Iva xanthifolia, a problematic weed in sugar beet in Serbia

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INTRODUCTION

Iva xanthifolia is a newly introduced weed in Serbia. The first report of its presence were in 1966 (Koljadzinski & Šajinović, 1978), predominantly along roads and tracks, and Veljković (1996) has since reported its presence in arable crops. The plants is well-adapted to Serbian growing conditions, has a high seed production and already causes problems in soya bean, maize, sunflower and sugar beet. The weed is also important elsewhere in eastern Europe (e.g. Milanova, 1999; László & Mária, 2000; Hódi, 2001). In Serbia, we began a four-year investigation (continuing the investigations of Marisavljevic & Veljkovic, 2002), to examine the possibilities for its chemical control in sugar beet.

MATERIAL AND METHODS

Field trials were done in the field naturally infested with 350 plants/m^2. Sugar beet was grown according to the local practice. The following combinations of herbicides were used: (a) triflusulfuron-methyl (0.01 kg a.i./ha) & phenmedipham + desmedipham (0.12 + 0.12 kg a.i./ha) single application, normal post-emergence; (b) triflusulfuron-methyl (0.02 kg a.i./ha) & phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha), split application; (c) phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha) & ethofumesate (1.5 kg a.i./ha) single application, normal post-emergence; (d) phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha) & clopyralyd (0.05 kg a.i./ha) single application, normal post-emergence; (e) phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha) & clopyralyd (0.06 kg a.i./ha), split application; (f) phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha) & metamitron (2.8 kg a.i./ha), split application; (g) phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha), ethofumesate (1.5 kg a.i./ha) & metamitron (2.1 kg a.i./ha), split application; (h) phenmedipham + desmedipham (0.24 + 0.24 kg a.i./ha), metamitron (2.1 kg a.i./ha) & clopyralid (0.025 kg a.i./ha), single application; (i) triflusulfuron-methyl (0.02 kg a.i./ha) + phenmedipham + desmedipham (0.18 + 0.18 kg a.i./ha) & metamitron (2.1 kg a.i./ha), split application; (j) triflusulfuron-methyl (0.015 kg a.i./ha), phenmedipham + desmedipham (0.12 + 0.12 kg a.i./ha) & metamitron (1.4 kg a.i./ha), single application. In all treatments with triflusulfuron-methyl, 0.05% 'Trend' (90% isodecylalcochol ethoxylate) was added. Herbicides were applied with a knapsack sprayer with a 2-m-wide boom and 8 flat-fan nozles (Spraying System 110-002). Spray volume was 400 litres/ha. Single applications were made at the cotyledon or 2- to 6-leaf stage of the weed. First treatments of split applications were at

the cotyledon to 2-leaf stage, while the second application was at the 2- to 6-leaf stage of the weed.. The trials were set up using a randomized block design with four replicates; plot size was 25 m^2.

RESULTS AND DISCUSSION

Most of the 10 herbicide combinations tested achieved better than 80% efficiency (Table 1).

Table 1. Efficiency of herbicides tested.

Herbicide combination	Efficiency (%)	Herbicide combination	Efficiency (%)
(a)	79	(f)	90
(b)	97	(g)	83
(c)	93	(h)	90
(d)	80	(i)	100
(e)	81	(j)	97

A 100% effect was achived only with split application treatment (i), although split application treatments (b) and (j) also had a very good effect. All other combinations were unsatisfactory. Better results were achieved with normal post-emergence applications (at 2 to 4 leaves of *Iva xanthifolia*) rather than at early post-emergence (cotyledon to 2-leaf stage) and with split (rather than single) applications. The experimental field was heavily infested with *I. xanthifolia*, and we believe that this weed must be fully eliminated from sugar beet fields, because its size and strong competitive potential can result in a total loss of the crop. One plant/m^2 is sufficient to cause problems in sugar beet.

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