

A Manual
full of useful tips and
innovative techniques!

New

Practical weed control

in arable farming and outdoor vegetable cultivation without chemicals

APPLIED PLANT RESEARCH
WAGENINGEN UR



Practical weed control

- Tabs.
- Suitable for use in the field: plastic film on both sides.
- Prevention: preventive measures, crop sequence, false seedbed, harrowing between sowing and emergence, flame weeding before emergence, sowing or planting methods, undersowing and intercropping, and the use of mulches.
- Weeds: Information about damage caused by weeds, their dispersal, and problems with weeds.
- Crops: Assistance in decision-making. Which farm machinery can be deployed, depending on the crop stage and the size of the weeds.
- Farm machinery: principle, feasible settings and particulars of each type of farm machinery. This is accompanied by a brief summary of the types of farm machinery. Steering systems are reviewed on a separate page.
- 77 pages
- Handy format (21 x 16 cm).
- More than 100 colour photos and illustrations.

Ordering:

The manual can be ordered by transferring **€ 32.50** (including postage and packing) to bank account number 36.70.17.369 in the name of Praktijkonderzoek Plant & Omgeving – Publicatieverkoop Lelystad, citing the order code PPO 352, the required number of copies, and your full address. BIC code: RABONL-2U. IBAN number: NL 45 rabo 036.70.17.369. Please send a fax or e-mail with the order code PPO 352, your name and address to confirm your order. Fax: +31 320 230479. E-mail address receptieagv.ppo@wur.nl

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Contents – Practical weed control

A useful aid for arable farmers and outdoor-vegetable growers wishing to carry out weed control without using chemicals.

Prevention

Weeds

Crops

Machinery


Index

Irrespective of the information you need about prevention, weeds, control strategies for specific types of crops or farm machinery, you will always find the information you require under the relevant tab.

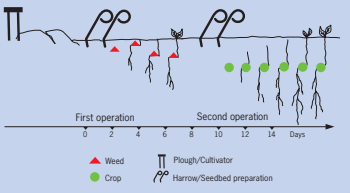
False seedbed 5

The thorough preparation of the seedbed, by means of what is referred to as a 'false seedbed', offers an excellent means of controlling germinating weeds before the crop is sown or planted. The false seedbed must be prepared at least ten days before the crop is sown or planted. Ploughing the soil encourages weed seeds to germinate. Harrowing machinery is then used to control germinating weeds prior to sowing or planting the crop; the soil should be cultivated as shallowly as possible, although this depends on the crop's sowing/planting depth. The cultivation depth should not exceed 2 cm, otherwise further weed seeds will be brought to the surface from deeper soil levels. When the soil conditions and the time permit then this procedure can be repeated several times prior to the establishment of the crop.

Preparation of a false seedbed. Give consideration to the soil structure.



Measure: False seedbed
Scope: Sown and planted crops.
Machines: Pasture harrow, chain-link harrow, full-field hoe, and other machines for the preparation of sowing and planting beds such as a rotary harrow.
Notes: Restricted effect with soil temperatures below 10°C. Covering the machines used for the preparation of the final sowing or planting bed to exclude light can limit the further germination of weeds. Weed seeds that require exposure to light will not then germinate. Most weed seeds respond to exposure to light.



Sown – small seeds – narrowly-spaced in the row (chicory, carrot, onion, redbeet, spinach) 29

Weeks	-3 to 0	1 to 3	3 to 4	4 to 6	6 to 8	until harvesting
Crop		+	+	+	+	+
Weed		+	+	+	+	+
Machinery						
Setting						

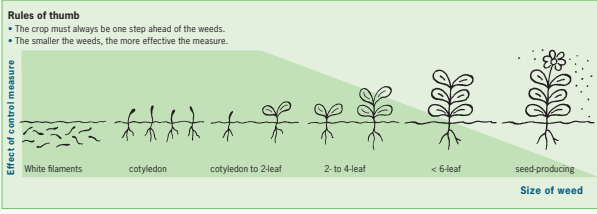
SOWING (Weeks -3 to 0) | **EMERGENCE** (Weeks 1 to 3)

Size of weeds 15




The effective control of weeds requires the adoption of cultivation measures focused on ensuring that the crop is always one step ahead of the weeds. In general, the ease of controlling weeds is inversely proportional to their size. Almost all weed-control measures are more effective with weeds in the cotyledon phase. In addition, a number of measures can have sufficient effect on larger weeds with a maximum of four leaves. A significant difference in the size of the crop and the weeds is of particular importance with control measures that also affect the crop, such as harrowing or soil cultivation using a finger weeder or torsion weeder. The larger crop plants are less susceptible to these forms of cultivation as compared to weeds in the cotyledon phase. Weeds at the cotyledon stage are much more susceptible to damage than weed plants at the two to four leaf stage. The most important factor determining the success of a control measure is the use of that measure whilst the weeds are still small. Carry out the weed-control measure as soon as the crop can withstand the operation.

Rules of thumb

- The crop must always be one step ahead of the weeds.
- The smaller the weeds, the more effective the measure.



Finger weeder 56

Principle Uproots weeds and ejects them from the crop row.
Requirements imposed on sowing/planting bed Level and loose soil.
Row spacing - 25 - 35 cm (small finger weeder).
 - from 35 cm (large finger weeder).
Effect in the row/ridging - good on light to medium-heavy clay soils.
 - not suitable for soil that is too hard.
Optimum weed stage Cotyledon to 2-leaf.
Optimum crop size When properly rooted: from the 2-leaf stage.
Suitable for use with the following crops Almost all crops sown or planted in rows with a sufficient distance between the rows.
Capacity 1.0 ha per hour with a 3-metre working width.


Addresses of machinery manufacturers 75

The wide range of harrows and hoes has an equal number of manufacturers and sales organizations; consequently it is recommended that you contact your dealer for advice about the type and make most suitable for your farm and your conditions. The www.agricity.com website can also be of use in finding the appropriate machinery and companies also on the site www.organicweeds.org.uk is a list with machinery sites.

1 Agro Techniek Holland BV, Delfweg 36, NL-2211 VM Noordwijkerhout, The Netherlands	www.agro-techniek.com
2 Bärtschi-Fobro AG, Dorf 1, Postfach 1, CH-6152 Hüswil, Switzerland	www.fobro.com
3 Brienen/LMB, Merklein 15, NL-5835 AT Beugen, The Netherlands	www.brienen-lmb.nl
4 Broekema Landbouwtechniek, Brammershoopstraat 20, NL-7858 TC Eerserveen, The Netherlands	0599 287333
5 Christaens Agro Systems, Heldenseweg 15A, NL-6086 PD Neer, The Netherlands	www.christaensagro.com
6 Dijk, Innovatie, Liederholthuisweg 7, NL-8131 PW Wijhe, The Netherlands	E-mail: dijk.innovatie@planet.nl
7 Fralo Machine Import, Woezikestraat 635, NL-6604 CK Wijchen, The Netherlands	www.fralo.nl
8 Garford Farm Machinery, Frognaal, Deeping St James, Peterborough, PE6 8RR, United Kingdom	www.garford.com
9 Greenburner, D'Urbans, Framingsham, Suffolk, IP13 9RR, United Kingdom	www.greenburner.com
10 HOAF Infrared Technology, Munsterstraat 14, NL-7575 ED Oldenzaal, The Netherlands	www.hoaf.nl
11 Homburg Machinehandel BV, Postbus 5, NL-9050 AA Stiens, The Netherlands	www.homburg-holland.com
12 Kooiman Mechanisatie, Handelsweg 10, NL-1619 BJ Andijk, The Netherlands	E-mail: nannekooiman@wxs.nl
13 Kress & Co, GmbH, Eberdinger Strasse 37, D-71665 Vaihingen, Germany	www.kress-landtechnik.de
14 Kruse, Stobbenkamp 42, NL-7631 CP Ootmarsum, The Netherlands	www.kruse.nl
15 L. Lütkemeyer, Gartenstrasse 13 D-33397 Rietberg, Germany	E-mail: sleutkemeyer@ear.com
16 Sketeeve BV, Lieve Vrouwepoldersdijk 1A, NL-3243 LA Stad aan 't Haringvliet, The Netherlands	www.sketeeve.com
17 Sarl Radis Mécanson, Quartier Rouzeure, F-84400 Apt, France	E-mail: daussan.christian@wanadoo.fr
18 Struk Wieringermeer BV, Schelphorst 67, NL-1771 SM Wieringerwerf, The Netherlands	www.strukholland.nl

Speed 4 - 12 km per hour.

Settings The crop row must pass precisely between the finger weeders. The aggressiveness of the cultivation increases with decreasing distance between the fingers. With young crops fit the fingers at a distance of 2 cm from each other. Reduce the distance between the fingers once the plants are firmly rooted. The fingers may overlap with sturdy crops (maximum of 5 cm).



Soil requirements The soil must be readily workable, and preferably drying. Soil that is too wet will stick between the fingers and the drive. Preference is given to the use of harder fingers on heavy clay soil and softer fingers on light soil.

Crop damage Make sure that the plants are planted correctly and sufficiently deep, and that the soil has been pressed down firmly. Soil cultivation too-early can uproot the plants.

Combination with other machinery Extremely effective in combination with flat hoes between the rows. Use of the finger weeder in combination with a torsion weeder will control larger weeds. The use of a steering system will help ensure that the crop row is kept between the finger weeders. Hoing closer to the row improves the effect.

Alternatives Harrow, torsion weeder or Pneumat.

Ridge cultivation Cultivation with the finger weeder is possible when the top of the ridge is sufficiently wide (12 - 15 cm).