

Hand weeding

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Factsheet about integrated weed management



Introduction

The most ancient weed control method, hand weeding (Figure 1), is a method that minimizes the build-up of weed populations of weeds that escaped all other weed control efforts by removing them directly by hand. Weeds are either pulled out of the ground or controlled by chipping or digging them out using hand-held tools.

costs as well; e.g. from a field experiment in New England resulted that the weed age had a significant effect on the time taken to weed. Average times were 53 hours and 83 hours ha⁻¹ for early and late weeding respectively¹. The crop type is another important factor for labour requirements in weeding (table 1).

Table 1| Hours per hectare required for manual intra-row weeding in different crops on organic farms in the Netherlands (means from data collected from organic farms during several years; Van der Weide et al., 2003)²

Crop	Planting method	Hours ha ⁻¹
Onion	Sown	177
Carrot	Sown	152
Sugar beet	Sown	82
	Planted	28
Vegetables	Sown	46
Cereals	Sown	12
Potato	Sown	9

Applicability

Hand weeding can be done at any time in the year, although the efficacy depends highly on the timing. The timing should be adjusted to the growth stages of the prevailing weeds and weather conditions. Removing large weeds that will produce many seeds that contribute to a relatively large build-up of the seed bank is more effective than the removal of small weeds. When specific weed species are an alternative host for difficult to control pests and diseases, it might be worthwhile to remove individual weed plants.

Efficacy

Potentially with hand weeding an efficacy of 100% can be achieved.

Hand weeding has the following advantages:

- Weeds can be removed plant-specific
- it can be applied inter-row
- if done conscientiously, the entire weed is removed including the root system
- low risk of crop injury

A great disadvantage however is that hand weeding is labour intensive. Furthermore the effectiveness depends on the skills of the person who does the weeding.

Costs

Costs depend on the wages in the region; in most European regions labour for weeding is expensive and can be scarce. The timing of application determines the

Equipment

Besides pulling by hand various hand-held tools are used, varying in efficiency and comfort and applied at different stages of the lifecycle of the prevailing weeds:

- hoes (figure 2)
- harrows
- tines
- brush weeders
- trowels
- thermal weeders
- cutting tools like mowers, sickles



Figure 1| Before the introduction of herbicides hand weeding was an important weed control strategy



Extra information

See <https://iwmpraise.eu/publications/> for all crop diversification strategies and their definitions. To get inspiration for the tools to use, have a look on the forum where farmers and researchers share experiences on hand weeding tools, e.g. the *Top five hand weeding tools for a new market farmer*.

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Figure 2| Hoes are one of the oldest hand weeding tools, varying from small precise ones to large ones for more rough weeding of e.g. deep rooting weeds.



1| Sita Tiwari, B.M. Sindel, N. Smart, M.J. Coleman, C. Fyfe, C. Lawlor, B. Vo & P. Kristiansen (2021): Hand weeding tools in vegetable production systems: an agronomic, ergonomic and economic evaluation, *International Journal of Agricultural Sustainability*, DOI: <https://doi.org/10.1080/14735903.2021.1964789>

2| Van der Weide RY, Lotz LAP, Bleeker PO & Groeneveld RMW (2003) Beheren en beheersen van onkruiden. In: *Op weg Naar Goede Biologische Praktijk: Resultaten en Ervaringen uit BIOM* (eds FG Wijnands & J Holwerda), 131–140. Applied Plant Research, Lelystad, the Netherlands.