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Research Paper

Evaluation of weed control implement in soybean (*Glycine max* L.)

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ABSTRACT

Field studies were conducted at Weed Science Research centre Marathawada Agril University, Parbhani during *Kharif* season of 2008, 2009 and 2010to evaluate performance of different mechanical weed control implements for weed control in soybean. Soybean grain yield (kg/ha) was significantly influenced due to various weed control treatments. The mechanical weeding (2 HW and 2H) recorded highest grain yield during 2008-09, 2009-10, 2010-11 and Mean (Table 1) which was found significantly superior over TW_2 *i.e.* Grubber, TW_1 *i.e.,* Twin wheel hoe TW_4 *i.e.,* Hand hoe and TW_6 *i.e.* weedy check and was found at par with the use of cycle hoe (TW_3). The use of cycle hoe, hand hoe, twin wheel hoe and grubber were found to be significantly superior over the unwedded control in terms of grain yield kg/ha. The unwedded control (TW_6) recorded significantly lowest grain yield than rest of the treatments. The highest weed control efficiency for grassy as well as broad leaved weeds at 30 and 60 days was observed in 2 HW and 2H weed control treatment followed by the use of cycle hoe and hand hoe for weeding in soybean (*Glycine max* L.) crop.

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KEY WORDS : Soybean, Weed control, Implements

Awareness of environmental sustainability has increased efforts to reduce agrochemical use for plant protection which also include herbicide use. On the other hand, exponential increase in demand for organic foods due to substanciated health benefits and new emerging markets for them are positive reasons for transforming some soybean area to organic production. The biggest obstacle in organic soybean production is weed management. Today's organic soybean production system, for weed control rely on mechanical cultivation, flame weeding, crop rotations, companion crops and other cultural, mechanical and biological methods. The research on mechanical weed control effectiveness is limited. In light of above, this study was conducted to evaluate performance of different weeding implements for weed control in soybean (*Glycine max* L.).

RESEARCH PROCEDURE

A field experiment was conducted during *Kharif* season of 2008-09, 2009-10 and 2010-11 in Randomized Block Design with four replications. The gross and net plot size were 6.0 x 6.0 m and 5.4 x 4.8 m, respectively. The crop was sown at 45 x 5 cm spacing. The recommended dose of NPK and plant protection schedule was followed.

The weeders like cycle hoe, twin wheel hoe, grubber and hand hoe were used for weeding in soybean crop and they were compared with hand weeding and hoeing. The working width of each weeder including hand hoe was measured and tabulated in Table 7 and 8. The speed of operation as km/hr was also recorded for every weeder by running that weeder for 5 m distance in the experimental area. The time required for weeding by every weeder for weeding the given plot size or area (36 m^2) was also calculated by using stopwatch. Considering the speed of operation and working width, the theoretical field capacity of each weeder was calculated with the formula:

$$\frac{SW}{10}$$

where, S = Speed of operation km/hr
W = Width of the weeder (m)

The actual field capacity was also drawn with the help of time required for weeding the given plot or area and thus after getting actual field capacity, with the following formula the field efficiency of each weeder was calculated.