Reference No. :- **IDEAAP011391**

1. Details of Incubatee:			
1.1 Details of the Host Institute (HI)	QIS College of Engineering and Technology , Ponduru Road, Vengamukkapalem, Ongole, Prakasam District, Andhra Pradesh , 08592281023 , principal@qiscet.edu.in , 9246419542	**1.2 Name of the Business Incubator (BI)**	Dr.A.Prakash , Associate Professor, Department of Electrical and , prakash.a@qiscet.edu.in , 7200585852
1.3 Category of the Incubatee	Others	**1.4 Incubatee Name**	S Saranya
1.5 State	ANDHRA PRADESH	**1.6 District**	PRAKASAM
1.7 Email Id	saranya.s@qiscet.edu.in	**1.8 Mobile Number**	8778593423
1.9 Category	OBC	**1.10 Gender**	Female
1.11 Address	107,Dheeraj Bhagya Nagar Residency, Bhagyanagar 3 Line,Ongole		
2. Details of Idea:			
2.1 Title of proposed idea/innovation	AUTOMATIC RICE TRANSPLANTING MACHINE (ARTM)		
2.2 Whether the idea involves use of existing intellectual property or not, give brief detail there of	• The idea is already patent filed in the patent office and the following are the details of the patent Title - Smart and Intelligent Based Rice Transplanting Machine (SIRTM) filed in Shri Rajendra Ratnoo, Controller General of Patents, Designs Trade Marks, the Patent number is 202141003251 and date of publication 29/01/2021, Holding by QIS College of Engineering and Technology, Ongole.		
2.3 Briefly explain newness/uniqueness of the innovation	1.The proposed machine focuses primarily on reducing the time and manual interference to transplanting the seedling in the paddy field. 2.The proposed system provides end-to-end solutions to increase the production of food grains through advanced IoT technologies and combined hardware technology such as Raspberry PI and LORA. 3.The proposed system uses camera to guide the ARTM in the correct direction to transplanting the seedling in the paddy field. 4.The system as a whole is first of all the way to solve a problem of automatically move and transplanting seedling in paddy field by using LORA. ARTM has the automatic guiding system using LORA and camera to detect the boundaries and based on the detection, it triggers the ARTM to move either left or right depending on the longitudinal and latitude values to plant the rice.		
2.4 Concept & Objective	For the past two decades, automobile and IT industries are growing in a very fast manner due to this most of the young people are attracted to these industries. It creates a massive demand for skilled labours for agriculture. Also, it is very difficult for farmers to get skilled labours during the monsoon season. It does not have the automatic movement control facilities and it is important to reduce the cost of the machine. To keep this in mind, we proposed an automatic rice transplanting machine (ARTM) for rice transplanting and it will overcome the above-mentioned issues by automatically move around and plants the rice in the paddy fields. Current rice transplanting machines are high in cost and also most of the farmers are interested to purchase such a machine for plantation purpose. ARTM has the automatic guiding system using LORA and camera to detect the boundaries and based on the detection, it triggers the ARTM to move either left or right depending on the longitudinal and latitude values to plant the rice.		
2.5 Specify the potential areas of application in industry/market in brief	Agriculture production plays crucial part for any developing countries economy. In late 1960&#';s, India has adopted green revolution to achieve the goal of adequacy in food production. Also started using mechanical based products in cultivation and increased the productivity in agriculture. Due to this food grains productivity is increased 51 Million Tonnes in 1951 to 283 Million Tonnes in last year. In India, Many people use rice as a main food grain. There are three important processes which are involved in paddy cultivation and they are preparation, manure and transplanting the seedling to field. During early days, transplanting is done by manually and it requires more number of labours. While going for large scale production it&#';s difficult to get workforce and also time consumption is more. The growth of paddy seedlings takes two to three weeks and also this is the first and foremost step in paddy cultivation. Usually, seedlings grow in nurseries. All grown seedlings are relocated to the farm field by manually. Since India is fast growing country in population requires fast production of food grains. It is not at all possible to produce food grains in stipulated time and satisfies the demand either by traditional or any new methodology. So, it is essential to use the upcoming new technologies in agriculture sector. ARTM will decrease the dependency of labour for transplanting paddy seedlings and also it will reduce the total cost as well.		
2.6 Briefly provide the market data for the potential idea/ innovation	Agriculture production plays crucial part for any developing countries economy. In late 1960&#';s, India has adopted green revolution to achieve the goal of adequacy in food production. Also started using mechanical based products in cultivation and increased the productivity in agriculture. Due to this food grains productivity is increased 51 Million Tonnes in 1951 to 283 Million Tonnes in last year. In India, Many people use rice as a main food grain. There are three important processes which are involved in paddy cultivation and they are preparation, manure and transplanting the seedling to field. During early days, transplanting is done by manually and it requires more number of labours. While going for large scale production it&#';s difficult to get workforce and also time consumption is more.		

2.7 Name and details of Mentors	Dr. S. S.Suresh Kumar Associate Professor, Department of ECE, Deputy Director -EDC, Directorate of Projects and Research, QIS College of Engineering and Technology Ongole, Andhra Pradesh, India	**2.8 Experience and Qualification of Mentors**	He has 14 Years of Teaching Experience in that 8 Years of Research experience. M.E.,Ph.D
2.9 Contact Details of Mentors	9894567014	**2.10 Current Development Status of innovation**	Literature Review is completed. Components with specification is identified and listed.
2.11 Expected time of completion of idea	1 year	**2.12 Idea Sector**	Agriculture, Rivers & Ocean Produce based industries, fertilizers, Agricultural Implements & Agro processing and any related sub-sector

3. Financial requirements:

3.1 Activity-wise break

Particular/Item	**Total idea project cost (Rs. In lakh)**	**Amount GOI assistance (Rs. In lakh)**	**Incubatee share (Rs. In lakh)**
Technology related Expenditure towards machine usage charges etc., Electricity charges, Procurement of raw material , testing/Calibration charges, other charges essential for development of idea **Max (10.00) lakh.**	8.000	6.800	1.200
Charges for mentor/handholding supporting team **Max (3.00) lakh.**	3.000	2.550	0.450
Travelling Expenses or any other item not coverd as above may be allowed as per need for development of the idea **Max (2.00) lakh.**	2.000	1.700	0.300
Total	13.000	11.050	1.950

Approved Activity-wise break

Approved By	**Approved Date**
PMAC	12/03/2024

Particular/Item	**Total idea project cost (Rs. In lakh)**	**Amount GOI assistance (Rs. In lakh)**	**Incubatee share (Rs. In lakh)**
Technology related Expenditure towards machine usage charges etc., Electricity charges, Procurement of raw material , testing/Calibration charges, other charges essential for development of idea **Max (10.00) lakh.**	8.000	6.800	1.200
Charges for mentor/handholding supporting team **Max (3.00) lakh.**	3.000	2.550	0.450
Travelling Expenses or any other item not coverd as above may be allowed as per need for development of the idea **Max (2.00) lakh.**	2.000	1.700	0.300
Total	13.000	11.050	1.950

Ref. No.	INC23CAP020348	**5. Summary of the idea. This is the section reviewers read to understand the technical solution. Please state the solution clearly. Reviewers may ask: What is the actual technical advancement or improvement provided by this solution?**	we proposed an automatic rice transplanting machine (ARTM) for rice transplanting and it will overcome the above-mentioned issues by automatically moving around and planting the rice in the paddy fields. Current rice transplanting machines are high in cost and most of the farmers are interested in purchasing such a machine for plantation purposes. ARTM has an automatic guiding system using LORA and a camera to detect the boundaries and based on the detection, it triggers the ARTM to move either left or right depending on the longitudinal and latitude values to plant the rice.
6 (a) Is it a new concept?		YES	
(b) Prior art on the concept, if any	The ARTM helps mainly to transplant seedlings automatically without any human interference and also it will reduce the total cost of paddy field cultivation by using this machine.	**7. Main Problem Being Addressed in the Project (Every solution targets a certain problem. Please use this section to highlight the specific problem the solution addresses. This section can be as short or as long as needed to describe the precise problem the solution addresses)**	The primary issue tackled by the automatic rice transplanting machine project involves the labor-intensive characteristics of conventional rice planting techniques. Rice transplantation stands as a pivotal phase in rice cultivation, where youthful rice seedlings are manually inserted into the rice paddies. This procedure demands substantial time, physical exertion, and a significant labor force.
8. Background for getting the idea?			
a. Who is it for?	The automatic rice transplanting machine is designed to serve the needs of the agricultural community, particularly rice farmers and cultivators. This innovative technology targets those engaged in rice cultivation, with a focus on alleviating the challenges posed by the labor-intensive process.	**b. What will it do?**	The automatic rice transplanting machine is a cutting-edge agricultural technology designed to revolutionize the process of rice cultivation. This innovative machine is engineered to automate and streamline the traditionally labor-intensive task of planting rice seedlings.
c. Any unique features? Explain?	The automatic rice transplanting machine boasts several unique features that set it apart as a game-changing technology in the realm of agriculture: • Precision Planting Technology • Adjustable Planting Parameters • Real-time Monitoring and Feedback • Navigation and Terrain Adaptation	**9. How simple or complex will the idea's execution or implementation be? What are the risk factors involved in executing the idea?**	The implementation of the concept for the automatic rice transplanting machine can span a spectrum from moderately intricate to highly intricate, contingent on factors such as the machines technological sophistication, the extent of automation, and the integration of diverse components. Risk Factors • Technological Hurdles • Operational Dependability • Data Precision • Initial Investment • User Acceptance • Maintenance and Assistance
10. How soon could the idea be put into operation? (TRL of prototype)	Proof of Concept (TRL 3-4): Right now we are in this stage, a proof-of-concept prototype is developed to demonstrate the feasibility of the key technologies and functionalities.	**11. How much investment would you need for prototyping of the Idea?**	13 lakhs are required to develop the prototype.
12. (a) How do you intend to protect your idea (i.e. your intellectual property or IP)? Status of IPR (If any)	The idea is already patent filed in the patent office and the following are the details of the patent Title - Smart and Intelligent Based Rice Transplanting Machine (SIRTM) filed in Shri Rajendra Ratnoo, Controller General of Patents, Designs Trade Marks, Patent number 202141003251	**(b) Related Background This section is used to highlight information that can be used by the reviewers or patent attorney to help put the solution in proper context. You can think of this section as something similar to the introduction section of an academic publication. This section is specifically reserved for other people's work (please include competitive work) as well as your past work that you believe will aid the reviewers in understanding the technical landscape. Data related to or supporting your solution should NOT be in this section, it should be in Section III: "How is this Solution Made and Used."**	The concept of an automatic rice transplanting machine builds upon advancements in agricultural automation, precision farming, and robotics. Several relevant technologies and research initiatives have paved the way for the development of such a solution. Notable works in the field include • Precision Agriculture • Robotic Farming • Other Crop Transplanting Machines • Remote Sensing and Monitoring • Collaborative Research • Startup Innovations • Government Initiatives

13.How is This Project Made and Used: Please describe in as much detail as possible how the innovation is implemented. This includes details on how you actually make, assemble, synthesize, or build the solution and details on how the solution is used once it is made. Reviewers will ask: How does the technical innovation actually work – or – what is the detailed process to achieve the technical innovation? Please help convince the reviewers with supporting statements using as much of the following that is available: your thoughts, logic, supporting literature, and/or experiments.	Creating the automatic rice transplanting machine involves a sophisticated fusion of diverse technologies, all aimed at automating the intricate process of rice planting. The development journey encompasses several pivotal phases: Conceptual Blueprint Mechanical Blueprint Electrical and Electronic Components Automation Algorithm Architecture Seedling Handling Mechanism Rigorous Testing and Evolution Manufacturing Marvel and Cohesion Verifying Prowess on Fields
Upload Block diagram/ flow chart/ Circuit Diagram/Pictures	View/Download
Uploaded Minutes of the evaluation Committee	View/Download

Application Remarks

Action	Date	Status	Remark
PMAC	12/Mar/2024 12:48:37 PM	Approved By PMAC	The 7th PMAC held on 15/02/2024 has approved this idea for GoI grant. Please check your mail and do the needful as instructed on priority basis. This may be treated as most urgent. View/Download

I declare that:

1. **I have read the entire scheme guidelines and shall abide by all the requirements stipulated therein for seeking financial assistance.**
2. **I hereby declare that information given above is true to the best of my Knowledge and that I have not withheld/distorted any material fact.**
3. **Any information/ documents that may be required to be verified shall be provided immediately before the concerned authority.**
4. **I hereby declare that I have not availed any financial assistance for this purpose from any other scheme from any Central/ State govt. agency.**
5. **In case the Idea is approved, Host Institute would undertake to make facilities available to carry out the development arrange for the submission of periodic progress reports and other information that may be required by the Ministry.**
6. **I certify that the accounts of the funds received and spent will be kept and made available on demand, as per scheme guidelines**
7. **I certify that the funds will be used only for Idea development as per activities defined in Scheme Guidelines & no funds out of this grant will be utilized for any other activity/production purposes.**