: Precision farming techniques using sensors and data analytics to optimize the use of inputs, reducing waste and environmental impact. |  |
| Labor Shortages: |  |
| * Problem: Shortage of labor during critical farming periods.   Smart Agriculture Solution: Automation and robotics for tasks like planting, harvesting, and weeding, reducing the reliance on manual labor. |  |
| Soil Health and Nutrient Management: |  |
| * Problem: Degraded soil health and nutrient imbalance.   Smart Agriculture Solution: Soil sensors and monitoring systems to assess soil health, coupled with precision agriculture techniques for targeted application of fertilizers. |  |
| Post-Harvest Losses: |  |
| * Problem: Inadequate storage facilities and transportation, leading to post-harvest losses.   Smart Agriculture Solution: IoT-enabled cold storage, real-time monitoring of transportation conditions, and supply chain optimization to minimize post-harvest losses. |  |
| Sustainability and Environmental Impact: |  |
| * Problem: Environmental concerns related to agricultural practices.   Smart Agriculture Solution: Adoption of sustainable farming practices, precision agriculture, and IoT technologies to minimize environmental impact and promote sustainable agriculture. |  |
|  |  |

**Short-term and long term action plan for possible solutions for the problems identified and that could be recommended to the concerned authorities for implementation.**

|  |  |
| --- | --- |
| **Short-term action plans:** |  |
| **Community Awareness Campaign** |  |
| **Waste Management Improvement:** |  |
| **Green Spaces Enhancement** |  |
| **Policy Review and Update** |  |
| **Labor Support Initiatives** |  |
| **Smart Irrigation Pilot Program** |  |
| **Weather Information Dissemination** |  |
| **Labor Support Initiatives** |  |
| **Long-term action plans:** |  |
| **Renewable Energy Integration** |  |
| **Green Infrastructure Development** |  |
| **Education System Integration** |  |
| **Community Engagement Programs** |  |
| **Monitoring and Reporting System** |  |
| **Scaling Smart Agriculture Technologies** |  |
| **Weather-Resilient Agriculture Programs** |  |
| **Sustainable Agriculture Certification** |  |
|  |  |

**Description of the Community awareness programme/s conducted w.r.t the problems and their outcomes.**

|  |
| --- |
| **Description:** |
| * Deploying sensors, drones, and satellite imagery to gather real-time data on soil health, crop conditions, and weather patterns. |
| * Implementing automated irrigation systems that adjust water usage based on soil moisture levels and weather forecasts. |
| * Introducing advanced technologies, such as drones and sensors, for remote monitoring of crop health. |
| * Establishing digital platforms connecting farmers directly to markets, providing real-time price information and facilitating transparent transactions. |
| * Conducting workshops, training sessions, and providing access to online resources to educate farmers on smart agriculture technologies**.** |
| * Ensuring farmers are equipped with the knowledge and skills to adopt and benefit from these innovations. |
| * Promoting sustainable farming practices, reducing environmental impact, and optimizing the use of resources. |
| * Encouraging the adoption of eco-friendly technologies for long-term agricultural sustainability. |
| **Expected Outcomes:** |
| * Increased crop yields and overall productivity. |
| * Improved water efficiency and resource management. |
| * Enhanced farmers' income through direct market access and fair pricing. |
| * Reduction in environmental impact and promotion of sustainable agricultural practices. |
| * Empowered and educated farming communities ready to embrace the future of agriculture |
| * By combining the expertise of farmers with the power of smart technologies, this project aims to create a resilient and technologically advanced agricultural ecosystem, ensuring food security, economic growth, and environmental sustainability for our farming communities. |

**Report of the mini-project work done in the related subject w.r.t the habitation/village.**

A mini-project work in the related subject w.r.t the habitation/village. (For ex., a student of Botany may do a project on Organic Farming or Horticulture or usage of biofertilizers or biopesticides or effect of the inorganic pesticides, etc. A student of Zoology may do a project on Aquaculture practices or animal husbandry or poultry or health and hygiene or Blood group analysis or survey on the Hypertension or survey on the prevalence of diabetes, etc.

The Report shall be limited to 6 pages.

**Project Title: Enhancing Agricultural Productivity through Smart Farming**

**INTRODUCTION:**

Agriculture, as the cornerstone of human civilization, has undergone a remarkable transformation over the years. The advent of technology, particularly in the form of smart farming, has revolutionized traditional agricultural practices, offering innovative solutions to address the challenges of a growing global population, climate change, and the need for sustainable food production. Smart farming, often synonymous with precision agriculture or precision farming, encompasses the integration of advanced technologies and data-driven solutions to optimize various aspects of farming operations.

Smart farming incudes:

**.Precision Agriculture Principles**

**.IoTand Sensor Technologies**

**.Data Analytics and Artificial Intelligence**

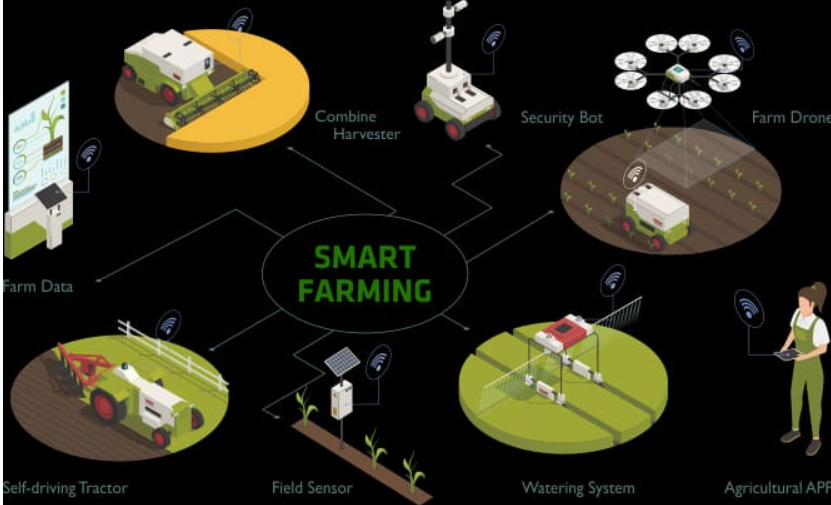
**.Precision Irrigation Systems**

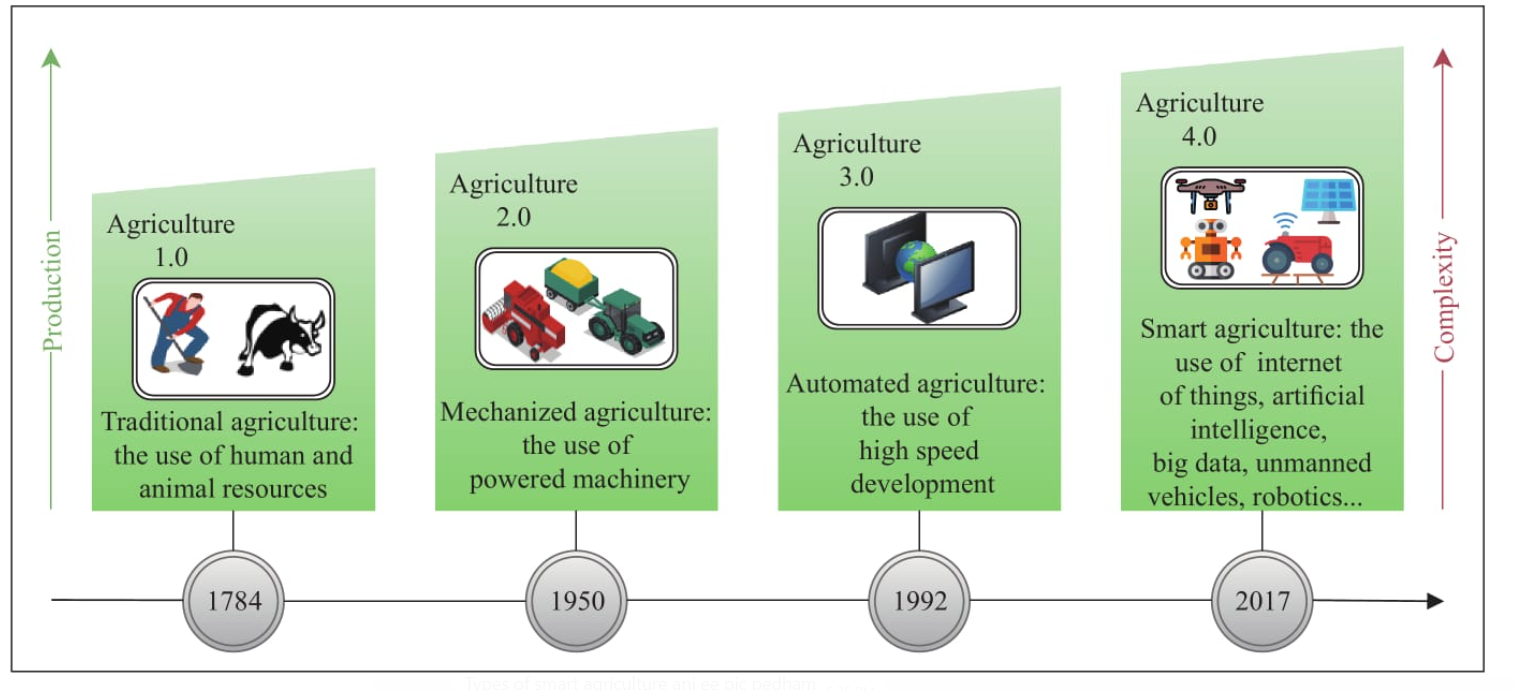
**.Automated Machinery and Robotics**

**.Drones for Aerial Surveillance**

**.Weather Forecast Integration**

**.Economic Impact on Farmers**





### Evolution of smart farming

### **Mechanization:**

* **Era:** Late 19th to early 20th century.
* **Description:** The introduction of machinery such as tractors and harvesters marked the first step toward mechanization in agriculture. These machines increased efficiency and reduced the reliance on manual labor.

### **Remote Sensing and Satellite Technology:**

* **Era:** Late 20th century.
* **Description:** The use of satellite technology and remote sensing for monitoring crops and collecting data on soil conditions and vegetation health became more prevalent. This allowed for more informed decision-making in agriculture.

### **Advent of Internet of Things (IoT):**

* **Era:** Late 20th to early 21st century.
* **Description:** The rise of IoT brought a new wave of connectivity. Sensors embedded in the field and on equipment started providing real-time data on soil moisture, temperature, and crop health. This data could be accessed and analyzed remotely.

### **Data Analytics and Artificial Intelligence:**

* **Era:** 21st century.
* **Description:** With the increasing availability of data, farmers began to adopt data analytics and AI technologies to gain actionable insights. Predictive modeling, machine learning, and AI algorithms enhanced decision-making processes.

### **Robotics and Automation:**

* **Era:** 21st century.
* **Description:** Robotics and automation entered agriculture, contributing to tasks such as planting, harvesting, and weeding. These technologies reduce labor requirements and increase precision.

### **Smart Farming Ecosystem:**

* **Era:** Present.
* **Description:** The current stage involves a holistic smart farming ecosystem. Farmers utilize a combination of technologies, including IoT, AI, drones, and farm management software, to optimize every aspect of their operations. The focus is on sustainability, resource efficiency, and environmental stewardship.

### Methods in Smart Farming:

**IoT Sensors and Connectivity:**

Deploying IoT sensors in fields, on equipment, and with livestock enables the collection of real-time data. Connectivity ensures that this data can be transmitted and accessed remotely.

**Data Analytics and AI:**

Data analytics and artificial intelligence are used to analyze large datasets, providing insights into crop health, yield predictions, and optimal resource management.

**Precision Irrigation:**

Precision irrigation involves the precise application of water to crops based on real-time data. This ensures that crops receive the right amount of water at the right time, reducing water wastage.

**Drone Technology:**

Drones equipped with cameras and sensors are used for aerial surveillance of crops. They provide valuable data on crop health, pest infestations, and field conditions, enabling timely decision-making.

**Weather Forecast Integration:**

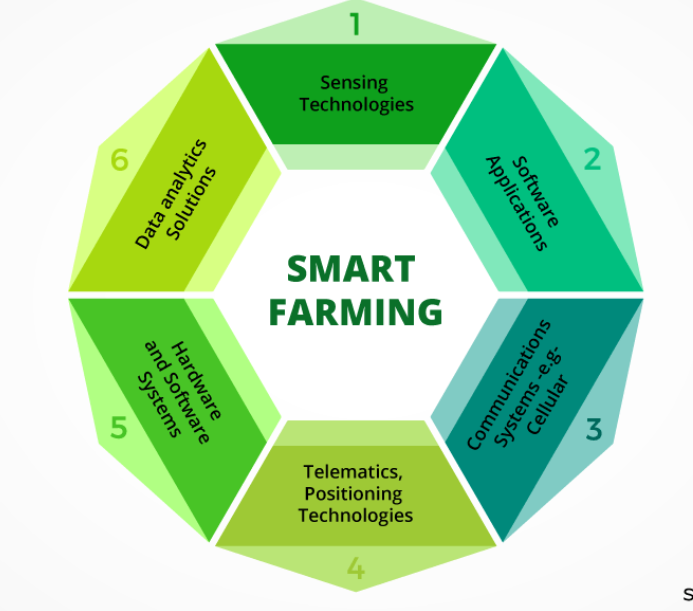
Integrating weather forecasts into farm management systems helps farmers plan activities, mitigate risks, and optimize resource allocation based on expected weather conditions.

**Automated Pest Monitoring and Control:**

Automated systems using sensors and cameras monitor pest populations. This information, combined with AI, helps in the timely application of pest control measures.

**Smart Crop Selection and Breeding:**

Data analytics and genetic engineering assist in selecting and breeding crops that are well-suited to specific environmental conditions, improving resilience and yield.



**CHAPTER 6: RECOMMENDATIONS AND CONCLUSIONS OF THE MINI PROJECT**

The smart agriculture project represents a transformative and sustainable approach to modernizing the agricultural sector. Through the integration of cutting-edge technologies and data-driven solutions, this initiative aims to enhance productivity, reduce resource inefficiencies, and address the challenges faced by farmers in a rapidly evolving world.

One of the key outcomes of the smart agriculture project is the optimization of resource utilization. By leveraging sensors, IoT devices, and real-time data analytics, farmers can make informed decisions regarding irrigation, fertilization, and pest control. This not only leads to increased crop yields but also minimizes environmental impact by reducing the overuse of water, fertilizers, and pesticides.

Furthermore, the implementation of precision farming techniques enables farmers to monitor and manage their fields remotely, providing them with a more flexible and efficient way to oversee their operations. This not only saves time and effort but also allows for timely responses to changing environmental conditions, ultimately improving the resilience of agricultural practices.

The incorporation of data-driven insights also contributes to risk mitigation and improved decision-making. By analyzing historical data and predicting future trends, farmers can better anticipate challenges such as weather fluctuations or market demands. This proactive approach empowers farmers to adopt strategies that maximize their returns while minimizing risks, fostering a more sustainable and economically viable agricultural ecosystem.

Additionally, the smart agriculture project fosters connectivity within the agricultural community. Farmers can share information, best practices, and insights through digital platforms, creating a collaborative environment that promotes knowledge exchange. This sense of community contributes to the overall growth and resilience of the agricultural sector.

In conclusion, the smart agriculture project represents a holistic and forward-thinking solution to the challenges faced by modern farmers. By embracing technology, data, and collaboration, this initiative paves the way for a more sustainable, efficient, and resilient agricultural future. As we move forward, continued investment in research, development, and the adoption of emerging technologies will be essential to further unlock the potential of smart agriculture and ensure food security for generations to come.

**Student Self-Evaluation for the Community Service Project**

Student Name:

Registration No: Period of CSP: From:

To:

Date of Evaluation:

Name of the Person in-charge: Address with mobile number:

**Please rate your performance in the following areas:**

**Rating Scale: 1 is lowest and 5 is highest rank**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1) Oral communication** | **1** | **2** | **3** | **4** | **5** |
| **2) Written communication** | **1** | **2** | **3** | **4** | **5** |
| **3) Proactiveness** | **1** | **2** | **3** | **4** | **5** |
| **4) Interaction ability with community** | **1** | **2** | **3** | **4** | **5** |
| **5) Positive Attitude** | **1** | **2** | **3** | **4** | **5** |
| **6) Self-confidence** | **1** | **2** | **3** | **4** | **5** |
| **7) Ability to learn** | **1** | **2** | **3** | **4** | **5** |
| **8) Work Plan and organization** | **1** | **2** | **3** | **4** | **5** |
| **9) Professionalism** | **1** | **2** | **3** | **4** | **5** |
| **10) Creativity** | **1** | **2** | **3** | **4** | **5** |
| **11) Quality of work done** | **1** | **2** | **3** | **4** | **5** |
| **12) Time Management** | **1** | **2** | **3** | **4** | **5** |
| **13) Understanding the Community** | **1** | **2** | **3** | **4** | **5** |
| **14) Achievement of Desired Outcomes** | **1** | **2** | **3** | **4** | **5** |
| **15) OVERALL PERFORMANCE** | **1** | **2** | **3** | **4** | **5** |

**Date: Signature of the Student**

**Evaluation by the Person in-charge in the Community/Habitation**

Student Name: Registration No:

Period of CSP: From:

To:

Date of Evaluation:

Name of the Person in-charge: Address with mobile number:

**Please rate the student’s performance in the following areas:**

**Please note that your evaluation shall be done independent of the Student’s self-evaluation Rating Scale: 1 is lowest and 5 is highest rank**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1) Oral communication** | **1** | **2** | **3** | **4** | **5** |
| **2) Written communication** | **1** | **2** | **3** | **4** | **5** |
| **3) Proactiveness** | **1** | **2** | **3** | **4** | **5** |
| **4) Interaction ability with community** | **1** | **2** | **3** | **4** | **5** |
| **5) Positive Attitude** | **1** | **2** | **3** | **4** | **5** |
| **6) Self-confidence** | **1** | **2** | **3** | **4** | **5** |
| **7) Ability to learn** | **1** | **2** | **3** | **4** | **5** |
| **8) Work Plan and organization** | **1** | **2** | **3** | **4** | **5** |
| **9) Professionalism** | **1** | **2** | **3** | **4** | **5** |
| **10) Creativity** | **1** | **2** | **3** | **4** | **5** |
| **11) Quality of work done** | **1** | **2** | **3** | **4** | **5** |
| **12) Time Management** | **1** | **2** | **3** | **4** | **5** |
| **13) Understanding the Community** | **1** | **2** | **3** | **4** | **5** |
| **14) Achievement of Desired Outcomes** | **1** | **2** | **3** | **4** | **5** |
| **15) OVERALL PERFORMANCE** | **1** | **2** | **3** | **4** | **5** |

**Date: Signature of the Supervisor**

**PHOTOS AND VIDEO LINKS**

<https://www.instagram.com/p/C1IyLGHoGNoLFK6WYV1Seedi6HImVDMwR0EHBc0/?igsh=MzRlODBiNWFlZA==>