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Relationship Between The Timing Of Seedbed Preparation And The Efficacy Of Pre-Emergence Flaming

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Abstract

Many weed species have an emergence peak in spring. When flaming weeds prior to crop emergence, the timing is important. The proportion of weeds killed by pre-emergence flaming might be increased by timing seedbed preparation some days before the sowing of the crop. In these experiments we studied the timing of seedbed preparation in relation to sowing date in order to enhance weed emergence and thus improve the efficacy of thermal weed control.

The field experiments were conducted in 1995 and 1996. Seedbed preparation was done with a rotary tiller to 15-20 cm depth either 5–7 days prior to sowing of carrot or at the day of sowing. In both cases, flaming was done 8 days after sowing. Weeds were counted i) on flaming date, ii) 5 days after flaming, and iii) 13 or 21 days after flaming.

When the seedbed preparation was done 5 to 7 days before sowing, more than 75% of the weeds germinated before carrot, and were thus controlled by flaming. Whereas, when the seedbed preparation was done in connection with sowing, only 25–35% of the weeds germinated before carrot. The most abundant weed species in the study were *Chenopodium album*, *Stellaria media*, *Viola arvensis* and *Matricaria matricarioides*.

Manipulating weed emergence by timing seedbed preparation several days apart from sowing gives an opportunity for better weed control by flaming than simultaneous seedbed preparation and sowing. Consequently, need for additional (hand)weeding is reduced. Models and software for forecasting emergence could be used as a further improvement.

Table 1. Timing of seedbed preparation and control effect of flaming in 1995 and 1996

Year	Seedbed preparation	Sowing	Annual weeds (number m ⁻²)			
			On flaming date (14.6.-95 or 5.6.-96)	5 days after flaming	13 days after flaming	21 days after flaming
1995	1 June	6 June	172	16	28	
	6 June	6 June	60	46	57	
1996	21 May	28 May	653	48		194
	28 May	28 May	174	108		458