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Assessment of Power Tiller tynes (blade) for Biasi operation under rice cultivation

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Abstract

Farm mechanization does not mean the use of large and costly implements and tractors for different farm work. It is a need based practice, to increase net profit per unit, to maintain timeless operation and do difficult task which is not possible without mechanization. In spite of rapid farm mechanization. It would improve the traditional practice of ploughing with reducing drought and also increase field capacity and field efficiency of the implements.

The farmers of Janjgir district are totally dependent on agriculture specially on kharif paddy. The role of improved farm implements are very important under different farm operations of farms. About 75 percent farmers of the district are marginal and small categories hence the implements in small & efficient equipments is mostly needed, to improve the per unit land productivity. This Technology introduced and modified during the year 2013-14.

The trail was based on biasi system with the help of Power Tiller. It was new approach and new practices for biasi system in rice cultivation. In this technology the tynes were modified which made by local black smithy workshop so that they are highly motivated and impressed to adopt such technology in coming years.

The studied were conducted by OFT/FLD on farmers field of district farmers during year 2013-14 to 2016-17. The highest average yield increased 12.05 % found in improved practice, BC ratio maximum was 2.34 as followed 2.14 in traditional practice whereas saving cost during biasi operation was average 610/- ha⁻¹.

Keywords: Tillage, Plough, Yield & Farm mechanization

Introduction

The technological improvements in Indian since mid sixties have brought about revolutionary increase in agricultural production. Interestingly, growth rate of food grain production particularly wheat and rice was much higher than the growth population. Agricultural production in India has been able to keep pace with the ever increasing population and maintain food security. Consequently, several new and improved equipment have been introduced in agriculture to increase the yield and to save valuable inputs in farm.

The Janjgir –Champa district is situated 21.6° to 22.4° N latitude, 82.3° to 83.2° E longitude with an altitude of 294.4 M. The total geographical area of the district is 486674 ha. The district is surrounded by Raigarh in east, Bilaspur in west, Korba & Bilaspur in north and Raipur in south. kharif nearly 60-70 % area covered under direct seeded or lehi method maintaining proper plant population and conservation of water are major constraint

Tillage is one of the major farm operations and is an important contribution to the total cost of production. The biasi operation of rice cultivation with included shallow ploughing, redistribution of seedlings and destroyed of weeds in presence of 15-20 cm water depth. It is done from 30-40 days after DAS. In generally traditional practice done with local desi plough hence, it time taking process and operation during this operation, so reasons for this technology.

- Labour problem.
- In biasi system number of grains found is 300 where as with out biasi operation below 200.
- Yield found as like Transplanting method.
- 15-20 labour required in Biasi system as traditional practice.
- Destroyed plants to make manuring.
- 10-20 % more yield as compared to Broad Cast system.

Materials and method

Agricultural workers were randomly selected for the study, The present study was conducted in the Janjgir –Champa district which is the major agriculture production areas of Chhattisgarh

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state. In year 20013-14 to 2016-17 OFT/FLD on the biasi operation was conducted between district farmers in different villages of Janjgir-Champa district of Chhattisagrh. The operation was perform as modified tynes or as original tynes but in operation condition were set as per direction, numbers etc.

Krishi Vigyan Kendra Jangir-Champa introduced and modified the technology during the year 2013-14. The trail

was based on biasi system with the help of Power Tiller. It was new approach and new practices for biasi system in rice cultivation. In this technology the tynes were modified which made by local black smithy workshop.

How to use Power Tiller for biasi operation

Model: Greaves/ Kamco/ Any others

| Particulars | General Operation | Biasi operation |
|--|---|---|
| Blades (tynes) numbers | 20 numbers (General) | 6-8 numbers (Modified) |
| Blades (tynes) Distance | 2-4 cm | 18 cm |
| RPM | As per required | As per required |
| Blades (tynes) Top View |  |  |
| Blades (tynes) Front View |  |  |
|  | With attached in power tiller | Modified power tiller tynes (blades) |



Power Tiller in operation at different views

Results and discussion

The traditional method was more energy and time taken operation. It is totally depended bullocks availability and capability it is also said An average pair of bullocks can develop about 1.0 hp however, the draught developing ability an individual bullock depends number of factors like breed age, nutrition status, type of yoke and working condition etc. Behara *et al* (2008) [4]. Kharif nearly 60-70 % area covered under direct seeded or lehi method maintaining proper plant population and conservation of water are major constraint in

the district. Krishi Vigyan Kendra Jangir-Champa introduced and modified the technology during the year 2013-14. The trail was based on biasi system with the help of Power Tiller. It was new approach and new practices for biasi system in rice cultivation. In this technology the tynes were modified which made by local black smithy workshop so that they are highly motivated and impressed to adopt such technology in coming year under district and whole nation. The tillage operation needs immediate attention and time of operation Panesar (1993) [1].

Table 1: Detailed technology specifications of Power Tiller tynes.

| S. No. | Description | Improved Implement |
|--------|-----------------------|---|
| 1 | Source of power | Power Tiller |
| 2 | Suitability for crops | All rice crop |
| 3 | No. of blade | 6-8 |
| 4 | Blades distance | 18 cm |
| 5 | Weight of implement | 120 kg |
| 6 | Gear | I forward heavy |
| 7 | Blade | 2.5 cm width, 32 cm length (heat treatment process) |

Table 2: Detailed technology specifications between traditional and improved.

| Particulars | Local Deshi plough | Power Tiller with modified tynes (blade) |
|-----------------------|--------------------|--|
| Seed rate, kg/ha | 100 | 100 |
| Distance of Biasi, cm | 20 ± 3 | 18 ± 3 cm |
| Weeding Efficiency,% | 47 | 60 |
| Field capacity, ha/h | 0.034 | 0.215 |

Table 3: Result obtained during biasi operation.

| Treatment | Yield (q ha ⁻¹) | % change in Yield | Saved Cost during Biasi (Cost Rs/ha) | Net Income Rs/ha | B:C Ratio |
|---------------------|-----------------------------|-------------------|--------------------------------------|------------------|-----------|
| T ₁ (FP) | 41.90 | 12.05 | 610/- | 32083.40 | 2.14 |
| T ₂ (IP) | 47.62 | | | 39100.40 | 2.34 |

The total number of blades (tynes) were set up 8 numbers and distance between two blades was 18-20 cm. biasi with help of power tiller was accounted 12.05% more yield and BC ratio was found maximum 2.34 in improved practice where as 2.14 traditional practice respectively with similar crop production practices of rice cultivation whereas, saving cost in improved practice was 610/- ha⁻¹. It was new approach and new practices for biasi system in rice cultivation.

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