

## Technology Resource Centre: Transforming Time into Money through Drudgery Reduction of Indian Women Farmers

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### ABSTRACT

Agriculture is main source of livelihood for majority of population in India. Though much development has taken place in agriculture, the work that women do has not been altered. Women do not have proper awareness and knowledge about improved tools and equipment that can reduce their drudgery. The women don't have access to tools and machines to ease their hard manual labour. Since women's contribution in agriculture is significant to economy, improving their work efficiency is of concern and needs to be given high priority. These concerns of women farmers have been addressed through a project entitled, 'Mitigating hardship of Indian women farmers through technology intervention', initiated by IEA for funding through John Deere Foundation. Under the project a Technology Resource Center was established for easy access/availability of technologies to reduce their drudgery. The capacity building training as well as field demonstrations of technologies is transforming lives of women farmers full of drudgery to that of ease and comfort improving efficiency and output in agriculture work. Additionally, the time saved through use of improved tools and technologies can be transformed to money by initiating various agro and non-agro enterprises.

**Keywords:** Drudgery, Technology, Women farmers, Improved tools, Technology Resource Center

### INTRODUCTION

India is mainly an agricultural country and farming is one of the main occupations accounting for 18 % of the GDP (Gross Domestic Product). 78% of the economically productive women in the country are engaged in agricultural activities. However, current farming practices used by women farmers has considerable degree of ergonomic/health impact on their body causing them immense pain and hardship. The project on, "Mitigating Drudgery of Indian women farmers through Technology Intervention" was an attempt to address these issues using technology to make women farmer's jobs easier and significantly reduce the ergonomic/health impact on their bodies. By using simple agricultural tools through this intervention the project endeavoured to increase the agricultural productivity and efficiency of these women farmers and thereby increase their household level income allowing them to have better access to health and education facilities.

Current farming practices used by women farmers have considerable degree of health impact

on the body, the use of technology was proposed to reduce this health impact on the body of women farmers. The project increased the awareness of women farmers on usage of simple agricultural tools & technologies and helped the women farmers to better understand safe practices in farming such as use of correct postures, safe storage and handling, pesticide and chemicals to be used in farming etc.

Through use of simple agricultural tools enabled women farmers to increase their agricultural productivity and efficiency thereby increasing household level income to support women farmers to have better access to health and education.

### Objectives

- To identify and promote need based hardship reducing technologies in agriculture, animal husbandry and homestead activities.
- To assess the impact of technologies on hardship reduction, efficiency and quality of life of women farmers.

### Proposed Indicators

- Establishment of one technology resource center.
- Hardship reduction of 500 women farmers from 20 % -60% in various agricultural activities is anticipated over the project period.
- Increased efficiency of women farmers in terms of work output from 20% – 200% in various agricultural activities
- Increased income due to usage of improved technology by Rs 10,000 (\$ 222) – Rs 30,000 (\$666) over the project period.

**Target Group:** The project was implemented in one district of Rajasthan named, Rajsamand, covering three villages viz; Mora, Madara, and Sakrawas in Railmagra Panchayat Samiti, covering 500 farm women.

### Implementation of Project activities

#### Capacity building on usage of different tools and equipment:

22 trainings were successfully completed wherein 506 women were benefited. Thus, the target of reaching out to 500 women was achieved. The trainings raised the awareness and knowledge of farm women towards drudgery reducing women friendly technologies, technologies based on renewable energy, and improved animal husbandry practices along with empowering women on various other relevant topics like gender role, personal hygiene, occupational health hazards, etc. The beneficiaries were appreciative and opined that they benefited a lot from the trainings.

**Impact assessment of trainings** depicted an increase in awareness and knowledge score about tools among women (baseline awareness-24.44, post awareness-68.07, baseline knowledge-8.08, post knowledge-25.65). Thus, there was a 178.52% gain in awareness and 217.45% gain in knowledge about tools/technologies as compared to baseline data.

At the end of the project a control village

Mauin in the vicinity of the 3 project villages was selected and data on a few aspects was collected from 60 subjects to study the impact of a few variables. The awareness score from the control village was 25 and that of knowledge was 5.05, which was close to the baseline score of experimental village.

**Tool Kit Distribution:** A tool kit consisting of sickle, rake and maize sheller were also distributed during these trainings to 500 women beneficiaries. The tool kits are being extensively used by the beneficiaries. Convinced with use of these tools, some tools were purchased by other farmers.

#### Establishment of Technology Resource Center (TRC):

Since construction of TRC is dependent on allotment of land which took time, a building suitable for starting TRC was hired on rent in the village Madara. The TRC Coordinator was appointed who opened the Centre for 4-5 hours a day. The TRC was furnished with tools and Technologies and also essential items and facilities. The TRC is initiated as Single window for the following purposes-

- Display and demonstration units of appropriate technologies
- Custom hiring of equipments
- Information material (literature)
- Training centre for the adoption /use of new technology/entrepreneurship and conducting meetings
- Sale of agricultural inputs, tools and products
- Information dissemination of various government schemes/distribution of agriculture inputs for FLDs
- Skill training program/awareness program for women agricultural farmers on usage, maintenance and importance of simple agricultural tools.

**TRC Sustainability Fund:** A TRC Sustainability Fund was initiated by accumulating sale & hire charges of tools collected for sustainability of TRC after the project period is over. In two years' time more than one lakh rupees were deposited in the account opened for the purpose. The collected amount was put into Fixed Deposit in bank.

**Demonstration on usage of tools in field:** Regular demonstrations on the usage of tools were conducted in all three villages with the project staff rotating the demonstrations based on seasonal requirements. These demonstrations were instrumental in making the farmers realize the benefit of using these modern tools and have encouraged many farmers to hire these tools. Additionally, the project team members made door to door contacts and gathered feedback on tools distributed as tool kit to beneficiaries. The families using the tools have benefited immensely from the use of the tools given as part of the tool kit as well as the tools hired from the TRC. Higher outputs, less strain on the body, less time consumption are some of the feedback shared by the farmers.

**Focus group discussions to elicit difficulties in use of tools:** Regular focused group discussions were held with the women farmers to elicit difficulties in the use of tools. This feedback has been utilized during the modification of various tools such as the rake, hanging cleaner, groundnut stripper, comb type groundnut stripper, cotton stalk puller and seed cum fertilizer drill.

**Appointing Mangers:** In all the three selected villages the animal husbandry practices found were very poor. The cattle sheds were found in very dirty condition. It was observed that there was too much wastage of the fodder because of the improper animal feeding practices. To overcome this problem construction of 'Feed Mangers' of standard design and size viz; 2'x 7'x 2' (for 2 animals) was promoted. Construction of total 102 Mangers was completed in two years. These mangers were constructed on partial contribution of INR 200/- by

the beneficiary. The money so collected was deposited in TRC sustainability account in the bank for meeting the future need of funds in running the TRC.

Impact assessment of mangers elicited that there was 3-4 kg saving in fodder per day. Fodder did not spread all around in the shed, thus it reduced the efforts undertaken by women during the cleaning of shed which is a tedious and time consuming activity; this resulted in 45.35% percent reduction in drudgery.

#### **Convergence Activities:**

Over the course of two years a number of convergence activities were carried out by the TRC staff that included improved seed distribution programmes in collaboration with state agriculture department, University, Krishi Vigyan Kendra (KVK) etc. Exposure Visits, Animal Husbandry Camps and Farmer Fairs were useful in providing additional farming knowledge to the farmers. A lot of education and communication material was developed which could be used by various social development and extension agencies

#### **Website Launched:**

A website named, [www.dmfw.org](http://www.dmfw.org) on Drudgery management of farm women was launched by Honorable Vice Chancellor of Univ. Mara Sovey - President - John Deere Foundation, Nate Clark - Vice President - John Deere Foundation.

**Impact of use of tools & technologies:** the impact of the tools on the women farmers was analyzed based on which the following was assessed:

- **Drudgery Reduction:** The drudgery reduction ranged from 18% to 74%. Drudgery was calculated on 6 psycho-physical parameters on a continuum of 5 point scale with the total score of 30. The parameters were- rating on work demand, feeling of exhaustion, posture assumed, perception on manual loads operative, difficulty perception and work load

perception. Approximately 20% to 40% reduction in drudgery was observed with use of sickle, cotton picking machine, groundnut decorticator, cotton stalk puller and grain cleaner. While use of weeder reduced drudgery by 52%, sprayer 60%, maize Sheller 69%, and groundnut stripper reduced drudgery by 74%. *The overall average drudgery reduction was 41%.*

- At the end of 2 years data from a control village was collected to depict the impact of interventions in the experimental villages. It was elicited that the baseline drudgery score (25.45/30) in project villages was similar to that of control village i.e. 25.65/30. The percent reduction in drudgery in project villages post intervention was 41.28%.
- **Health Disorder:** Reduction in health disorder ranged from 27% to 59% with use of improved technology. *Overall average reduction in health disorders was 42%.*
- **Per cent User Acceptability:** The percent acceptability data for technologies was overwhelming; with majority of technologies exceeding far beyond 100%. There was a vast range in percent user acceptability of technologies, ranging from 51% (Multicrop Thresher) to 880% (Tubular Maize Sheller). *The average overall user acceptability was 371%.*
- **Per cent Saving in Cost:** *The overall average saving in money with use of technologies was 52%; Improved Sickle -40% and Cotton stalk puller 66.67%. Use of weeder, cotton picking machine and mini harvester saved approximately 50% cost, while cotton stalk puller saved 67% of cost incurred earlier.*
- **Per cent Efficiency/ Saving in Time:** Groundnut decorticator saved enormous time and increased output to the tune of 2150%. *Overall average saving in time was up to*

120%. Use of grain cleaner saved 300% time and that of groundnut stripper saved 400%. For major technologies time saved ranged from 50 to 100%. Lowest time saved was for Weeder i.e. 25%.

- **Per cent satisfaction with technology:** Percent satisfaction with use of technology was very high exceeding 100% for most of the technologies. Sprayer, cotton stalk puller, rotavator and groundnut stripper represented maximum satisfaction i.e. 200%. The minimum satisfaction was observed for grain cleaner (33%). *Overall average percent satisfaction was 128%.*
- **Assessment of Mangers:** *There was 3-4 kg saving in fodder per day.* There was 45.35% percent reduction in drudgery in cleaning the animal shed. Fodder does not spread all around in the shed; this facilitates cleaning of shed, which is a tedious and time consuming activity, performed by the women farmers as reported by 55% of the respondents.

#### Major achievements

- Awareness and knowledge of women about tools and technologies has increased as a result of intensive capacity building trainings and regular field demonstrations conducted.
- Along with women farmers, male farmers have also started taking keen interest in using drudgery reducing new technologies.
- Tools given in tool kit viz; improved sickle, rake and tubular maize sheller are extensively used. Rake was primarily provided for cleaning animal shed but beneficiaries are making multiple uses of rake.
- Rental of tools collected is satisfactory in the short span.

- Bank account in name of TRC Sustainability Fund has been opened.
- The process of acquiring land for construction of TRC is completed.
- Some activities performed pre dominantly by women are replaced by men after introduction of technology, hence reducing drudgery of women in a way. A few examples are cutting/ harvesting of crop and cotton stalk pulling.
- The impact of sub-TRC at village level is positive. Farm families have started showing interest in hiring and purchasing tools.
- Male farmers are also coming forward and are keen to get training in various new agricultural technologies, and also demand to procure high end farm machinery at TRC.
- Active participation of farm families in convergence activities and exposure visits.
- Good linkages developed with certain agencies have benefitted families in the selected villages. To mention a few,
- Monsanto was the seed input partner in various crops.
- Looking at the overwhelming performance of Cotton Picking machine introduced by project, the Line department of agriculture asked for a formal request to be submitted by MPUAT for granting subsidy on cotton picking machine by state government.
- The line department of agriculture and veterinary are collaborating with MPUAT and include the beneficiaries in various trainings conducted by them and inputs provided by them.
- Improved seeds of Maize, cotton, groundnuts and fodder are provided to beneficiaries by University departments

and KVK for putting up front line demonstrations.

- Because of improved efficiency in farming work, more time was left with women, so 28 Self-help groups were formed so that they can pursue some entrepreneurship activity.
- There was saving of about 48 percent in farming inputs expenditure as a result of use of improved technology.
- Habits of thrift inculcated in SHG women and improvement in self-confidence of women.
- Entrepreneurial activity of dal and dalia processing by SHGs was initiated.
- Many IEC material and Project Website is designed which can be viewed at [www.dmfw.com](http://www.dmfw.com).

#### Recommendations

- Women in agriculture should be given recognition/cadre of a farmer. Drudgery reduction of women farmers should be viewed as a social objective.
- Villages be saturated with at least a few simple tools/implements to mitigate drudgery of women in day to day activities.
- Provision for Mobile vans should be made to carry implements for custom hiring during agri season to ensure access. It is an apt solution looking at labour shortage presently due to MNREGA.
- Technology Resource Centers should be opened in every village in collaboration with Panchayats/ State Agri deptt to act as a tool bank and also as a single window of information.
- FRM units of AICRP- H Sc can be integrated with engineering wing, may be with ESA. The area of technology

need/mechanization can be communicated by FRM units, and technology developed by engineers can be tested in field by FRM units and Feedback can be generated. This would be beneficial as women Scientist can work more closely with women for promotion and testing of technology.

- Women friendly high end machinery be designed and developed, like tractors with all attachments suiting women anthropometry, as the forecast suggests that by 2020 agriculture will be dominated by women.
- Though high tech machinery suitable for women is the need of the hour but reaching small manual tools for drudgery reduction and improving efficiency of women in each village of the country should not be neglected.

- Mechanization of activities predominantly performed by women would certainly go a long way to bring the change in quality of life of farm families.
- Levying contributory charges on every project input was a good decision as when people pay money they exhibit accountability. Hence, in future too this practice must continue and no input should be given free.
- The goal should be more on drudgery reduction of women and not on accumulation of funds as women do not have decision making power to spend as frugal as Rs. 10/- (which is 1/6 of a dollar) on rent for tools especially for the activities which are prominently performed by women. Accumulation of funds for sustainability can be done by rental of big machinery.

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