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EFFECTIVE WAY OF WEED MANAGEMENT IN BULB CROPS

Popular Article

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ABSTRACT

Bulb crops (*Allium species*) are the most important vegetable crops grown throughout the world. Weeds are the major problem in this crops and compete the plants/crops for water, sunlight etc. They are undesirable plants out of place and function as an uneconomic tax on the crop by taking the space required for the plant, absorbing the water and nutrients from the soil and by competing for other essentials like light, moisture etc. Weeds being much more hardy and tenacious than crops plants, if unchecked, get the upper hand and adversely affect the growth and yield of crop plant. There are two methods generally employed for controlling weeds. viz., (i) Hand weeding, and (ii) Use of herbicides. The first one is generally practiced by the farmers. This method is the most labour intensive and costly. Due to the industrial development, the agricultural labourers are engaged towards the industries for higher wages. To overcome this difficulty, with the recent introduction of new herbicides, chemical weed control has come to the forefront as an additional tool to fight weeds. One of the major advantages of some of these chemicals is that when applied at a suitable stage they kill the weed even before they appear on the surface and save the crop from weed competition during the critical growing period.

Introduction

Bulb crops are a crop grouping that includes all of the *Allium* species except chives. Bulb crops include onions (dry and green), leeks, garlic, and shallots. Bulb crops do not shade out weeds that emerge in the rows. Also, many of the crops, such as dry bulb onions and leeks, require a long growing season. Weed is the plant grows in a place, where it is unwanted. A weed is any plant that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. Weeds are also known as invasive plants. Weeds compete with onion crop for nutrients, soil moisture, space, light and considerably reduce the bulb yield, quality and value of the crop through increased production and harvesting costs.

Weed control methods

Mechanical or physical method

Mechanical removal of weeds is both time consuming and labor-intensive but is one of the most effective methods.

- Hand weeding
- Hoeing
- Mowing
- Cultivating
- Tillage
- Flooding
- Burning

Cultural method:

- Crop rotation
- Soil Solarisation
- Mulching
- Cover crops
- Proper spacing
- Amount of seed rate
- Adjustment of planting date
- Fast growing varieties

Tabel 1. Characteristics of weed life cycle

Weed type	Duration of life cycle	Overwintering state	Method of reproduction
Annual	1 yr	Seed	Seed
Biennial	2 yr	Rosette	Seed
Perennial	>2 yr	Seed, vegetative propagule	Seed, vegetative propagules

Biological method

A biological weed control regiment can consist of biological control agents, bioherbicides, use of grazing animals, and protection of natural predators.

Chemical method

Herbicides offer a great scope for minimizing the cost of weed control irrespective of the situation and offer a good weed control alternative to cultural or mechanical methods in Bulb crops.

Onions and leeks are fairly shallow rooted, and care must be taken not to prune these roots with cultivation, especially when onions begin to bulb. Pulling or hoeing occasional large broadleaf weeds, while labor intensive, may be preferable when plants are older and bulbing. Avoid fields that are infested with nutsedge, hard-seeded legumes, or other difficult-to-control weeds. Many weed problems can be reduced by preparing the land well ahead of planting and using Roundup in a "cropping systems" approach, and/or using paraquat in a "stale seed bed" approach. Preemergence and early postemergence herbicides may control many weeds for 4–6 weeks. Herbicide performance depends on weather, irrigation, soil type, and proper selection for the weed species to be controlled. Obtain consistent results by reading the herbicide label and other information about proper application and timing of each herbicide.

Table 2. Important weeds of bulb crops

Crop	Weeds Name
Onion	*Amaranthus retroflexus*
	Cyperus rotundus
	Chenopodium album
	Parthenium hysterophorus
	Melilotus indica
	Phalaris minor
	Cynodon dactylon
Garlic	*Phalaris minor*
	Avena ludoviciana
	Chenopodium album
	Amaranthus retroflexus

Weed management of bulb crops:

- Hand weeding should be done two times at second and fourth weeks after transplanting is very effective to control weeds in onion. pendimethalin + mulching treatments had the lowest weed population and weed dry matter and the highest onion bulb yield
- Application of Oxyflurofen 23.5EC before planting + one hand weeding at 40-60 days after transplanting or combined spray of Pendimethalin 30EC + quizalofop ethyl 5EC at the time of planting and second application at 30 days after transplanting in onion.
- Pre-emergence application of pendimethalin at 1.0 kg/ha, oxyfluorfen at 200 and 250 g/ha, pre-emergence spray of trifluralin at 1.0 kg/ha either through sand mixing or spray and oxadiargyl at 100 g/ha applied as pre emergence or 10 and 25 days after transplanting (DAT) as post emergence spray supplemented with one hoeing proved very effective in minimizing population of *C. album, Melilotus indica* and *Coronopus didymus.*
- Pendimethalin (Mehmood *et al.* 2002), oxyfluorfen (Vora and Mehta 1999, Qasem 1996), metolachlor and trifluralin were found effective for managing weeds in garlic.

Conclusion

The yield of crop will reduced up to 78 % due to weeds therefore hand weeding was the best option for weed management but due to labour expensive and their scarcity, the use of herbicides are effective in controlling weeds and increasing the bulb yields.

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