

## Weed growth and peppermint yield influenced by various doses of Oxyfluorfen

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### ABSTRACT

Highest oil yield from both the cuttings (60 DAP and 45DAFC) was recorded from weed free treatment followed by oxyfluorfen @ 470 g ai/ha. Oil yield was increased with the increase in rate of herbicides during both the years. Pendimethalin at both the rates were equally good. Oil yield was reduced up to 44% during 2004 and 62.9% during 2005 in weedy check as compared to weed free. Non grassy weeds were high in numbers then grassy during both the years.

**Key words:** Oxyfluorfen, Fluchloralin and Pendimethalin

### INTRODUCTION

Today, India has emerged as the largest producer of menthol and mint oil in the world. The cultivation of mint has become popular among farmers progressively. Uttaranchal and UP growing mint in an area of considerable size. To grow mint as commercial crop needs proper care of the crop i.e. nutrients, irrigation, pest control and weed management. Among all the essential requirements, weed management is very crucial and important because, weed not only reduce the yield of mint but also reduce the quality of the oil. Kothari and Singh (1994) reported that the unrestricted weed growth significantly reduced mint oil yield by 58% to 73%. Since, mint crop is grown by propagates and needs frequent irrigations & thus weeds get congenial environment for germination, establishment and for their fast growth. The weeds compete the crop since very beginning and reduce the yield. The critical period of weed competition in menthol mint has been found to be in between 30-90 days after planting and 16-45 days after first harvest. To check the weed growth 4-5 manual weddings are required .To grow on large scale it needs more human resource which is very difficult to manage and also very costly affair due to higher wages of the labour. To solve the crisis of labour problem, weeds may be checked / managed by herbicides. Various herbicides i.e. Pendimethalin, Diuran etc. have already been tested. Oxyfluorfen is also a good herbicide to control weeds in mentha. Hence, the present study was undertaken to test the oxyfluorfen in various doses.

### MATERIALS AND METHODS

A field trial was conducted during two consecutive years i.e.

winter session of 2004 and 2005 at Medicinal Plant Research and Development Center of Govind Ballabh Pant University of Agriculture and Technology, Pantnagar. Experiment was conducted in Randomized Block Design with 11 treatments. All the treatments were replicated three times. Treatments were consisted of various doses of Oxyfluorfen (88, 176, 206, 235 and 470g ai/ha), Pendimethalin (225 and 450g ai/ha), Fluchloralin (270 and 540g ai/ha) along with one weedy and weed free treatments. Oxyfluorfen and Pendimethalin were applied a day after planting as pre-emergence (PE) while Fluchloralin was applied as pre-plant incorporation (PPI). Water was used @ 500 liter per hectare. *Mentha piperata* was planted at row spacing of 30 cm. in mid of January during both the years. The soil of experimental plots was sandy loam in texture having 0.75% organic carbon, medium in phosphorus (24.5kg/ha) and medium in available Potassium (173 kg/ha). Soil was in neutral (pH 7.0).

### RESULTS AND DISCUSSION

Weed spp. observed in the field at 60 days stage were grassy, non grassy and sedges. Population of weeds was higher during 2005 as compared to 2004. In general, the population of *Cyperus rotundus* was highest during 2005 against 2004 (Table-1). *Echinochloa colona* and *Digitaria sanguinalis* among grassy; *Solanum nigrum*, *Chenopodium album*, and *Ipomea* spp., *Eclipta alba* and *Commelina benghalensis* among non-grassy were predominant weeds irrespective of the treatments. Data given in table-1 revealed that all the weeds were suppressed due to higher doses of herbicides. There was good control of non-grassy weeds by oxyfluorfen @

Table 1 : Effect of treatments on weed density (No. m<sup>-2</sup>) at 60 DAP

Treatments	Dose (g ai ha <sup>-1</sup> )	Grassy Weeds		Non Grassy Weeds		Sedges	
		2004	2005	2004	2005	2004	2005
Oxyfluorfen	88	30	20	49	13	10	491
Oxyfluorfen	176	16	19	24	7	10	461
Oxyfluorfen	206	13	19	18	4	10	453
Oxyfluorfen	235	8	19	9	6	5	433
Oxyfluorfen	470	2	14	3	1	2	426
Fluchloralin	270	23	10	45	352	16	422
Fluchloralin	540	13	16	23	347	15	475
Pendimethalin	225	21	28	56	272	30	524
Pendimethalin	450	8	19	25	215	16	494
Weed-free	-	0	00	00	00	00	00
Weedy	-	52	58	114	557	35	562

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