

**UNIVERSITY OF AGRICULTURAL AND  
HORTICULTURAL SCIENCES, NAVILE, SHIVAMOGGA**



***Guidelines and Template for Success Story under  
RKVY Project***

***Entitled***

**“Establishment of Farm Machinery Workshop cum  
Service and Training Centre”**



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Professor (Agricultural Engineering)  
ZAHRS, Hiriyur, UAHS, Shivamogga.

## 1. Title - “Empowerment of Farmer through Mechanization”

## 2. Category – agriculture, horticulture, animal husbandry etc,

**Agriculture Engineering:** Agricultural mechanization helps in increasing production, productivity and profitability in agriculture by achieving timeliness in farm operations, bringing precision in metering and placement of inputs, reducing available input losses, increasing utilization efficiency of costly inputs (seed, chemical, fertilizer, irrigation, water etc.), reducing unit cost of produce, enhancing profitability and competitiveness in the cost of operation. It also helps in the conservation of the produce and byproducts from qualitative and quantitative damages; enables value addition and establishment of agro processing enterprises for additional income and employment generation from farm produce. It is one of the important inputs to usher in all round development in the rural India. It is very essential to create awareness and train in mechanization of agriculture in order to overcome the labour problem and to reduce cost of cultivation.

## 3. Challenge

Short coming are the part and parcel of the today’s spanned life, but these short coming of the farmers are the target point of agriculture engineering, the trouble shooters for our play was the lack of knowledge about technology, lack of understanding found in farmers leading to difficulty in conveyance of the matter about the mechanization, lack of availability of the advanced equipments for multiple operation at a time and set back of the farmers in their economy which resists the affordability on the equipments.

Our project was put forward for the following constraints like:

- Lack of awareness on utilization of modern efficient equipments to suit their requirements depending on his land holdings.
- Poor purchasing ability towards costlier equipments and machineries.
- Non availability of required farm equipments/machineries to suit precision farming under small land holdings.
- Poor knowledge on the source and mode of availability.
- High initial cost of equipments and Lack of knowledge in the aspect of operation.
- In a crop season, on the onset of rains all the farmers will take-up sowing at a stretch to exploit the available moisture, there farmers in general face scarcity of labour/farm equipments
- Poor knowledge on the source and mode of availability

The challenge accepted by us through this project taken a strong and determined step in our play to eradicate these lacunae, through “establishment of farm machinery workshop cum service and training center” , was won by favoring the farmers in terms of cost-labour-time saving services, economic strength by increasing the yield, standard of living,

#### 4. Initiative

A thousand mile journey begins with a first step, so our project was initiated by the purchase / To introduce suitable equipments/ machineries for pre and post harvest mechanization under dry land agriculture based on crop specific requirement to suit small and marginal land holdings, the workshop required equipments like lathe, tractor drawn implements, and field testing equipments ect,. also purchased to modify and develop equipments based on their feedback and techno economic feasibility, Then activities was planed in the following methodology,

- Establishment of custom hiring center for dry land agriculture crops with special reference to resource poor farmers ,
- Procurement/development/modification of pre and post harvesting equipment and machines that specially suit for present day farmers,
- Identification of region, crop and land specific equipments and machineries for custom hiring centers
- Popularization and commercialization of equipments /machineries through pamphlets, vedio, mass media and worksops/seminar/krishimela,
- To record and analyze the impact of mechanizes cultivation

In continuation timeline of action was planned and followed according to PERT chart,

**Time frame:**

Period of study	Achievable targets (Clearly indicate targets per month or quarter)
1 <sup>st</sup> year	<ul style="list-style-type: none"> <li>- Preliminary Survey</li> <li>- Establishment of custom hiring center for crop production</li> <li>- Training-cum-Demonstration to the Farmers/rural youth.</li> <li>- Testing/Evaluation of existing/newly developed machineries.</li> </ul>

2 <sup>nd</sup> year	<ul style="list-style-type: none"> <li>- Testing &amp; Modification of existing/ developed machinery</li> <li>- Training-cum-Demonstration to the Farmers/rural youth</li> <li>- Promotion and Strengthening of Agricultural Mechanization through Demonstrations, pamphlets, video, mass media and workshops/seminar/Krishimela.</li> <li>- Certificate courses on Use, Repair and maintenance of farm machineries would be started.</li> </ul>
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***PERT chart for implementation of the project (2-years duration)***

Activities planned	6 months	12 months	18 months	24 months
Custom hiring center (building)				
Preliminary Survey of Farm Implements				
Establishment of workshop cum service centre				
Design & Development of Farm machines				
Evaluation of existing and modified Farm equipments				
Training-cum-Demonstration to the Farmers/rural youth				
Procurement of Workshop machineries				
Custom hiring of farm machineries				
To get the feedback from farmers				
To study the impact of mechanization and economics.				

finally all these hardships was benefited mainly to the resource poor farmers by establishing custom hiring center, this project was started with a ray of hope in 2013 and successfully completed with full shine in 2016 with crystal clear utilization of sanctioned budget,

### Detail information of equipments/implements list under RKVY 2012-13

Sl No	Name of Equipments	Price/hour (Rs)	Price/day (Rs)	Time limits (days)	Advance (Rs)	Cost of machine/implements	No of benefited farmers	Area covered (Acres)
01	Coconut frond Cutter ( With Tractor)	500	4000	5	10,000	1,32,000	10	15
02	Reaper cutter	300		5	5000	98,250	20	40
03	Reaper cutter cum binder	800		5	10,000	3,70,000	03	10
04	Power Weeder		1000	5	5000	64,000	03	08
05	Onion Grader		1000	5	5000	59,000	04	04
06	Tractor Drawn Bund Former	800	1000	5	5000		20	180
07	Tractor drawn Seed Drill		1000	5	5000	55,000	60	250
08	Tractor drawn Seed Drill with Tractor	650		5	5000		02	10
09	Bhoom Sprayer		1000	5	5000	45,000	05	20
10	Bhoom Sprayer with Tractor	600		5	5000		01	04
11	Plastic Mulching Machine		1500	5	5000	12,000	02	02
12	Plastic Mulching Machine With Tractor	1000		5	5000	63,000	-	-
13	Manual vegetable Planter		100	5	500	2,000	06	04
14	Groundnut Digger		1500	5	5000	1,90,000	08	20
15	Groundnut Digger with Tractor	500		5	5000	1,90,000	02	04
16	Groundnut Wet Pod Thresher		1200	5	10,000	1,90,000	03	03
17	Groundnut Wet Pod Thresher with Tractor	500		5	10,000		04	04
18	Groundnut Wet pod thresher ( Diesel Engine)	500	1200	5	10,000	1,90,000	01	01
19	Castor Thresher without Tractor	100		5	5000	1,50,000	04	04
20	Castor Thresher with Tractor	500		5	5000		10	25
21	Ridger Furrow Opener		500	5	2000		04	06
22	Bullock Drawn onion seed drill		500	5	2000		04	02
23	Bullock Drawn Groundnut seed drill		500	5	1000	15,000	12	20
24	Seed cleaner		100	5	1000	10,000	05	12
26	Groundnut intercultural weeder hoe		500	5	5000		02	06
<b>Total</b>							<b>195</b>	<b>654</b>

### Benefits providing to the farmers through custom hiring Centre

1. Timely availability of Men & Machineries at farmers door step.
2. Low hiring rates (Annexure 1).
3. Scientific recommendations & frequent visit by scientist.
4. Increase in Production & productivity due to Precision farming.
5. Increase in Employment opportunities through CH & Service Centre, Since our centre is providing Hands on Training to the Rural youth.
6. Reduction in operational cost.
7. Reduces drudgery & Labour problem. More area in less time.
8. Reduces losses & increase in profit.

### Physical progress under custom hiring services to the farmers at Brahmavar Centre.

Sl. No	Particulars	Target Planned	Target Achieved
1.	Mechanized Primary cultivation	350.00 acre	350.00 acre
2.	Nursery /Seed bed preparation	300.00 acre	312.00 acre
3.	Mechanized Secondary cultivation (Puddling)	350.00 acre	350.00 acre
4.	Mechanized Transplanting	300.00 acre	312.00 acre
5.	Mechanized weeding	50.00 acre	50.00 acre
6.	Spraying	-	2.00 acre
7.	Mechanized Harvesting	200.00 acre	152.00 acre

### Physical progress under custom hiring services to the farmers at Hiriyur Centre.

Sl. No.	Name of the implement	No of benefited farmers	Area covered (Acres)
1.	Groundnut seed drill	16	415
2.	Groundnut decorticator	5	
3.	Pneumatic tire	2	50
4.	Tractor drawn groundnut inter cultivator	2	22
5.	Bhoom sprayer	2	40
6.	Manual cycle weeder	15	34
7.	Power weeder	3	25
	<b>Total</b>	<b>45</b>	<b>586</b>

**Physical progress under custom hiring services to the farmers at Shivamogga Centre**

<b>Sl. No.</b>	<b>Name of the implement</b>	<b>No of benefited farmers</b>	<b>Area covered (Acres)</b>
1.	Seed cum Fertilizer drill	50	255
2.	Reaper	10	50
3.	Paddy Transplanter	20	80
4.	Paddy weeder	12	25
5.	Post hole digger	10	30
6.	Manual digger	15	25
7.	Weed cutter	25	25
	<b>Total</b>	<b>142</b>	<b>490</b>

## 5. key results:

The successful operation of custom hiring center helps to reduce the burden of high investment and maintenance costs of the farm machinery at the farm level. However, for the long term sustainability of the services of this custom hiring center established by university, these need to be economically viable for rural and small marginal farmers.

Insight fact stemming from this project is

- Increase income to farmers through mechanization



Demonstration of Groundnut Digger



Demonstration of Tractor Drawn Intercultural Operation



Demonstration of Power Operated and Hand Operated weeder



Demonstration of Combine Harvester

- Custom hiring center was established in ZAHRS, babbur farm, Hiriyyur, which provides the equipments for farmers as required at a very low rent





- Employment for rural youth by creating awareness about modern technology applications in agriculture through training camp, seminars and demonstration,







## 6. Impact

Since, the A-Z Mechanization in Groundnut is available our station and farmers are benefited from it through custom hiring center and also demands for equipments like castor thresher, decorticator , cycle weeder, bund formers tamarind deshuking and tamarind de-seeding machines, A-Z mechanizations in onion is under progress, role of engineering in agricultural field is important it should reach the resource poor farmers.

### Mechanization in Groundnut

- Land Preparation
- Sowing
- Weeding
- Plant protection
- Harvesting
- Threshing
- Decortications
- Grading

Particulars	No. of labour required/ha	Operation cost Rs/ha (labour + hiring charges )
Farmers practices	96	24,775
Mechanization	13	11,114

**Cost saving through mechanization = 24,775 – 11,114 = 13,661**

**Percentage saving through mechanization =  $\frac{(24,775 - 11,114)}{24,775} \times 100 = 55.10 \%$**

The target beneficiaries of the project included

1. Resource poor farmers
2. Small and marginal farmers of dry land region
3. Empowering Rural youths on fabrication of newly developed equipments suited for small land holders.

## **7. Lessons Learned**

In central dry zone (zone IV), more than 60 per cent of the farmers are resource poor and depends on traditional equipments and methods which contributing towards poor yields and income.

In a crop season, on the onset of rains all the farmers will take-up sowing at a stretch to exploit the available moisture. Thereby farmers in general face scarcity of labours/farm equipments. Under the said situation, the resource poor farmers may lose the season of sowing and ultimately losing their farm income.

The Resource poor farmers face followings constraints locally

- (i) Non availability of required farm equipments/machineries to suit precision farming under small land holdings.
- (ii) Timely availability of labours/farm equipments to carryout various field operations to suit their land holdings.
- (iii) Poor purchasing ability towards costlier equipments and machineries.
- (iv) Lack of awareness on utilization of modern efficient equipments to suit their requirements depending on his land holdings.
- (v) Poor knowledge on the source and mode of availability.

Custom Hiring in India faces constraints like high initial cost of equipment, lack of knowledge in the aspects of operation, maintenance and repair of equipment, repair and maintenance under individual ownership coupled with lack of space for shelter, orientation towards the use of tractors and allied equipment, sub-optimal asset capacity utilization on account of crop specific requirements.

In view of the above, the present proposed project will look after the said constraints faced by the resource poor farmers under dry land situations.

## 8. Supporting Quotes and Images:



### Farmer Friendly Cycle Weeder

**Dr. Vasudevappa Honorable Vice Chancellor, Dr. M.K Naik Honorable Director of Research, Dr. Vagish Dean PGS, University of agricultural and horticultural science, Shivamogga, have appreciated the efficiency of cycle weeder, which is farmer friendly and helpful to small and medium scale farmers, which is available in cheaper rate**



### Patent for Agriculture Implement

**Dr. S Aiyappan Principal Director and Secretary of Bharatiya Krushi Anusandan Parishath, Government of India, New Dheli, has expressed his appreciation to Dr. Sharanappa Jangandi for the invention of cycle weeder, he also told that it was very good agricultural implement, which staticifies the lack of availability of agricultural labours he has also suggested to Dr. Sharanappa Jangandi to get a patent for the cycle weeder.**



#### A Time and Labour Saving Groundnut Decorticator

Dr. Narayana Gowda Honorable Vice Chancellor, Dr. Shivanna Honorable Director of Research, University of Agricultural Science, Bangalore have very much appreciated Hand operated and Motor operated Decorticator, they said that this machine is very much suitable and less expensive for the small and marginal farmers with the help of this machine 150 kg of groundnut is decorticated per day, which can reduce the 10 labour's and time, they opined that this machine is suitable where there is a lack of availability of labour's



#### **Mechanization in Modern Agriculture – A Ray of hope in Farmer's Life**

**Dr. Sharanappa Jangandi Who has developed the modern equipment was Honored by Shree B N Chandrappa Honorable M.P of Chitradurga and D Sudakar Honorable M.L.A Hiriur,**

**These Machines have helped farmers a lot in reducing the drudgery of Daily labours in this day's**





### **Farmer's friendly Multi Purpose Agricultural Machineries**

**Shree C M Ibrahim Honorable Chairman of state Planning Commissioner of Karnataka, Government of India has Honored and Appreciated Dr. Sharanappa Jangandi for his research in the production of this machineries, he has told that it is very inheritable to use modern agriculture machineries in the development of agriculture, he has directed the officials to develop an awareness among small and marginal farmer's.**



### **Establishment of customer hiring center his holiness**

**Shree, shree, shree Shivamurthy Muruga Rajendra Sharanar and Honorable Agricultural minister Sri Krishna Byregowda who have participated in the Sarana Samshkrithi Uthsava 2013 and released motor operated cycle weeder, they have honored and appreciated the hard work and skills of Dr. Sharanappa Jangandi in the research and production of agricultural machineries, to encourage Dr. Sharanappa Research Honorable minister has released rupees one Crore to state "customer hiring center"**



### **Invention of low cost Machineries**

**Shree Dr. Carlin Honorable Agricultural Scientist from Germany**

**has visited our agriculture Engineering research center and appreciated Dr. Sharanappa Jangandi for the production of low cost agriculture machineries, been surprised looking at this low cost machineries and has told that had never seen anywhere earlier, she opined that this machineries were very much useful for small and marginal farmers, she also applauded the service given by customer hiring center**



## 9. Additional information:

<b>Title of Project</b>	:	<b>“Establishment of Farm Machinery Workshop Cum Service and Training Centre”</b>
<b>Nodal officer</b>	:	<b>Dr. Sharanappa Jangandi</b> Professor (Agricultural Engineering) ZAHRS, Hiriyur
<b>Principal Investigator (PI)</b>	:	<b>1. Dr. M. Shankar Asst. Prof of Agri.Engg. ZAHRS, Brahmavar</b> <b>2. Er. Basavarajappa H. Bhogi Asst. Prof of Agri.Engg. ZAHRS, Shivamogga</b>
<b>Implementing Institution (S) and other collaborating Institution (s)</b>	:	Zonal Agricultural and Horticultural Research Station Hiriyur ,Brhamavar and Shivamogga.
<b>Date of commencement of Project</b>	:	2013
<b>Approved date of completion</b>	:	2016
<b>Actual date of completion</b>	:	2016

## 10. Checklist

Sl. No.	Questions to considered	Yes	No
01	Is the story interesting to the target audience of the project/activity report?		
02	Does the story explain what new insights the project brings? What is the main lesson learned from this story? Does the story describe a key insight on what works and what doesn't and something that future project could build on		
03	Does the story describe the outcomes the project produced and the people who are benefitting? What changes—in skills, knowledge, attitude, practice, or policy—has the project brought, and who is benefitting from these changes?		
04	Does the story make a compelling point that people will remember? Does the story show how the project makes a difference to improving livelihoods and lessening poverty?		
05	Does the story provide an interesting fact that people will remember? For example, how much yields increased, how many hectares of land could become more productive from this innovation or technology?		
06	Does the story explain what kind of impact this innovation or technology could have if scaled up?		
07	Does the story show which partners contributed and how?		
08	Does the story include quotes from Stakeholders or beneficiaries?		
09	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other Programme/ project ) that also feature this story?		
10	Have I provided the contact details of people who can provide more information?		