

Spiral Grader and Seed Treatment Drum in Madhya Pradesh



Prepared for:

Directorate of Agriculture Engineering,
Govt. of Madhya Pradesh
under
Small Farmers' Agribusiness Consortium



PREPARED BY



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EXECUTIVE SUMMARY

The Madhya Pradesh Government has taken an initiative to study the distribution of Spiral Grader and Seed Treatment Drum in Balaram Villages. This study is in line with Small Farmers' Agribusiness Consortium (SFAC). The physical plan consists of the coverage of the villages in the state. 1000 model villages have been selected known as Balaram villages. In this state there are total 313 blocks and each block consists of 3 Balaram villages. Now 10% blocks i.e. 30 blocks are targeted and from every one village is selected for study purpose.

The use of Spiral Grader and Seed Treatment Drum for agricultural purposes reduces not just the hardship faced by farmers under traditional manual practices but also boost up agricultural processes, saves costs and enhances agricultural productivity. These benefits of farm mechanization among many others have driven Indian states to motivate their farmers for switching over to the use of modern farm equipments.

The objectives behind selection of villages for distribution of the Spiral Grader and Seed Treatment Drum are to train the less knowledgeable farmers of the villages and to make them aware about the usage of Spiral Grader and Seed Treatment Drum, to boost up their motivation towards agricultural activities, to support the farmers in less time consumption process, application of scientific process in Agriculture, savings of labor cost etc.

Initially there was a tentative plan to cover 1000 villages with a stipulated budget but at later phase 15 more villages were selected. So 1015 villages were covered without enhancing the budget cost, that means physical plan exceed by 1.5% at zero extra cost.

The initiative of distributing of Spiral Grader and Seed Treatment Drum was started in 2011-2012. The Balaram villages have been selected for the distribution of Spiral Grader and Seed Treatment Drum. Madhya Pradesh is a core agricultural area which has 11 agri-climatic zones. In such a scenario the launching of Spiral Grader and Seed Treatment Drum have a full fledged use. 20% increase in quality has been observed in all type of crops. Not only saving of time but also labor cost has been saved. The pace of work has been increased by 7-8 times. This revolution in grading and treating seeds has attracted so many people in agriculture.

Basically, 1015 Balaram villages have been chosen for free distribution of one Spiral Grader and one Seed Treatment Drum in each village. After seeing the success of both machines, other village farmers also have started to come and use the machine. The main objective of the study is to analyze the impact of Spiral Grader and Seed Treatment Drum, how those machines are benefited to the farmers and all.

The total procurement cost of Spiral Grader and Seed Treatment Drums are as follows:

Spiral Grader : Rs. 62, 84,250.00/-

Seed Treatment: Rs. 27, 45,200.00/-

If any farmers want to buy either of the two machines, he will be given a subsidy of 75% which consists of 50% from state government and 25% from central government.

A five prolonged methodology has been used such as Reconnaissance survey, Extensive secondary research, Stakeholder meet & feedback, structured interview and Focus group discussion to conduct the survey.

The effect of the scheme can be seen clearly in the increasing productivity of crops like soybean, paddy, wheat, gram, lentil etc. More than 60% to 85% increase is observed for some particular crops. After launching Spiral Grader and Seed Treatment Drum the following changes are seen:

- Soybean has been increased by 75%,
- Chana increased by 60%,
- Matar increased by 40%,
- Masur increased by 71%,
- Paddy increased by 49%,
- Wheat increased by 36%

Increased productions of the above crops are also dependent on the weather condition, soil condition, irrigation facilities, availability of seeds and much more factors. Apart from these the scheme also helped the farmers in expanding their knowledge base regarding using modern agricultural methods, techniques and machineries. Time taken per hours to grade one quintal of seeds through Spiral Grader and Seed Treatment Drum has been reduced by 7-8 times. Previously 8 hour required grading one quintal of seeds but now it is a matter of hardly one hour. Cost of labor has been reduced largely from Rs.240 to Rs.30 per hour.

Spiral Grader and Seed Treatment Drum have left a major impact on Oilseeds production in Madhya Pradesh. The main findings of the study are as follows:

- Increase in quality,
- Empowerment of farming community,
- Quickening up the grading and treating process regarding the seeds,
- Zero usage of fuel power and electricity,
- Minimal maintenance cost and portability of the machines etc.

On the other hand there are some drawbacks like the machines are not available timely, shortages of machineries etc.

The farmers have taken well to the two machines and time has come to introduce the same on a larger scale with few modifications as suggested below:

- The Spiral Grader should be designed in such away so that all type of seeds can be graded;

- Semi-automation should be considered in case of seed treatment drum so that large quantity can be processed and human labor can be relieved.
- Spiral grader can be broken up into three parts to negate the hindrance regarding its height. More over a third output point can be incorporated so that separation time is lessened.
- For better results from the scheme, the ratio of farmers to machine should be kept around 50:1.
- Madhya Pradesh is mainly playing on their volume of production whereas per hectare yield is less than competitors. Hence the same has to be looked into to maintain the comparative advantage that Madhya Pradesh has over its competitors.
- And last of all the Awareness and amicable atmosphere should be spread and created within the farmers such that there is optimal usage of the two machines.

CHAPTER 1

INTRODUCTION

BACKGROUND

Directorate of Agriculture Engineering, Government of Madhya Pradesh has taken up measures to enhance agricultural productivity in the state. Spiral Grader and Seed Treatment Drum distribution is one of such measures to demonstrate the comprehensive production enhancing agricultural practice with other converging initiatives like deep ploughing, irrigation facilities.

The Spiral Grader & Seed Treatment Drum (SG & STD) were introduced during 2011-12 in 1015 villages as pilot project which would be scale up to cover all villages (52,000) within 5 years depending upon the performance of the scheme.

I-Win Advisory Services has been entrusted to conduct an Evaluation Study of the on going program under the aegis of Small Farmers' Agribusiness Consortium (SFAC), Ministry of agriculture, Government of India.

PHYSICAL AND FINANCIAL PLAN OF THE STUDY

A brief of the program is given below:

Program: *Spiral Grader & Seed Treatment Drum*

Implementing Agency: *Directorate of Agriculture Engineering, Government of Madhya Pradesh*

Initial Plan: *To cover 1000 villages under the program*

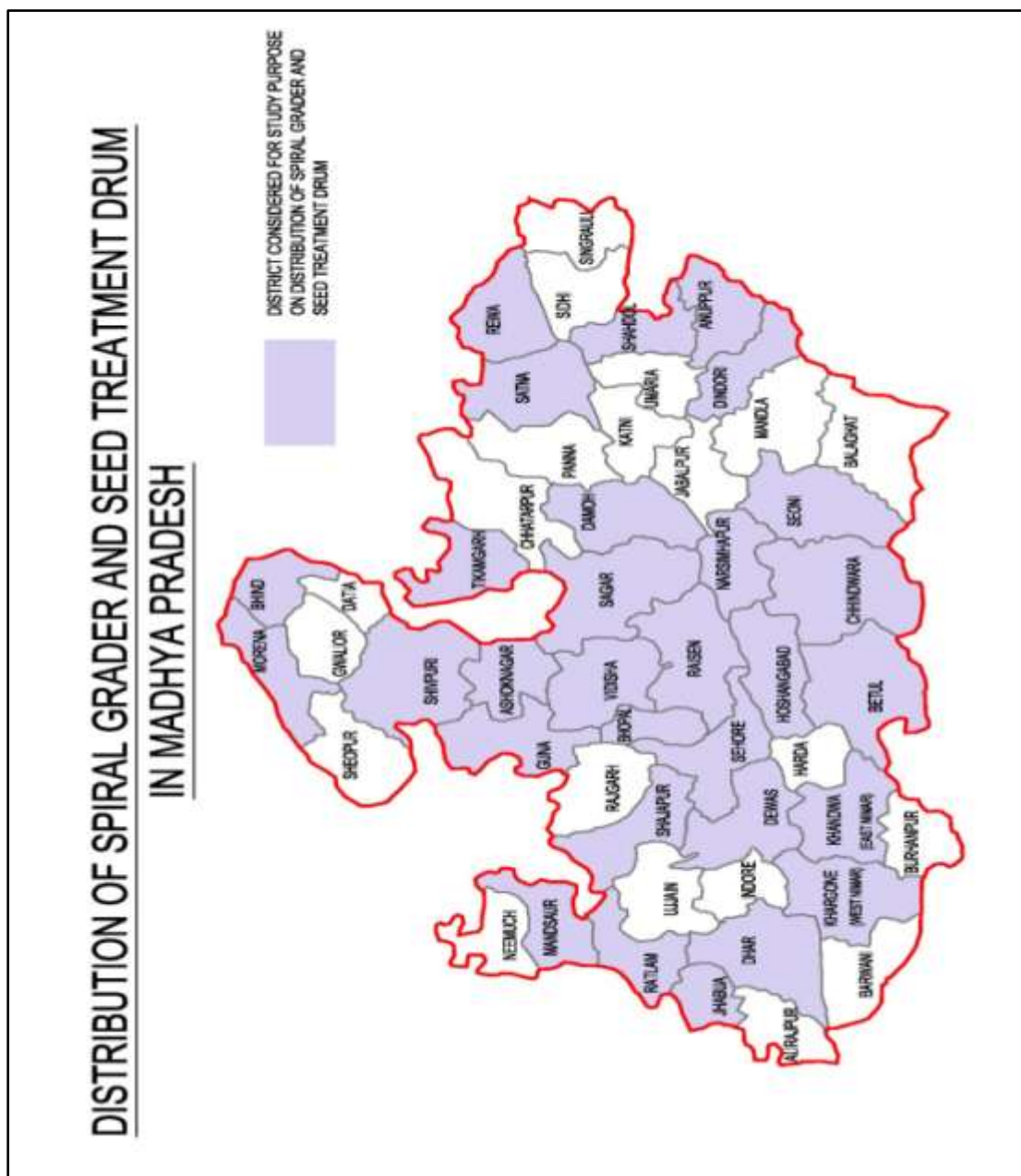
Achievement: *Villages covered: 1015*

Reasons for covering more villages: There was a tentative plan to cover 1000 villages with a stipulated budget. 15 more villages other than the targeted 1000 were accommodated within the stipulated budget, hence physical plan exceed by 1.5% at the zero extra cost.

The criterion behind selection of villages for distribution of the Spiral Grader and Seed Treatment Drum are based on the following:

- Financially weaker section of the farmers should get the priority.
- To train the less knowledgeable farmers of the villages and to make them aware about the usage of Spiral Grader and Seed Treatment Drum.
- To boost up their motivation towards agricultural activities.
- To support the farmers in less time consumption process, application of scientific process in Agriculture, savings of labor cost etc.

1000 model villages have been selected known as Balaram villages. In this state there are a total of 313 blocks and each block consists of 3 Balaram villages. Now 10% of these blocks i.e. 30 blocks have been considered for the evaluation study. Out of 30 blocks, 30 villages (one village from each block) have been selected for conducting field level survey. Villages have been selected in consultation with the Directorate of Agricultural Engineering, GoMP. The district as selected under the evaluation study is as follows:



Agriculture engineering department has distributed Spiral Grader and Seed Treatment Drum in 1015 village out of 1031 villages. Total Cost of Spiral Grader and Seed Treatment Drums distributed are as follows:

Spiral Grader : Rs. 62, 84,250.00/-

Seed Treatment: Rs. 27, 45,200.00/-

The subsidy for purchasing Spiral Grader and Seed Treatment Drum is as follows:

Price of a Spiral Grader is Rs. 6200

Price of a Seed Treatment Drum is Rs. 1900

Subsidy allowed by Central Government is 25% and Subsidy allowed by State Government is 50%, as a whole 75% of the price is paid by the government and the farmers need to pay the remaining 25%.

Madhya Pradesh is rich in following agricultural production.

Agriculture Production- Major Crops

<i>Crop</i>	<i>All India Production (MMT)</i>	<i>Production in M.P. (MMT)</i>	<i>Percentage of production</i>
<i>Pulses (all)</i>	14.20	3.20	22.53
<i>Gram</i>	6.33	2.41	38.07
<i>Lentil</i>	0.91	0.26	28.57
<i>Tur(yellow pigeon pea)</i>	2.31	0.22	9.52
<i>Maize</i>	15.10	0.84	5.56
<i>Soybean</i>	8.85	4.78	54.01
<i>Rapeseed & Mustard</i>	7.44	0.69	9.27
<i>Wheat</i>	75.81	7.33	9.66
<i>Sugarcane</i>	355.52	2.81	0.79
<i>Rice</i>	93.36	1.37	1.46

[Sources: Department of Agriculture, Government of Madhya Pradesh]

From the above table it can be inferred that Madhya Pradesh contributes a large percentage of India's total production of Soybeans, Lentils, Pulses and Gram.

Major Crops and Rank in India

<i>Crop</i>	<i>All India Production (MMT)</i>	<i>Production in MP (MMT)</i>	<i>All India Rank</i>
<i>Soybean</i>	8.85	4.78	1st
<i>Gram</i>	6.33	2.41	1st
<i>Pulses</i>	14.2	3.2	1st
<i>Lentil</i>	0.91	0.26	2nd
<i>Rapeseed & Mustard</i>	7.44	0.69	4th
<i>Wheat</i>	75.81	7.33	4th
<i>Tur</i>	2.31	0.22	5th
<i>Maize</i>	15.1	0.84	7th

[Source: Agricultural Website of Madhya Pradesh Government]

In India Madhya Pradesh holds 1st position in three respective produces such as Pulses, Oilseeds, Maize, Gram and Soybean. Moreover there are 11 agro climatic zones in the state. Hence after considering all the above mention fact it is obvious that the distribution of Spiral Grader and Seed Treatment Drum are should be full of use in this state.



Farmers are showing their huge production of Soybean

CHAPTER 2

PROCESS

SPIRAL GRADER

Spiral Grader is a seed separator that helps in to separate seeds and their peel. It also throws away dusts and other unusable things. Spiral Grader basically separates the quality seeds and the inferior seeds. The machine provides a superior way and modern way to the farmers. It is much effective to use for the round shaped seeds. Generally the seeds are passed through the seven round shape (see picture 1.1) cone after pouring seeds from the top cone. This machine is portable and user friendly.

1.1 Team I-WIN Makes a Close Observation of Spiral Grader & Seed Treatment Drum

SEED TREATMENT DRUM

Seed treatment drum is used to mix the medicine with the seeds in a larger quantity in such a way that no seed or medicine is in the book of wastage. It is very simple to use, user friendly and time saving. After keeping seeds in the drum it needs to add medicine, thereafter moving the drum clockwise and anti clockwise (in up and down motion) thoroughly so that the seeds and medicine can mix well with each other.



1.2 Seed Treatment Drum in the Ramsthan village, Satna District



1.3 An Insider View of a Seed Treatment Drum



1.4 A farmer is pouring seeds into the drum

Process

Spiral Grader and Seed Treatment Drum both are in use in pre- sowing period. Generally the round shaped seeds are very effective for grading purpose. Seed treatment drum is used any type of seeds to mix up the medicine. To run both the machines no power, no electricity and no water are required. The height of the Spiral grader around 8-9 ft. and space occupied by it is around 1sq. meter. The Seed Treatment Drum occupies 1 sq. meter and its height around 3 ft. Through the Spiral Grader and Seed Treatment Drum following seeds are graded:

Seeds Graded through Spiral Grader	Seeds treated through Seed Treatment Drum
Soybean	Arahar
Chana	Soybean
Matar	Chana
Musur	Matar
	Musur
	Alsi
	Paddy
	Wheat
	Urad

	<i>Ramtil, Kodo, Kutki etc.</i>
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In both Kharif and Rabi seasons Spiral Grader has great significance in grading the seeds. Following are the seeds graded in both the season:

<i>Spiral Grader</i>	
<i>Rabi</i>	<i>Kharif</i>
Chana	Soyabean
Matar	
Masur	
Alsi	

Generally all the seeds are treated in the seed treatment drum in Rabi and Kharif season:

<i>Seed Treatment Drum</i>	
<i>Rabi</i>	<i>Kharif</i>
Chana	Soybean
Matar	Arahar
Masur	Paddy
Alsi	Ramtil
Wheat	Kodo
	Kutki

Grading Process in Spiral Grader and Seed treatment drum:

The machine consists of two circular path and two outlets

- ✓ *Step 1:* Once the seeds are poured through the hole on the top cone it rolls down through the machine.
- ✓ *Step 2 :* The better quality seeds (well round shaped) rolls on faster than the dirty and bad quality seeds, as a result the good quality seeds jumped into the wider circular path in a motion and the seeds are collected at the bottom. Meanwhile the good quality seeds never change its path
- ✓ *Step 3:* On the other hand as the bad quality seeds, dirt and other rough edges which do not roll properly, the seeds are passed through the smaller, narrow circular path and gets out through the other circular path.

A picture of Spiral Grader will reflect the process:



Path for getting out dirt and roughages

Path for getting out the quality seeds

Treatment process through Seed Treatment Drum:

The Seed Treatment Drum is used in the following process:

- ✓ *Step 1:* Pouring seeds into the drum as per requirement.
- ✓ *Step 2:* Add medicine into the drum as per requirement.
- ✓ *Step 3:* Close the drum
- ✓ *Step 4:* Move the drum clockwise and anti clock wise in up and down motion for five minutes.
- ✓ *Step 5:* The seeds are ready for sowing.



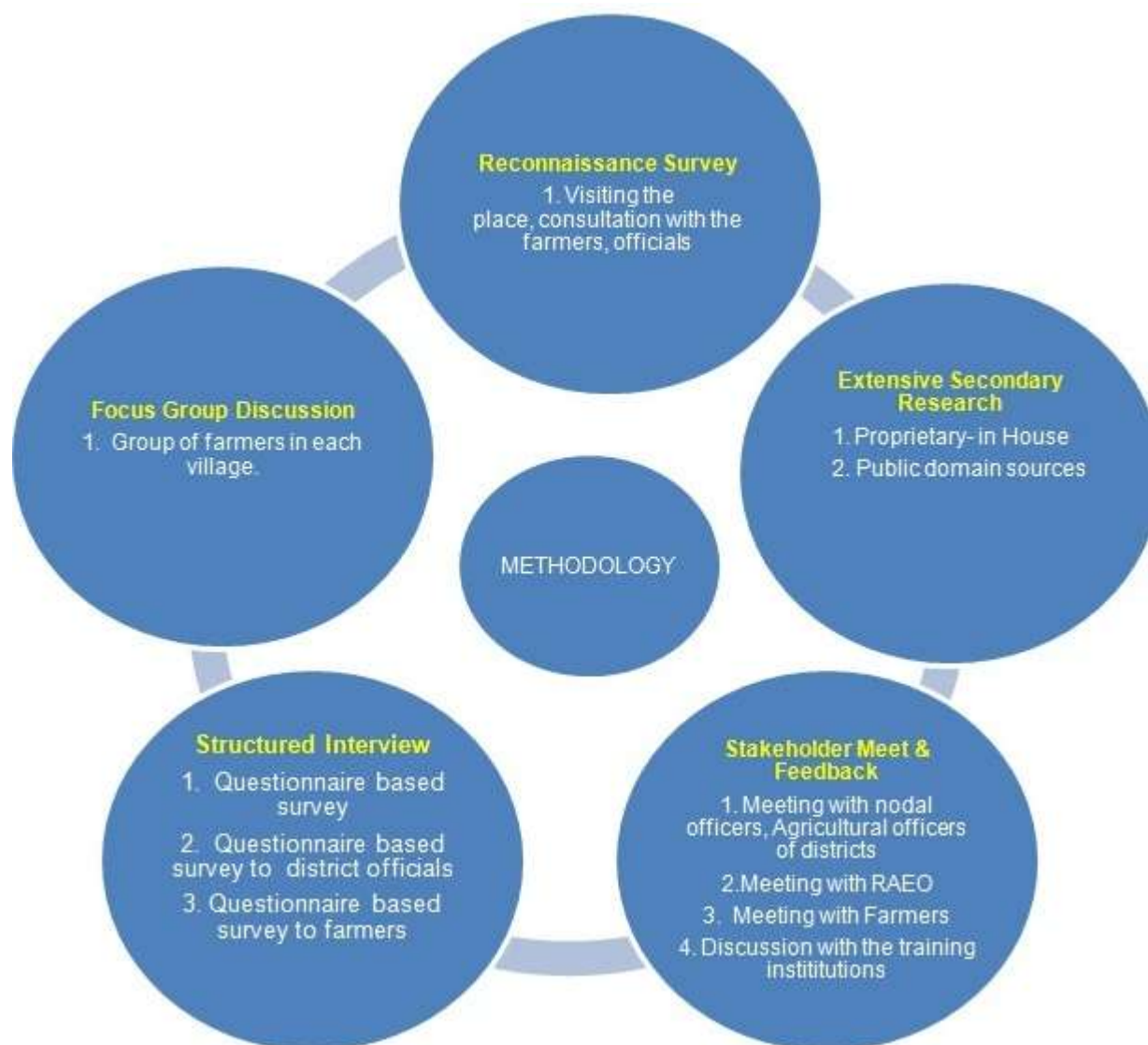
Seed Treatment Drum

Drum Handle to move around

CHAPTER 3

METHODOLOGY

A five pronged methodology as shown in the figure below has been used to carry out the study.



- *Reconnaissance Survey:* Target population of reconnaissance was farmers of the villages and government officials. It was conducted to understand the broad parameters of the area in respects of this project. Outcome from reconnaissance survey as expected was:
 - Profile of the area
 - Determination of pockets for drawing samples
 - Identification of key informants
 - Available infrastructure
- *Extensive Secondary Research:* Secondary survey was conducted to understand the dynamics of crop production in particular village. Outcome from secondary survey as received was related to:
 - Land holding under different crop cultivation
 - Area & productivity status
 - Irrigation status
 - Infrastructure availability
 - Farmers profile
 - Condition of Land
 - Profile of the villages
- *Stakeholders' Feedback:* Feedbacks from entities having diverse roles starting from procurement of seeds to harvesting the final produce. Discussions were undertaken and interviews conducted with all stakeholders. Outcome from the stakeholder's consultation was as follows:
 - Technology using in the cultivation
 - Production status of the particular villages before and after using Spiral Grader and Seed Treatment Drum.
 - Farmer collectives & other disintermediation initiatives taken
 - Planning of the scheme
 - Coverage of the districts
- *Field Survey:* A questionnaire based field survey was conducted on the farmers. A standardized questionnaire was developed and approved by officials. 1000 model villages have been selected known as Balaram villages. In this state there are total 313 blocks and each

block consists of 3 Balaram villages. Now 10% blocks i.e. 30 blocks are targeted and from every one village is selected for study purpose. In each of the village beneficiaries have been covered. Non-beneficiaries (as control group) are also interviewed to study the adaptability of Spiral Grader and Seed Treatment Drum

Outcome of the survey was broadly related to:

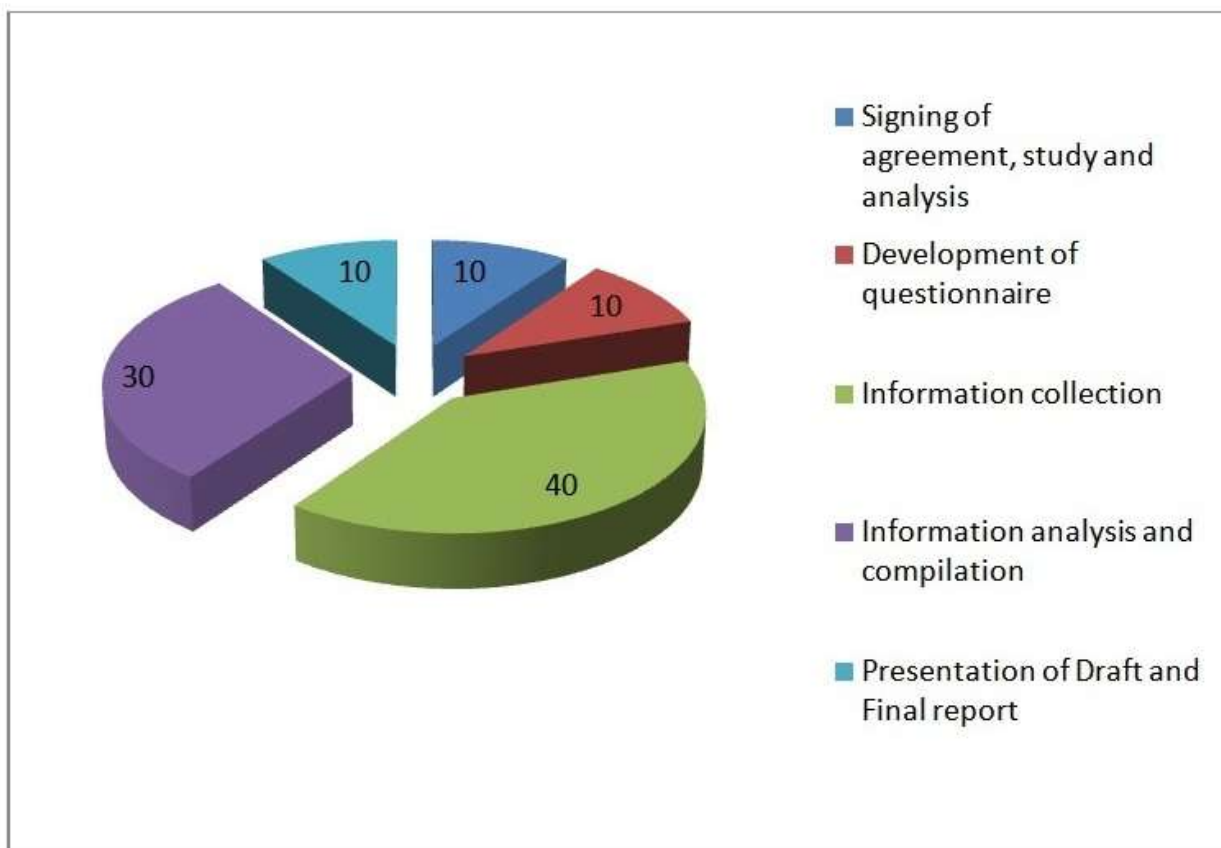
- General production practice, technical knowhow & awareness about SG & STD
- Rate of adoption of the instruments
- Problems related to operations and maintenance of the instruments
- Management of the instruments
- Scope for sustainability and up-scaling of usages of the instruments
- Processes followed for the instrument
- Benefit gained by the farmers in terms of time and quality



A Focus Group Discussion is conducting by team I-WIN

Timeline

The present study has been carried out under strict timeline. All the identified villages have been surveyed to the best possible extent. Feedbacks, interviews, secondary research, field survey etc. have been conducted simultaneously rather than sequentially to satisfy and meet the time requirements. The following pie-chart would offer details of days spent with respective activities.



A period of 3 months starting from September 2012 to November 2012 has been spent in different activities for presentation of final draft report. Most time spent on collection of information and analysis of the information.

Geographical coverage of the study

As per the recommendation of Government officials of Madhya Pradesh, the following blocks were taken for study purpose and their respective districts are also mentioned.

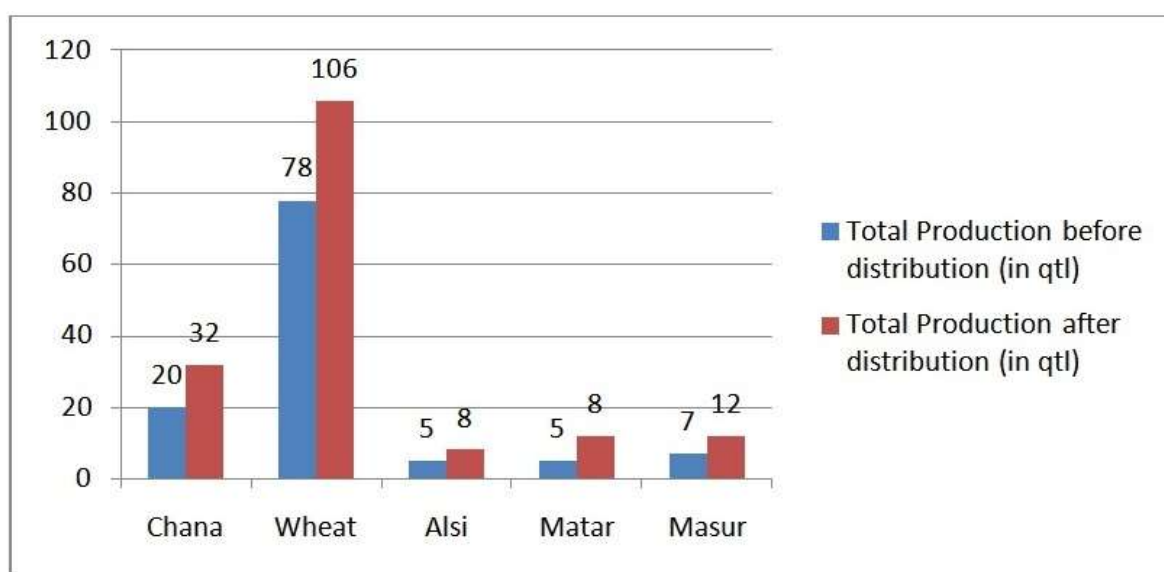
Name of the District	Name of the Block
Satna	Sohawal
Rewa	Rewa
Sahadol	Sohagpur
Anup pur	Pushprapgarh
Dindouri	Sahapura
Narshimpur	Gotego
Sagar	Sagar
Damoh	Pathariya
Bhind	Bhind
Tikamgarh	Tikamgarh
Guna	Guna
Ashoknagar	Ashoknagar
Shivpuri	kolkaras
Morena	Morena
Ratlam	Ratlam
Jhabua	Meghnagar
Mandsaur	Mandsaur
Shajapur	Shajapur
Khandwa	Pandhan
Dhar	Sandalpur
Sehore	Ichhawar
Dewas	Sonkatch
Khargaun	Khargaun
Seoni	Barghat
Raisen	Sanchi
Hoshangabad	Kesla
Betul	Betul
Chhindwara	Chourai
Vidisha	Vidisha
Bhopal	Phanda

CHAPTER 4

SITUATION ANALYSIS

The situation has been changed radically after the launching of Spider Grader and Seed Treatment Drum. The spiral Grader is very effective on the seeds like Soybean, Matar, Masur, Chana and Arahara and through seed treatment drum all kind of seeds are treated in it. Increase in quality, increase in quantity, saving cost of labor, conservation of time are some major factors that are effecting the production of crops.

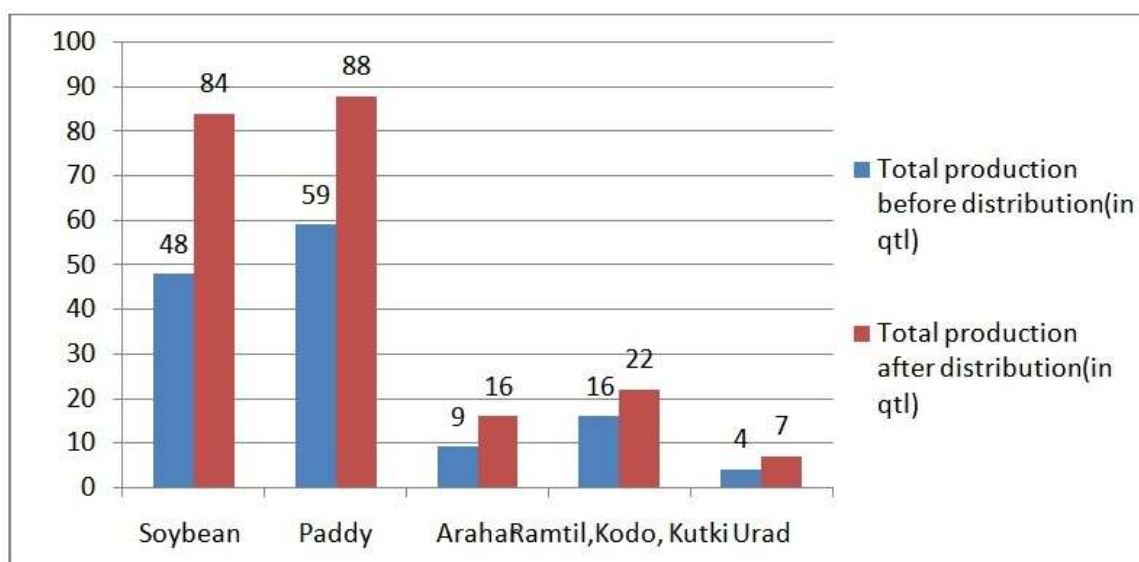
Production scenario before and after the usage of Spider Grader and Seed Treatment Drum



Production status of Rabi season crops

From the above table it can be inferred that production becomes almost double for each crop after distribution and use of Spiral Grader and Seed Treatment Drum.

- Chana increases by 60%,
- Wheat increases by 36%,
- Alsi increases by 60%,
- Matar increases by 60%,
- Masur increases by 71%

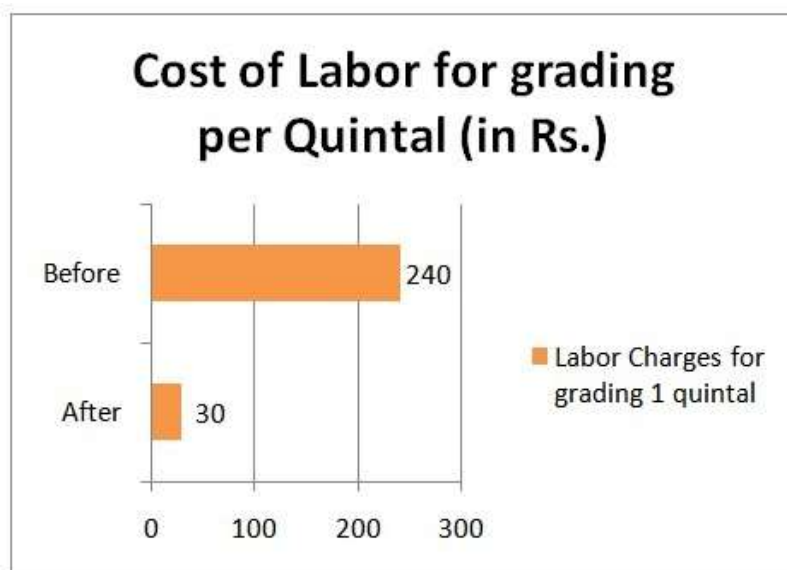
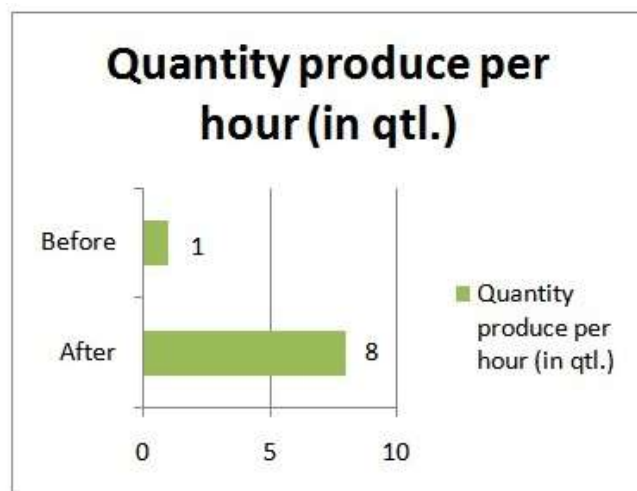
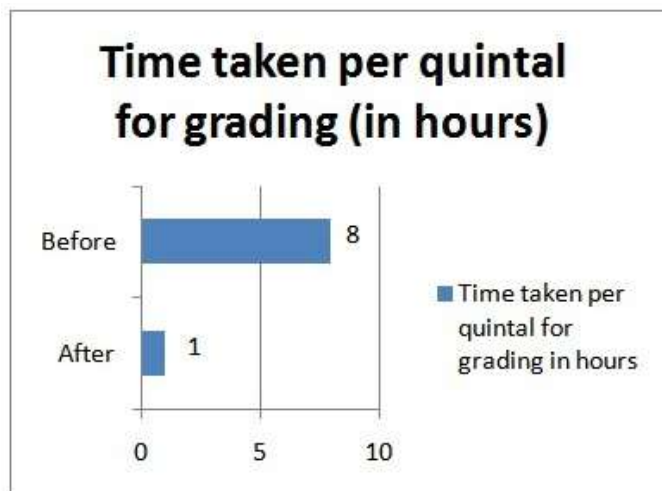


Production status of Kharif season crops

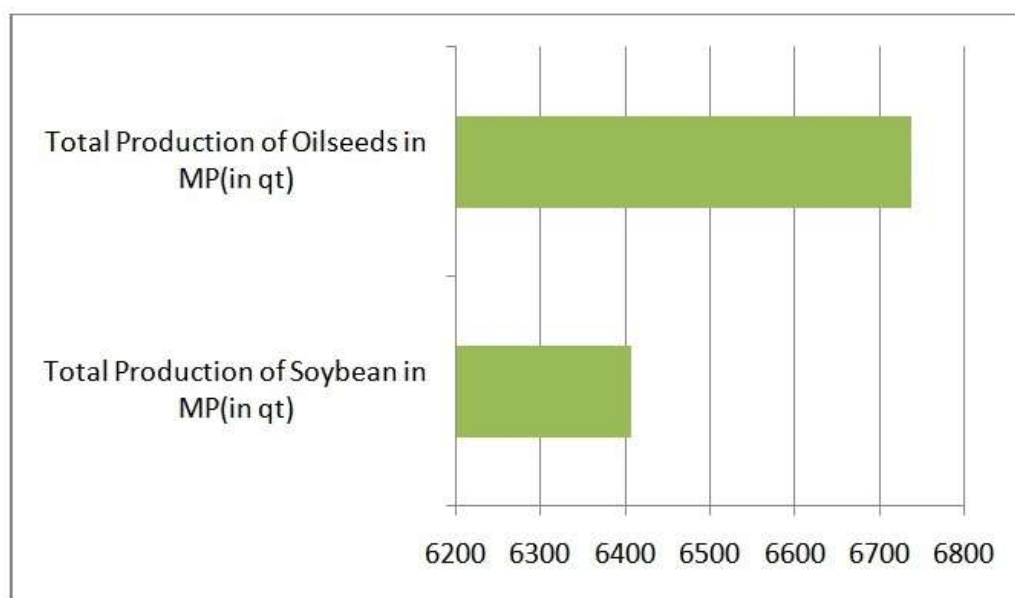
From the above table it can be inferred that production becomes almost double for each crop after distribution and use of Spiral Grader and Seed Treatment Drum.

- Soybean increases by 75%,
- Paddy increases by 49%,
- Arahar increases by 78%,
- Ramtil-Kodo-Kutki increases by 38%,
- Urad increases by 75%.

Production of crops also depends on the other factors like proper irrigation system, quality of seeds and condition of weather. So there are so many factors working behind the cultivation of crops and their production. Here post sowing of seeds condition should be taken into account. However contribution of Spider Grader and Seed Treatment Drum in the field of production is outstanding.



In the new system Rs. (240-30) =Rs.210 is saved per quintal of seed treatment compared to earlier process. Hence it can be concluded that a machine would save up to Rs.6300/- (which is more than the cost of the machine) by treating only 30 quintals of seed. In normal cases 6-8 quintal of seeds are treated per day during the peak season. Hence within 10 days of operation, cost of the machinery would be recovered. Hence the scheme is self sustainable in all sence.



The production of soybean in Madhya Pradesh is almost 94% of total oilseeds produced. Hence can be concluded that Spiral Grader & Seed Treatment drum have an effect on significant quantum (94% of total oilseed produced) of agricultural produced of the state.

OBSERVATIONS



❖ Conservation of time:

Manual process was time consuming one. To grade one quintal seed it was a matter of whole day and the task was very exhaustive. But introduction of the Spiral Grader and Seed Treatment Drum has brought a revolutionary change in the grading process. Now to grade one quintal of seed it is a matter of hardly one hour. In the case of Seed Treatment Drum bulk quantity of seed can be mixed to medicine at a time without any wastage.

❖ Reduction of cost:

Prior to introduction of the Spiral Grader and Seed Treatment Drum the farmers needed to give away labor charges of Rs.240/- (considering 2 labours at a cost of Rs.120/- each) for grading a quintal of seeds.

But situation has been changed after introducing Spiral Grader and Seed Treatment Drum amongst farmers. Now even the home maker can also grade seed in their spare time. Hence labour requirement has dramatically fallen resulting to savings of labour charges.

❖ Increase in production quantity:

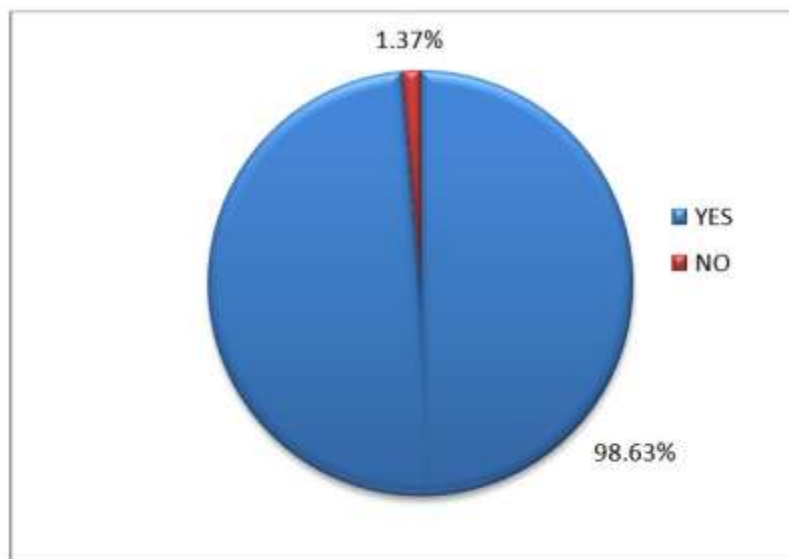
As the time taken and the cost incurred for grading and treating the seeds are low, hence the seed bed can be prepared in time leading to a higher rate of germination which in turn will lead to a higher produce.

❖ Increase in quality of produced:

Both the Spiral Grader and the seed treatment drum enhances the quality of the seed, in turn leading to better quality produce which has high demand in the market.

SITUATION:1

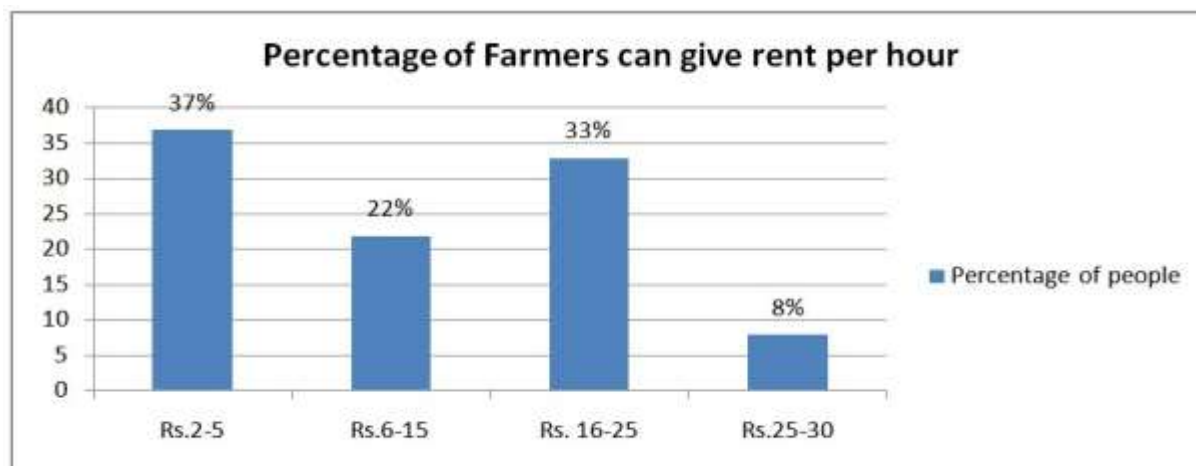
ARE YOU READY TO PAY IF GOVERNMENT STOPS FREE SERVICES



From the above figure it is pretty clear that the introduction of spiral grader and seed treatment drum has had a huge impact on the agricultural scenario and thus the farmers have shown inclination to spend on these equipments.

SITUATION:2

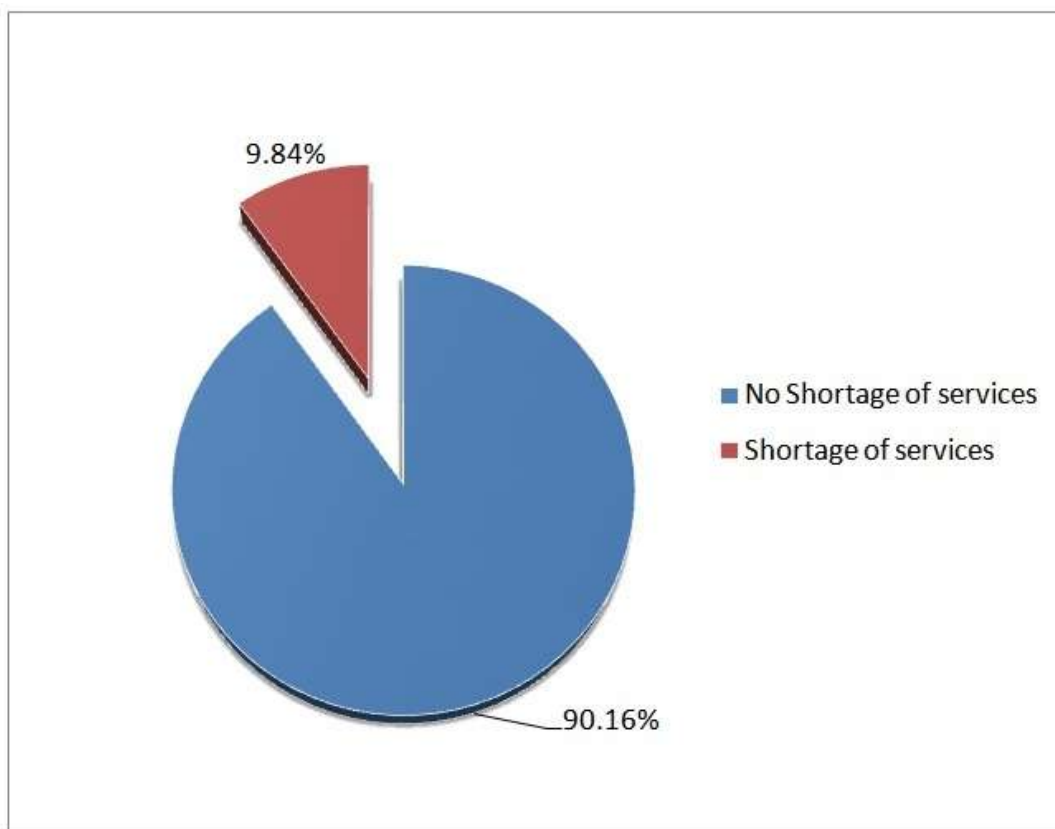
HOW MUCH A FARMER CAN PAY FOR USING SPIRAL GRADER & SEED TREATMENT DRUM AS A RENT PROVIDED BY GOVERNMENT



The feedback was taken from farmers covering the entire state. The overall feedback is shown in the above bar graph. From lower level farmer to financially sound farmers all are ready to pay but the capability to spend differed from farmers to farmers. Thus it is clear that irrespective of their financial conditions, farmers are interested to pay for the services. Some of them are even contemplating buying both the machineries. In case the government wants to follow a renting system, a proper rate has to be worked out in consultation with the stake holders..

SITUATION:3

SHORTAGES FACE BY THE FARMERS OF SERVICES



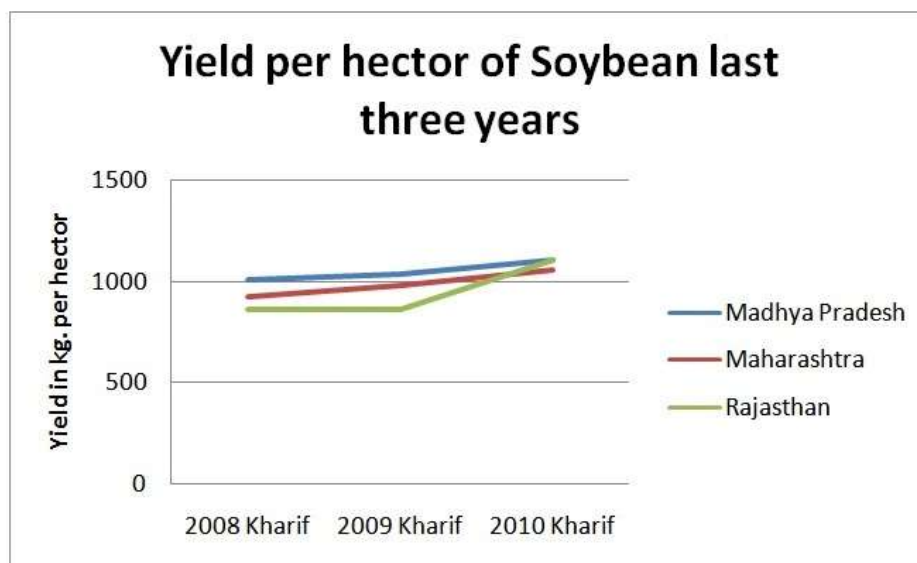
In the present scenario, according to 90.16% of farmers accessibility is not a problem as far as Spiral Grader and Seed Treatment Drum are considered. However 9.84 % farmers expressed their concern regarding the accessibility and the timely availability of the machines.

COMPARATIVE ANALYSIS

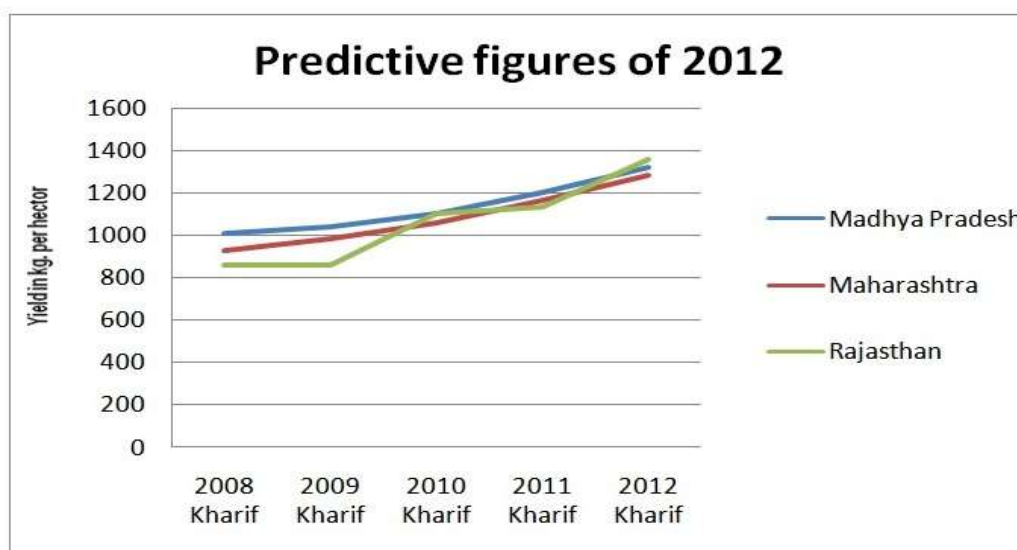
	2008 Kharif			2009 Kharif			2010 Kharif		
Name of State	Area	Yield per Ha.	Production	Area	Yield per Ha.	Production	Area	Yield per Ha.	Production
Madhya Pradesh	51.434	1010	51.948	52.985	1040	55.084	55.193	1105	60.987
Maharashtra	30.684	925	28.383	30.320	982	29.774	26.030	1058	27.543
Rajasthan	8.524	860	7.331	7.094	859	6.094	6.920	1103	7.633

[Area in Lakh Ha., Yield in Kg per Ha. Production in Lakh MT.]

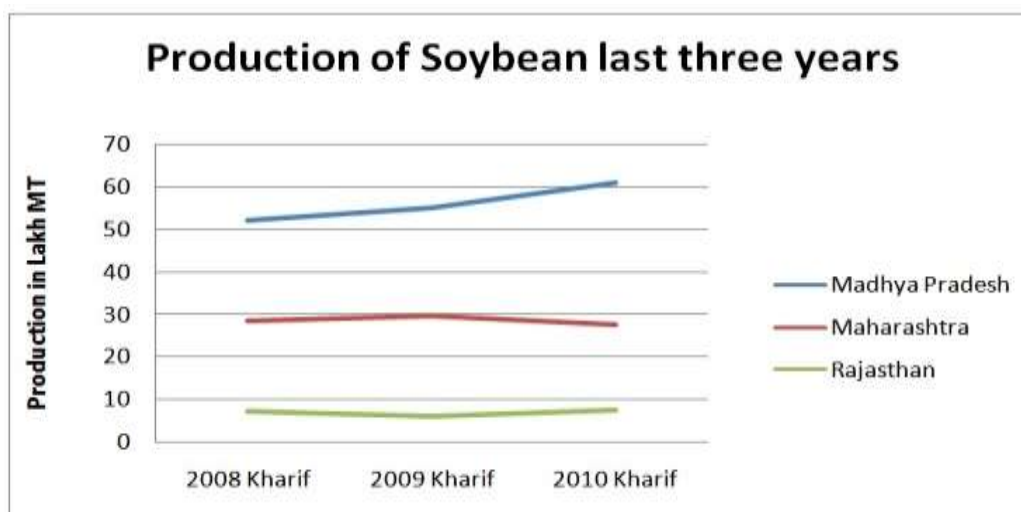
The above chart represents the area wise production of soybean in three major soybean producing states, namely Madhya Pradesh, Maharashtra and Rajasthan. From these we have developed some other line graphs which will give a analysis of the growth pattern of hector wise yield in the mentioned states



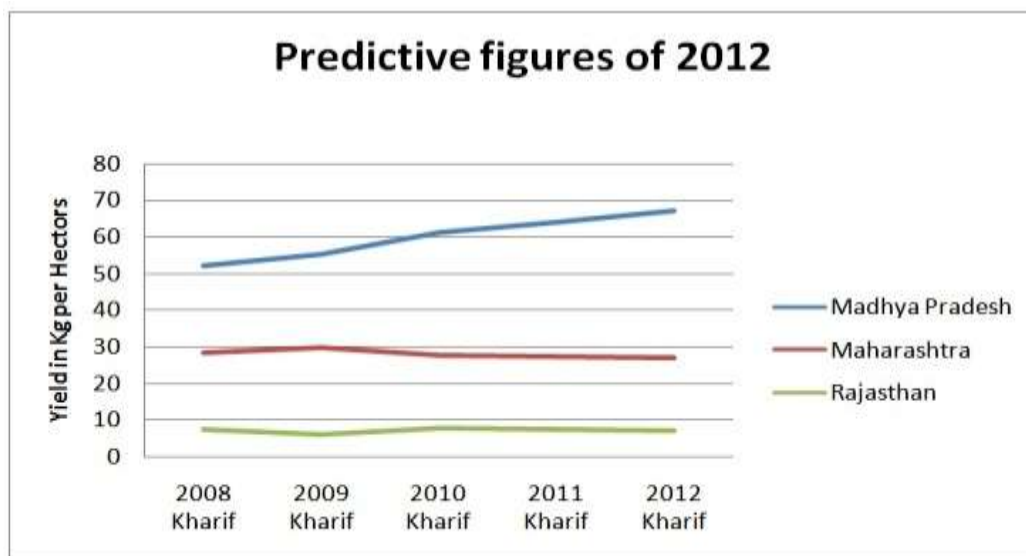
The above figure shows the hector wise yield of soybean in 2008, 2009 and 2010. Here we can see that although overall figures are high, Madhya Pradesh is very close to its main two competitors when it comes to per hector yield scenario.



In the above figure, we have stretched the previous figure by two years based on trend analysis of the historical data available in last three years. We can thus see that the competitors have reached and to some extent exceeded Madhya Pradesh as per as per hectare yield is concerned. Thus there is plenty of scope for improvement and quickening up of the agricultural process and herein Spiral-grader and Seed treatment drum can act as a catalyst for improving the same.



The above graph shows us the production figures of Soybean for three leading states of which Madhya Pradesh ranks first by a huge margin. This is largely due to the fact that Madhya Pradesh has a vast area under the cultivation of soybean where as the others don't have that much cultivated area.



The above graph is an extension of the previous one and it demonstrates the trend analysis of the production for the year 2012 based on historical data. Here we can see that the gap between Madhya Pradesh and its two main competitors have increased. This is due to the fact that apart from the increase in area of Madhya Pradesh under soybean cultivation, the other two states have decreased their land usage for soybean cultivation. Thus MP is having a distinctive advantage and Spiral grader and seed Treatment drum will only increase the advantage more and more.

CHAPTER 5

KEY FINDINGS & SWOT ANALYSIS

KEY FINDINGS

Spiral Grader

- Both the separation capacity and quality of Spiral Grader are superior.
- Pace of work has been increased by a significant margin. The two machines are more or less 7-8 times more efficient than the manual process followed by the farmers
- No special skill is required for operating the machines. Even a home maker can easily grade with the help of the machine. This leads to reduction in time and labor cost.
- The machines have a two-pronged impact on the farmers. Namely cost reduction and increase in production
- Cost of maintenance is almost zero. Just it needs to be kept under the shed during rain.
- The machine is light in weight and portable.

Seed Treatment Drum

- As the seeds are mixed well with the medicine the quality of the seeds are increased which in return gives very good output.
- The machine is portable.

- The machine neither requires power nor fuel and it is very user friendly and easy to use.
- There is minimal maintenance cost at all and it needs to keep under the shed.

SWOT ANALYSIS

Strength (S)	Weakness(W)	Opportunities(O)	Threats(T)
Quality seeds can be produced	Spiral Grader is useful only for round shaped seed.	Its scope is huge as it caters to soybean seeds, which comprise almost 95 % of the total oilseed produce	Insufficiency of rain and absence of proper irrigation facilities
Less time consumption	The capacity of Seed Treatment Drum is less.	Income can be increased	Unavailability of quality seeds
Very less labor cost involved	Sound that comes out from low quality Spiral Grader is annoying.	Madhya Pradesh government are fast improving their agricultural standards and hence these two machineries have a huge future scope.	
Qualitative and Quantitative outcome, the quality has increased by near about 20%	Significant human power is required for using seed treatment drum	In addition to the spiral grader and the seed treatment drum, the MP government are also coming up with the Yantra doot and the farm mechanizations schemes to boost up the agricultural scenario in subsequent stages of cultivation	

• Very easy to use	• Lack of awareness among the farmers leading to sub optimal use		
• Minimal maintenance cost and easy to maintain			
• The machine is light in weight so it is Portable • Zero energy and fuel consumption • No specialized skill is required • 95% of oilseeds produce is directly related to Spiral Grader and seed treatment drum.			

CHAPTER 6

SUGGESTIVE MEASURES

- ❖ The Spiral grader should be modified in such a way that it caters to both round seeds and other types of seeds. At the moment, it is only catering to soybean production which is only 20-22% of the total agricultural produce of Madhya Pradesh.
- ❖ Seed Treatment Drum should be modified such that it is semi-automated and can cater to bulk quantity of seeds and also relieves human labor.
- ❖ Awareness and amicable atmosphere should be spread and created within the farmers such that there is optimal usage of the two machines.
- ❖ The height of Spiral Grader is a hindrance to move the machine quite frequently from one place to another. If the machine can be divided into three parts for example, first part constituting top three cones, second part constituting the middle two cones and the third part constituting the last three cones.
- ❖ In the Spiral Grader there are two separators. From one hole, good quality seeds come out and from other inferior seeds and dust or unusable things come out. If three holes can be made such that from one of them quality seeds come out, from another, inferior seeds are emitted and from the last hole the dust and other particles come out, the inferior quality seeds can also be used with a lesser separation time.
- ❖ For better results from the scheme, the ratio of farmers to machine should be kept around 50:1.
- ❖ Madhya Pradesh is mainly playing on their volume of production whereas per hectare yield is less than competitors. Hence the same has to be looked into to maintain the comparative advantage that Madhya Pradesh has over its competitors.
- ❖ And last of all the awareness of farmers about the free distribution of Spider Grader and Seed Treatment Drum in their villages must be created.

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