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## Effect of integrated weed management on growth and yield of *kharif* groundnut (*Arachis hypogaea*)

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**Abstract**

The field investigation entitled “Integrated weed management in *kharif* groundnut” conducted during *kharif* 2017 at Experimental Agronomy farm section, Oil Seeds Research Station, Latur. The soil of experimental site was clayey, alkaline in reaction, low in organic carbon and available nitrogen and medium in available phosphorus and potash. The soil was well drained with moderate moisture retention capacity which was favourable for optimum growth. The environmental conditions were moderately congenial for growth and development of groundnut crop. Crop experiment was laid out in Randomized Block Design with three replications and 9<sup>th</sup> different weed control treatment *viz.* Chemical combination and cultural practice along with control plot. Among the chemical weed control methods, application of Pendimethalin 30% EC @ 1 kg a.i ha<sup>-1</sup>+ Imazethapyr 10% SL 0.075 kg a.i ha<sup>-1</sup> at 20 DAS (PoE) (T<sub>6</sub>) had controlled the weeds more effectively in groundnut crop which helps in improving growth, yield, quality attributes, weed control efficiency, weed index with higher net return.

**Keywords:** Groundnut, weed, herbicide, treatments, efficiency, control

**Introduction**

Groundnut (*Arachis hypogaea* L.) is one of the most important leguminous oilseeds belonging to family Fabaceae (Leguminaceae) and sub family Papilionaceae. The commercially cultivated groundnut varieties belongs to the species *viz.* hypogaea (verginia or runner), fastigiata (valencia) and vulgaris (spanish). Groundnut is also known as peanut, monkey nut, earth nut, *etc.* and supposed to be originated from Brazil.

Groundnut is rich source of oil (48 percent). Groundnut oil is edible oil. It finds extensive use as soap making and manufacturing cosmetics and lubricants, olein, and other salts. Kernels are also eaten as roasted. Groundnut kernels are rich in vitamins *viz.*, A, B, and some members of B2 group (Bhondve, *et al.* 2006). To meet the demand we have to increase the production of oilseeds including groundnut. There is an urgent need to explore the possibilities for increasing the productivity through better understanding of the constraints in production of oilseed crops especially in groundnut (Walia, *et al.* 2007) [11]. In India, it is well documented that out of the total 3 annual losses in the agricultural produce due to various pests complex, weed accounts alone for 45 per cent, insect 30 per cent, disease 20 per cent and other pests 5 per cent (Rao, 1983). The yields are reduced up to 70% if weed cover is more than 50% (Prasad, 2002) [8]. Thus, chemical weed control is a better supplement to conventional methods and forms an integral part of the modern crop production cultivation. (Sathya Priya *et al.* 2013) [10]. Selective herbicide was efficient and cost effective weed control measure in controlling weeds in groundnut, the maximum benefit can be achieved by combining herbicides with manual, cultural and mechanical weed control methods. (Jat, 2011) [5].

**Material and method**

The experiment was conducted during *Kharif* season of 2017-2018 at Experimental Agronomy farm section, Oil Seeds Research Station, Latur. The present experiment was laid out in Randomized Block Design with three replications. The allotment of treatments to various plots in each replication was done by randomization. The soil of experimental plot was black in colour, topography was uniform and levelled. The treatment details are T<sub>1</sub>: Pendimethalin 30% EC @ 0.75 a.i. ha<sup>-1</sup> (PE) T<sub>2</sub>: Pendimethalin 30% EC @ 0.75 a.i. ha<sup>-1</sup> + 1 intercultural operation at 30 DAS + 1 hand weeding at 40 DAS T<sub>3</sub>: Quizalofop ethyl 5% EC @ 37.5 gm a.i. ha<sup>-1</sup> at 15 to 20 DAS (PoE) T<sub>4</sub>: Pendimethalin 30% EC @ 1 kg a.i. ha<sup>-1</sup> + Quizalofop ethyl 5% EC @ 37.5 gm a.i. ha<sup>-1</sup> at 15 to 20 DAS (PoE) T<sub>5</sub>: Imazethapyr 10% SL 0.075 kg a.i. ha<sup>-1</sup> at

20 DAS (PoE) T<sub>6</sub>: Pendimethalin 30% EC @ 1 kg a.i ha<sup>-1</sup>+ Imazethapyr 10% SL 0.075 kg a.i ha<sup>-1</sup> at 20 DAS (PoE) T<sub>7</sub>: Farmers practice (1 Hand weeding at 25 DAS + 1 Hoeing at 35 -40 DAS) T<sub>8</sub>: Weed free plot (3HW at 15, 30, 40 DAS) T<sub>9</sub>: Weedy check. The gross and net plot size of each experimental unit was 5.4 m x 4.2 m and 4.8 m x 3.6 m respectively with spacing 30 x 10 cm. sowing was done by dibbling method on 08<sup>th</sup> July 2017 as per treatment. The recommended dose of fertilizer 25:50:00 NPK kg ha<sup>-1</sup> was applied.

## Result and discussion

### Effect of different treatments on growth, yield and weed of kharif groundnut

Growth and yield parameters of groundnut are different due to different treatments. The growth and yield character (plant height, branches, leaves, leaf area, number of capsules and dry matter), seed and haulm yield of groundnut varied significantly due to various treatments. The data indicated that treatment of weed free plot (3 HW at 15, 30, 40 DAS) giving more returns in all parameters of crop among the chemical weed control methods, application of Pendimethalin 30% EC @ 1 kg a.i ha<sup>-1</sup>+ Imazethapyr 10% SL 0.075 kg a.i ha<sup>-1</sup> at 20 DAS (PoE) (T<sub>6</sub>) had controlled the weeds more effectively in groundnut crop which helps in improving growth, yield attributes. The lowest growth and yield attributes are observed with weedy check (Unweeded). The highest growth and yield

parameter obtained with Weed free plot (3 HW at 15, 30, 40 DAS) might be due to no weed competition during its critical growth stages of crop and getting more space, light and nutrient to the crop.

The weed free plot (3 HW at 15, 30, 40 DAS) was recorded significantly higher plant height (53.33cm), number of branches plant<sup>-1</sup>(10.87), number of leaves plant<sup>-1</sup>(95.10), number of nodules plant<sup>-1</sup>(81.33), total dry matter plant<sup>-1</sup> (39.08), dry pods yield (1915 kg ha<sup>-1</sup>), and haulm yield (4017 kg ha<sup>-1</sup>) weed control efficiency (96.77), weed index (0.00) with oil content (46.77%) which was remained at par with Pendimethalin 30% EC @ 1 kg a.i ha<sup>-1</sup>+ Imazethapyr 10% SL 0.075 kg a.i ha<sup>-1</sup> at 20 DAS (PoE) and Pendimethalin 30% EC @ 1 kg a.i. ha<sup>-1</sup> + Quizalofop ethyl 5% EC @ 37.5 gm a.i. ha<sup>-1</sup> at 15 to 20 DAS ( PoE ) and found significantly superior over rest of the treatments the lowest parameters observed with weedy check.

## Conclusion

The weed free plot (3 HW at 15, 30, 40 DAS) giving more returns in all parameters of crop but among the chemical treatment, application of Pendimethalin 30% EC @ 1 kg a.i ha<sup>-1</sup>+ Imazethapyr 10% SL 0.075 kg a.i ha<sup>-1</sup> at 20 DAS (PoE) (T<sub>6</sub>) had controlled the weeds more effectively in groundnut crop which helps in improving growth, yield attributes, quality attributes, weed control efficiency, weed index with higher net return.

**Table 1:** Growth and yield attributes of groundnut crop as influenced by different treatments

Treatments	Plant height	number of branches plant <sup>-1</sup>	number of leaves plant <sup>-1</sup>	number of nodules plant <sup>-1</sup>	Total dry matter plant <sup>-1</sup>	Dry pods yield (kg ha <sup>-1</sup> )	Haulm yield (kg ha <sup>-1</sup> )	WCE	Weed index
T <sub>1</sub> : Pendimethalin 30% EC @ 0.75 kg a.i. ha <sup>-1</sup>	46.03	9.40	83.17	69.70	30.79	1328	3196	61.08	29.97
T <sub>2</sub> : Pendimethalin 30% EC @ 0.75 kg a.i. ha <sup>-1</sup> +1 IC at 30 DAS + 1 HW at 40 DAS	47.03	9.50	88.97	70.83	31.58	1546	3388	79.28	18.83
T <sub>3</sub> : Quizalofop ethyl 5% EC @ 37.5 g a.i. ha <sup>-1</sup> at 15 to 20 DAS	44.53	9.00	78.47	69.27	30.23	1169	3007	49.05	38.38
T <sub>4</sub> : Pendimethalin 30% EC @ 1 kg a.i. ha <sup>-1</sup> + Quizalofop ethyl 5% EC @ 37.5 g a.i. ha <sup>-1</sup> at 15 to 20 DAS	47.53	9.57	89.00	76.40	33.31	1676	3625	85.86	12.17
T <sub>5</sub> : Imazethapyr 10% SL @ 0.075 kg a.i. ha <sup>-1</sup> at 20 DAS	45.07	9.33	82.33	69.57	30.50	1229	3015	52.62	35.39
T <sub>6</sub> : Pendimethalin 30% EC @ 1 kg a.i. ha <sup>-1</sup> + Imazethapyr 10% SL @ 0.075 kg a.i. ha <sup>-1</sup> at 20DAS	51.83	10.30	90.00	77.57	35.51	1902	3806	92.38	0.22
T <sub>7</sub> : Farmer practice (1 HW at 25 DAS + 1 hand hoeing at 35-40 DAS)	46.87	9.43	83.33	70.50	31.31	1422	3282	62.49	25.23
T <sub>8</sub> : Weed free plot (3 HW at 15,30 and 40 DAS)	53.33	10.87	95.10	81.33	39.08	1915	4017	96.77	0.00
T <sub>9</sub> : weedy check	43.03	8.23	77.10	61.27	28.48	985	2686	0.00	47.85
S.E. ±	1.92	0.42	3.45	3.31	1.56	73	192.6	-	-
C.D. at 5%	5.76	1.26	10.35	9.91	4.67	219	577	-	-
General mean	47.25	9.51	85.27	71.83	32.31	1464	3336	-	-

## References

- Bhale M, Vilas Jayashri, Karmore V, Yuvraj R, Patil. Integrated weed management in groundnut. Pak. J Weed Sci. Res. 2012; 23(18):733-739.
- Bhondve TS, Pinjari SS, Suryawanshi JS. Integrated weed management in kharif groundnut (*Arachis hypogaea* L.). Int. J Sci. 2009; 5(1):158-160.
- Chaudhari AP, Gaikwad CB, Tiwari TK, Nikam AS. Integrated weed management in kharif groundnut (*Arachis hypogaea* L.). Int. J Agric. Sci. 2007; 3(1):133-135.
- Dixit JP, Kasana BS, Singh YK. Effect of pre and post emergence herbicides on pod yield and economics of groundnut (*Arachis hypogaea* L.). Int. J of farm Sci. 2016; 6(1):90-95.
- Jat RS, Meena HN, Singh AL, Surya JN, Misra JB. Weed management in groundnut (*Arachis hypogaea* L.) in India. Agri. Rev. 2011; 32(3):155-171.
- Jadhav PB, Singh R, Kamble DR. Effect of weed control method on growth and yield of groundnut. Adv. Res. J Crop. 2011; 6(2):151-157.
- Malunjkar BD, Mullik BB, Patil SC. Evaluation of post emergence herbicides in rainy season groundnut. Ind. J Weed Sci. 2012; 44(2):95-97.
- Prasad R. Textbook of field crop production, 2002, 397-434

9. Rao VS. Principles of weed science. Oxford and IBH publishing co., New Delhi, 1983, 23-42.
10. Sathya Priya R, Chinnusamy C, Manickasundaram P, Babu C. A review on weed management in groundnut (*Arachis hypogaea* L.). Int. J of Agri. Sci. and Res. 2013; 3(1):163-172.
11. Walia US, Surjit Singh, Buta Singh. Integrated approach for the control of hardy weeds in groundnut (*Arachis hypogaea* L.). Ind. J Weed Sci. 2007; 39(1&2):112-115.