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Research Paper

Chemical weed management in china aster (*Callistephus chinensis* L. Nees)

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ABSTRACT

An experiment was conducted during 2001-2002 at Horticulture Division, UAS, GKVK, Bangalore. Herbicides used were oxyfluorfen, trifluralin, pendimethalin and metolachlor each at three doses rate along with hand-weeding and un-weeded control (Weedy check) were tested in RCBD with three replications. The results revealed oxyfluorfen 0.1kg a.i/ha followed by earthing up at 35 DAT recorded significantly lower weed density and significantly increased plant growth, flower yield and quality of flowers. This was at par with metolachlor 1.0 kg a.i/ha followed by earthing up at 35 DAT. While, pendimethalin 0.75kg a.i/ha followed by earthing up at 35 DAT gave poor control of weeds and reduced plant growth, yield and quality of flowers but significantly superior than un-weeded control.

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China aster is an important commercial flower crop grown mainly in India, Siberia Russia, Japan and Europe. The growth of the plants and flower yield depends on the cultivation practices adopted, weed free environment right from early stage ensure higher yield. Weed infestation hampers the growth of China aster plants in the early stages besides harboring many pests and diseases. They compete also for nutrients and moisture. Though mechanical or manual methods of weed control in China aster crop are effective, they have certain practical limitations. Timely weeding are not practiced on a large scale, as labour is scarce, costly and time consuming. Incessant rains during initial periods often render the hand-weeding impossible. Thus use of herbicides in control of weed is comparatively economical, convenient and efficient in eradicating weeds by one or two applications (Yadav and Bose, 1987). Use of herbicides has received much less attention and systematic investigation to assess the effect of herbicides on growth and flower production in China aster has not been done under the field conditions. Considering the above facts, the present objective was taken up.

MATERIALS AND METHODS

The experiment was conducted during 2001-2002 at Horticulture Division, University of Agricultural Sciences, GKVK, Bangalore. The soil of the experimental site was red sandy loam with moderate fertility status. The fourteen treatments tested were oxyfluorfen, trifluralin, pendimethalin and metolachlor each at three doses rate, hand weeding at 30,60 and 90 DAT and unweeded control. The experimental design was RCBD with three replications. China aster cv. Kamini was planted at a spacing of 30cm x 30cm. The herbicides were applied as per-emergence treatments three days after planting with the help of hand operated Ganesh sprayer. The spray density and their dry matter production were recorded at 30 days interval with the help of 0.25m x 0.25m quadrant at randomly selected places from each plot. Weed control efficiency was calculated as suggested by Mani *et al.* (1973). The weed index expressing the competition offered by weeds was measured by per cent reduction in yield due to treatment over hand weeding and was worked out as suggested by Gill and Kumar (1969). The observations were recorded on weed flora, crop growth, yield and quality of flowers.

The details of the treatments were as follows: T_1: Unweeded control (Weedy Check), T_2: Hand Weeding at 30, 60 and 90 DAT, T_3: Trifluralin (48 E.C) 1.25 kg a.i. ha^{-1}pre-emergent on 3 DAT, T_4: Trifluralin (48 E.C) 1.00kg a.i ha^{-1} pre-emergent on 3 DAT, T_5: Trifluralin (48 E.C) 0.75 kg a.i ha^{-1} 3 DAT followed by earthing up at 35