Click www.researchjournal.co.in/online/subdetail.html to purchase.

RESEARCH PAPER International Journal of Agricultural Sciences, June to December, 2009, Vol. 5 Issue 2 : 477-481

Productivity of direct seeded onion (*Allium cepa*. L.) as influenced by integrated weed management practices

K.N. KALYANA MURTHY, P.S.FATHIMA* AND A.VIDYA
Department of Agronomy, College of Agriculture, U.A.S. (B), V.C.Farm, MANDYA(KARNATAKA) INDIA

ABSTRACT

An experiment was conducted to study the efficacy of different herbicides applied alone, integrated approach involving application of lower dose of herbicides in combination with one hand weeding in comparison to manual weeding at different growth stages on the bulb yield of onion. Integrated weed management treatments involving pre-emergence application of herbicides *viz*., oxyfluorfen @ 0.09 kg a.i. ha^{-1}, pendimethalin @ 0.75 kg a.i. ha^{-1} and metolachlor @ 0.75 kg a.i. ha^{-1} in combination with one hand weeding at 45 days after sowing resulted in higher bulb yield of onion (148.91, 147.25 and 146.50 q ha^{-1}, respectively) due to maintenance of weed free condition during initial stages with pre-emergence application of herbicides and control of late emerged weeds as a result of one hand weeding at 45 days after sowing. The weed control efficiency was more than 80 and 95 per cent at 45 days after sowing and at harvest. The weed index values ranged from 8 to 9.49 per cent in integrated treatments as compared to 86 per cent with weedy check indicating least crop weed competition.

Key words : Onion, Integrated weed management, Metolachlor

INTRODUCTION

Onion (*Allium cepa* L.) is a very poor competitor with weeds on account of its inherent characteristic traits such as short stature, non-branching habit, sparse foliage, shallow root system and extremely slow growth in the initial stages, enabling quick and rapid growth of weeds. In competition with weeds the bulb size of onion plant is greatly reduced. The loss of yield is mainly due to decrease in bulb size.

The severity of weed infestation in onion crop varies considerably with the method of establishment *viz*., direct seeding and transplanting (Westra *et al*., 1990). The periodical hand weeding with the help of "*Kurpi*" is the only conventional method widely practiced by the farmers in India. In areas where labour is scarce and expensive during critical period of crop weed competition and at times when field conditions are unfavorable for manual weeding, chemical weed control would be the practical and most economical method. Further, close spacing and shallow root system of onion make the mechanical operations quite ineffective against weeds resulting in sub-optimum plant population (Gajraj Singh and Pandey, 1982). Therefore, chemical method of weed control has shown good promise. With the advancement in agriculture and technology, a good number of herbicides are now available in the market, which can be used effectively and economically. However, an integrated weed management approach involving herbicide at lower doses and cultural practices is not only economically feasible but also ecofriendly. Therefore, an investigation to study the bio–efficacy of different herbicides alone, lower dose of herbicide in combination with one hand weeding and manual weed control at different growth stages was undertaken.

MATERIALS AND METHODS

The experiment was conducted in the farmer field at Kurlahally village of Chickballapur Taluk in Kolar District of Karnataka state during *rabi* - summer seasons of 1997-98 and 1998-99. The soil of the experimental site was sandy loam in texture and moderate in fertility. The soil was neutral in reaction and was high in organic matter, low in nitrogen, medium in available phosphorus and low in available potassium. The experiment consisted of 16 treatments of which 4 were herbicide treatments, 6 were hand weeding treatments, 4 were integrated weed control treatments, one weedy check and weed free check treatment. The experiment was laid out in randomized block design width.

The data on weed count and weed dry weight was subjected to square root transformation using the formula:

$$\check{E}X + 0.5$$

RESULTS AND DISCUSSION

The data on grasses, broad leaved, sedge and total weed population recorded at 30, 45 days after sowing (DAS) and at harvest are presented in Table 1. At 30 and 45 DAS, significantly lowest total weed population was recorded with pre-emergent application of oxyfluorfen @ 0.14 kg a.i. ha^{-1} (26.99 and 36.65 m^{-2}) and pendimethalin @ 1.25 kg a.i. ha^{-1} (29.83 and 34.66 m^{-2}), and these two were at par with metolachlor @ 1.25 kg a.i. ha^{-1}(31.32 and 37.99 m^{-2}). Highest was with butachlor @ 1.25 kg

* Author for correspondence