



## EFFECT OF WEEDS ON GROWTH AND YIELD OF CHICKPEA

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### ABSTRACT

The growth parameters of Chickpea was experimentally studied in field condition. The experiments were carried out in presence and absence of different weeds grow naturally in the field. There are 10 weeds found in the field of Chickpea. The three weeds were from grass category and remaining seven from herb. It is observed that growth of weeds along with Chickpea crop affected the growth parameters like height and yield mass. The maximum height (62.60 cm) was noted at 40 DAS in presence of weeds. The minimum plant height (15.96cm) is recorded at 15 DAS. The presence of weeds among the crop reduced height (11.00 cm) at 15 DAS. If absence of weeds enhanced maximum height (50.89cm) at 50 DAP. The growth performance of plants was reduced and showed stunting and thinness due to weeds. The absence of weeds increased minimum weight (927.2 g) at 15 DAS and maximum (1123.60 g) at 50 DAS. The delayed weeding affected the growth performance and yield. The weeds are controlled and removed with the help of weedicide Pendimethalin at the rate of 1000g / ha.

**KEY WORDS:** Chickpea, weeds, Pendimethalin, height, yield.

### INTRODUCTION

In India variety of agricultural crops are grown by farmers in different seasons. The chickpea is a Rabi crop grown in different parts of India for pulses. The pulses are used for various purposes in human diet and are feed of cattles. The seeds of chickpea are consumed in large scale all over the world. The seeds are eaten fresh or by roasting or boiling. They are used in making curries. The young leaves are plucked, stored and used as vegetable whenever required. The seeds are grounded and flour is made which is used in the preparation of edible items. The chickpea seeds are nutritionally rich as they contain protein, carbohydrates, fats, minerals, sodium, potassium, fibres etc.

The weeds are enemies of agricultural crops as they reduce growth and yield. They have remarkable capacity to germinate and grow under varied environmental conditions. They can grow in non irrigated field and compete for nutrients along with crops. It is a food of many herbivore animals. It protects soil cover against erosion. The weeds interfere with man's objective of crop yield.<sup>[1]</sup> The existing farming is failed to reduce undesirable weeds.<sup>[2]</sup> The reduction in yield depend upon weed emergence time, density, type and crops type. The life span of weeds may be one year or two year or years together. The Weeds are naturally strong competitors of agricultural crops .The seeds of weeds are multiplied rapidly and abundently and harm to crop. The seeds

remain dormant till onset of favourable environmental conditions Considering importance of chickpea and effect of different weeds on growth and yield, present investigation is carriedout.

### MATERIALS AND METHODS

#### Study area

The experiment was conducted in the field of Talegaon Bhari village in Yavatmal district. The research was conducted during rabi season. The study area is situated between 20.3899°N latitude and 78.1307°E longitude. The climate of this region is cold in winter and hot dry in summer season.

#### Selection of variety

The Chickpea is identified with scientific name *Cicer arietinum* belongs to the family Fabaceae and sub family papilionaceae. The Chickpea is a pulse crop grown enormously. It is a seasonal crop grown. The experiments were conducted on the Chickpea variety named as Ankur Chirag.

#### Experimental design

The experiments was conducted in total four field plots of 10 ft each. There made about eleven rows of Chickpea in each plot. The seeds of Chickpea was sown at a distance 14 ". There are 100 seeds sown in each row. The two plots were kept as control without weeds and remaining two plots having weeds.

### Weed eradication

The naturally grown weeds are sprayed with weedicide Pendimethalin at the rate of 1000g / ha. After spraying of weeds it was removed manually by hand and mechanical means. The first weed removal was made after growth of plant at 15 to 20 DAS. The second weed removal was done after 30 to 45DAS. The third weed removal was carried out manually at 40 DAS.

### RESULTS AND DISCUSSION

In the field of Chickpea 10 weeds were observed and considered for effect on crop growth and yield (Table 1). The weeds are non essential and harmful plants for agricultural crops. The weeds are naturally grown grasses or herbs in the crop field. The weeds constitute of height from 15 cm to 60 cm. The weeds were from different plant families and identified with different local names.

**Table 1: Flora of weeds in the field of Chickpea.**

S.N.	Botanical Name of the Plant	Family	Type of weed	Local Name
1	<i>Cynodon dactylon</i>	Poaceae	Grass	Durva
2	<i>Euphorbia hirta</i>	Euphorbiaceae	Herb	Doodhi
3	<i>Parthenium hysterophorus</i>	Asteraceae	Herb	Gajargawat
4	<i>Ageratum conyzoides</i>	Asteraceae	Herb	Ghanera Osandi
5	<i>Cyperus rotundus</i>	Cyperaceae	Grass	Nagarmotha
6	<i>Convolvulus arvensis</i>	Convolvulaceae	Herb	Chandwel
7	<i>Oxalis corniculata</i>	Oxalidaceae	Herb	Amrul
8	<i>Digitaria ciliaris</i>	Poaceae	Grass	Kekdagawat
9	<i>Celosia argentea</i>	Amaranthaceae	Herb	Komdigawat
10	<i>Digera arvensis</i>	Amaranthaceae	Herb	Kunjar

The grasses may be annual or perennial weeds grow profusely along with agricultural crops, though in adverse environmental conditions. The effect of ten

weeds on growth and yield of Chickpea was studied. The three weeds are from grass category and remaining seven in the category of herbs.

**Table 2: Effects of weeds on height of Chickpea.**

S.N.	Duration (in DAS)	Average Plant height (without weeds)	Average Plant height (with weeds)
1	15	15.96 cm	11.00 cm
2	30	40.1 cm	21.5 cm
3	40	62.60 cm	59.5 cm
4	50	60.6cm	50.89 cm

The maximum plant height (62.60 cm) was noted in crop without weeds at 40 DAS. The decrease in height was noted (60.6cm) at 50 DAS. The minimum plant height (15.96cm) is noted at 15 DAS. In presence of weeds the minimum height (11.00 cm) was noted at 15 DAS and maximum height (50.89cm) was noted at 50 DAS. The

results indicates that the growth performance of chickpea was reduced significantly after 50 DAS. The growth of Chickpea were found stunted and thin in presence of weeds. In presence of weeds fruit yield of okra is reduced by 88%.<sup>[3]</sup> The plant height were used to evaluate the growth performance of chickpea plant.

**Table 3: Effects of weeds on weight of seeds in Chickpea.**

S.N.	Duration (in DAS)	Average weight (without weeds)	Average weight (with weeds)
1	15	927.2g	618.18g
2	30	2040 g	816g
3	40	1860g	930g
4	50	1123.60g	749g

In absence of weeds minimum seed weight (927.2 g) was noted at 5 DAS, while it was maximum (1123.60 g) at 50 DAS. The presence of weeds has reduced seed weight and it was minimum(618.18g) at 15 DAS. The maximum seed weight gains (930g) was noted at 40 DAS. It is

observed that weed control is essential to enhance weight. The weeding or removal of weeds should be done as early as possible and not later than 50 to 60 DAS. The delayed weeding reduces crop yield. The presence o weed for long time may result into total crop

failure. The Weeds represent a great barrier to the productivity of several agricultural crops.<sup>[4]</sup> The poor weed management in chickpea is one of the most important yield limiting factor.<sup>[5]</sup> The weed infestation offer serious competition and cause yield reduction to the extent of 75% in chickpea.<sup>[6]</sup> The weed has affected onion yield in the tune of 40 - 80%.<sup>[7]</sup> The uncontrolled weeds in soybean field has reduced yield to the tune of 30-80%.<sup>[8]</sup> The crop yield losses are may be caused by weed competition, allelopathy and parasitism.<sup>[9]</sup> The level of weed interference among the crop is determined by factors acting additively or antagonistically or synergistically on agronomic and environmental variables.<sup>[10]</sup> Due to weeds the yield loss have been reported from 21 to 97% in pigeon pea.<sup>[11]</sup> The yield loss due to weed competition in cotton are estimated to 70-75%.<sup>[12]</sup>

## CONCLUSION

The weeds affect badly on the growth and yield of Chickpea crop. It affects the economy of farmers. The yield loss along with weeds may be additionally due to insects and pests because they act as vectors for spread of plant disease. The timely control and removal of weeds from the field are necessary to enhance the growth and yield. Field sanitation should be practiced from time to time till maturity and seed set of crop. The loss of yield affects the earning and economy of farmers. The weeds in the field can be controlled by using herbicides or weedicides and removed manually by hands or mechanically.

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