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# Participatory evaluation of weeding methods in vegetable pea (*Pisum sativum* L.)

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**SUMMARY**

Present investigation was conducted in participatory mode on farmers' field in randomized block design with six replications. The treatments comprised of one weeding with Khurpi (Farmers' practice), two weeding with Khurpi, two weeding with Dry Land Weeder, two weeding with Finger Weeder and two weeding with Dutch Hoe. First weeding was done at 25 days after sowing (DAS) whereas second was given at 40 DAS in all treatments. Result indicated that two weeding with Dryland weeder resulted in lowest cost of weeding per unit area, labour intensivity, total cost of cultivation, high pod yield per hectare, weeding efficiency and highest benefit /cost ratio of crop. Therefore, weeding with this implement is recommended in vegetable pea for efficient weed control and economical yield.

**Key words :** Mulches, Rhizome, Ginger

The vegetable pea (*Pisum sativum* L.) is an important vegetable crop during winter season in plateaus of Jharkhand. It occupies almost 10 per cent of irrigated area of district Chatra during Rabi season with an average pod productivity of only 50 quintals per hectare. The commercial cultivation of vegetable pea in this area suffers a number of setbacks leading to low yield, the important ones being lack of availability of the seeds of suitable varieties, lack of package of practices with economical viability and crops prone to moisture and weed stresses. Mechanization of agricultural operations particularly cultivation, sowing/planting, irrigation, weeding etc., is crucial for economical sustainability. Standardization of proper weed control and moisture conservation techniques in rainfed conditions is relevant to avoid over expenses of the crop. Moisture management practices in vegetable pea have been explored by many of earlier workers (Tayel *et al.*, 1990; El-Hady and Lotfy, 1990; Wu and Pu, 1999 ;) but a little attention has been given on weed control. Hand weeding is only practice generally used by the farmers of this area which is input intensive but weeding-cum hoeing using mechanized farm implements needs due stress with view to minimize the cost of cultivation and raising the economical yield in this crop.

## MATERIALS AND METHODS

Present investigation was conducted in participatory mode on farmers' field of Puraini, Mahuari, Singhrawa and Pipra-Husiya villages of Itkhori block of Chatra district during Rabi, 2007-08. The experiment was laid out in randomized block design with six replications. The treatments comprised of one weeding with Khurpi (Farmers' practice), two weeding with Khurpi, two weeding with Dry Land Weeder, two weeding with Finger Weeder and two weeding with Dutch Hoe. First weeding was done at 25 days after sowing (DAS) whereas second was given at 40 DAS in all treatments. The plot size for each treatment was kept 1000 $m^2$ and data were recorded on different field as well as economical parameters *viz.*, number of weeds per $m^2$ area before and after weeding, weeding efficiency (%) (number of weeds after weeding/ number of weeds before weeding x 100), labour intensivity (mandays/ha), cost of weeding (Rs/ha), total cost of cultivation (Rs./ha), pod yield (q/ha), benefit /cost ratio.

## RESULTS AND DISCUSSION

Results indicated that maximum pod yield (80.5 q/ ha) and weeding efficiency (86.0%) were recorded in plots weeded twice with Khurpi although the benefit/ cost ratio was lowest (1:1.62) in this treatment whereas two weeding with Dryland Weeder resulted in considerably higher pod yield (78.40 q/ha) and benefit/cost ratio (1:2.90) as compared to Finger Weeder (76.0 q/ha and 1:1.99, respectively), Dutch Hoe (74.70 q/ha and 1:2.53, respectively) and one hand weeding with Khurpi ( 65.5 q/ ha and 1:1.73, respectively). These findings were in agreement with Anonymous (1988) and Shrivastav (1996). Weeding efficiency of Dryland Weeder was next to two hand weedings with Khurpi but pulverization of soil leading to more aeration might have played role in comparable performance of the crop in terms of pod yield (Hamdeh and Qudais, 2001) and lowest labour intensivity (26.38

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**Table 1: Effect of different practices of weeding-cum-hoeing on performance of vegetable pea**

| Sr. No. | Treatments | Number of weeds per unit area | | Weeding efficiency (%) | Labour intensivity (mandays/ha) | Cost of weeding (Rs/ha) | Total cost of cultivation (Rs./ha) | Pod yield (q/ha) | Benefit / cost ratio |
|---|---|---|---|---|---|---|---|---|---|
| | | Before weeding | After weeding | | | | | | |
| 1. | One hand weeding with Khurpi (Farmers' practice) | 22 | 12.5 | 43.1 | 60.54 | 4237.80 | 14359.8 | 65.5 | 1:1.73 |
| 2. | Two hand weeding with Khurpi | 20 | 2.8 | 86 | 118.32 | 8282.40 | 18404.4 | 80.5 | 1:1.62 |
| 3. | Weeding with Dry Land Weeder (Twice) | 18.6 | 4.9 | 73.36 | 26.38 | 1962.88 | 12044.9 | 78.4 | 1:2.90 |
| 4. | Weeding with Finger Weeder (Twice) | 17.5 | 5.9 | 66.28 | 72.92 | 5118.75 | 15240.75 | 76.0 | 1:1.99 |
| 5. | Weeding with Dutch Hoe (Twice) | 21.3 | 8.5 | 60.09 | 36.45 | 2561.70 | 12683.7 | 74.7 | 1:2.53 |
| | CV (%) | 9.81 | 12.69 | 12.83 | 13.66 | 11.68 | 15.38 | 12.10 | - |
| | C.D. (P=0.05) | 1.66 | 0.75 | 1.58 | 20.73 | 198.45 | 666.12 | 2.34 | - |

mandays /ha) and cost of weeding (Rs. 1962.88 per hectare) enabled it to be beneficial practice in vegetable pea. Data on weeding efficiency indicated that among mechanical weeding implements, Dryland Weeder was most effective followed by Finger Weeder and Dutch Hoe. Lowest cost of weeding per hectare area was again recorded with Dryland Weeder followed by Dutch Hoe (Rs.2561.70) and Finger Weeder (Rs.5118.75). Labour intensivity *i.e.* labour requirement per unit area was found highest in two hand weeding with Khurp (118.32 mandays/ ha) followed by two weedings with Finger weeder (72.92 mandays/ha), one hand weeding with Khurpi (60.54 mandays/ha), two weedings with Dutch Hoe (36.45 mandays/ha) and two weedings with Dryland Weeder (26.38 mandays/ha).

From above observations it is evident that two weeding with Dryland weeder resulted in lowest cost of weeding per unit area, labour intensivity, total cost of cultivation, high pod yield per hectare, weeding efficiency and highest benefit /cost ratio of crop. Therefore, weeding with this implement is recommended in vegetable pea for efficient weed control and economical yield.

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