

Sowing Date

April | 2022



Factsheet about integrated weed management



Introduction

Weeds thrive best in crops that are most similar to them. Among other relationships, specific weeds relate to the sowing date of a crop because they are sown during their germination period. By varying autumn and spring sown crops in a rotation, or by altering the sowing date of crops (e.g. choosing early or late varieties), the preferred germination period of specific weed species can be avoided. When sowing early varieties, the crop can have an advantage over the weeds because of an earlier soil cover or canopy closure, and by choosing (trans)planted crops, the crop has a greater competitive ability. Primed seeds can reduce time between seeding and crop emergence with a few days and may provide crops an advantage over weeds. Planted crops can give crops a head start and reduce the impact of weed competition. Knowledge of the germination periods of weeds can therefore help deciding which varieties to grow or determine an early or delayed sowing date to control specific weed species.

Applicability

Each weed species is associated with a period of the year in which most seeds can germinate. For example, germination and emergence of *Alopecurus myosuroides* peaks in September and October in the UK, coinciding with the time when most winter wheat is sown. Another example is the germination and emergence of *Echinochloa crus galli* in April and May in the Netherlands, coinciding with the preferred sowing date of maize. Early crops of vining peas contain much lower numbers

of black nightshade than later crops. Black nightshade germinates relatively late in the year.



For any weed species that has a germination peak at the time a crop is sown, an early or delayed sowing date could potentially reduce the weed population. Another option is to include another crop in the rotation (alternating spring and autumn sown crops) to vary sowing dates within the rotation.

Efficacy



Delayed sowing in winter cereals is a tactic that is used for managing grass weeds, e.g. *A. myosuroides*. Postponing sowing of winter cereals from September to late October or early November can reduce black grass populations on average by 50%¹. Positive effects of postponed sowing on the management of other weeds in winter cereals have also been reported^{2|3}.



Compared to a late September sowing, a shift of 15 days can increase the efficacy of *A. myosuroides* management by 70%⁴. The effect is even greater by delayed sowing with 20 to 25 days (close to 90% efficiency). This effect is also visible on ryegrass.



Delayed seeding, by limiting the potential for weed emergence in the crop, limits the use of herbicides. Trials have also shown that the economic return is better, due to less weed competition with the crop (higher yield) and fewer herbicide load.

¹ Lutman, P., Moss, S., Cook, S., & Welham, S. (2013). A review of the effects of crop agronomy on the management of *Alopecurus myosuroides*. *Weed Research*, 53. doi:10.1111/wre.12024


² Melander, B., Cirujeda, A., & Jørgensen, M. H. (2003). Effects of inter-row hoeing and fertilizer placement on weed growth and yield of winter wheat. *Weed Research*, 43(6), 428-438. doi:10.1046/j.0043-1737.2003.00359.x


³ Rasmussen, I. A. (2004). The effect of sowing date, stale seedbed, row width and mechanical weed control on weeds and yields of organic winter wheat. *Weed Research*, 44(1), 12-20. doi:10.1046/j.1365-3180.2003.00367.x


⁴ IWM PRAISE factsheet sowing date delay cereals





IWM PRAISE

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Planted crops can give crops a head start and reduce the impact of weed competition. Planted crops enable mechanical weed control tactics such as hoeing without significant crop damage. Applicable in vegetable crops such as cabbage, lettuce and onions.
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On average, chitted potatoes achieve full ground cover two weeks earlier. This removes the need for one mechanical operation. In combination with late soil cultivation, sometimes avoids the need for any further mechanical control during the cultivation of the crop.
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Seed priming of, for instance, carrot and chicory results in more rapid emergence, i.e. a few days.
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The efficacy of delayed sowing varies largely among weed species and a good timing is essential.
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It is not clear whether a more rapid emergence is beneficial in situations in which flame weeding is used before crop emergence.

Costs

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There are no extra costs involved for delayed sowing, apart from harrowing the weeds. Delayed sowing can even result in avoided costs thanks to limited use of herbicides and fewer operations required to keep a crop free from weeds⁵¹. For example, the number of operations for late-sown green maize (May 10-15th) can be reduced by about 25%, while the final result of weed control is better and yields aren't reduced.

Equipment

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No extra or special equipment is required to change the sowing date. Termination of the weeds however may be done with other equipment than commonly used, for example spraying can be replaced by harrowing since the crop emerges better.

Extra information

See <https://iwmpraise.eu/publications/> for all crop diversification strategies and their definitions, and for more information on integrated weed management and the following inspiration sheet about sowing date:

- Sowing date delay cereals

Tabel 1| classification of groups of weed species according to their germination period for The Netherlands:

	January	February	March	April	May	June	July	August	September	October	November	December
Group 1												
Group 2												
Group 3												
Group 4												
Group 5												
Group 6												

no germination
 max. 5% germination
 > 5% and max. 20% germination
 > 20% germination

- Group 1: shepherd's purse, common chickweed, annual meadow-grass, groundsel, field penny-cress, crane's bill, speedwell, red deadnettle and common sow thistle
- Group 2: black-grass, green field-speedwell and loose silky-bent
- Group 3: annual nettle, cleavers, mayweed and field pansy
- Group 4: common orache, hempnettle and knotgrass
- Group 5: fat-hen, redshank, pale persicaria and black bindweed
- Group 5: black nightshade, smooth crabgrass, green bristlegrass, sun spurge and cock's foot

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⁵¹ Schans, D. A. v. d., Bleeker, P. O., Molendijk, L. P. G., Plentinger, M. C., Weide, R. Y. v. d., Lotz, L. A. P., . . . Baumann, D. T. (2006). Practical weed control in arable farming and outdoor vegetable cultivation without chemicals. Lelystad: Wageningen UR, Applied Plant Research.