



Cultivation

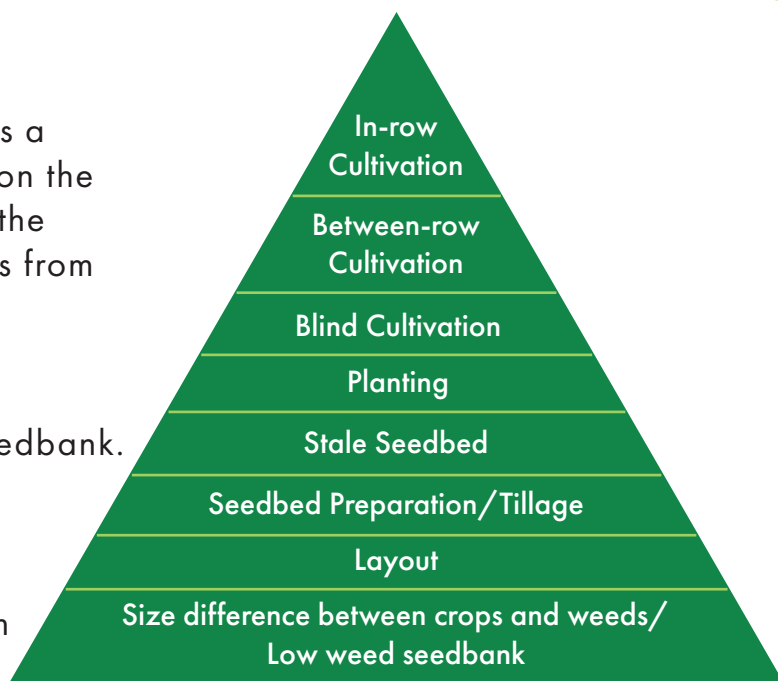
THE CULTIVATION PYRAMID

Just like many things in life, proper weed control is a cohesive process, with several steps that depend on the previous step for success. Each step matters, and the degree of success for each step adds or subtracts from the final effect.

Your two overall goals to control weeds are:

1. Reducing the weed seeds in the weed-seedbank.
2. Creating conditions for a size-difference between your crop and the weeds.

Every action you take in your weed control system serves these two goals.



REDUCING THE WEED SEEDBANK

You want to continually draw down the weed seeds in the soil (the weed seedbank).

- The number of weeds present greatly effects the efficacy of your weeding tool.
- If your cultivator achieves 80% weed kill, a field with 10 weeds per foot before cultivation results in 2 weeds remaining, whereas a field with 100 weeds per foot before cultivation results in 20 weeds remaining.

Figure 2 - Field soils in which the weed seeds were germinated – which soil would you want to be planting into?

Source: Gallandt, et al., Fall Flame Weeding: Targeting weed seeds before they enter the seedbank, Final Report for ONE11-141, SARE, 2013

FALSE SEEDBEDS

You draw down the weed seedbank by reducing the deposits (weed seeds) and increasing the withdrawals (weed seed germination). The false-seedbed technique will increase weed seed germination allowing you to effectively drain weed seeds from the soil surface. Your continued success in weed control over several seasons will drastically reduce the weed seeds being deposited.

(over)

For additional resources, please visit thelandconnection.org/resources

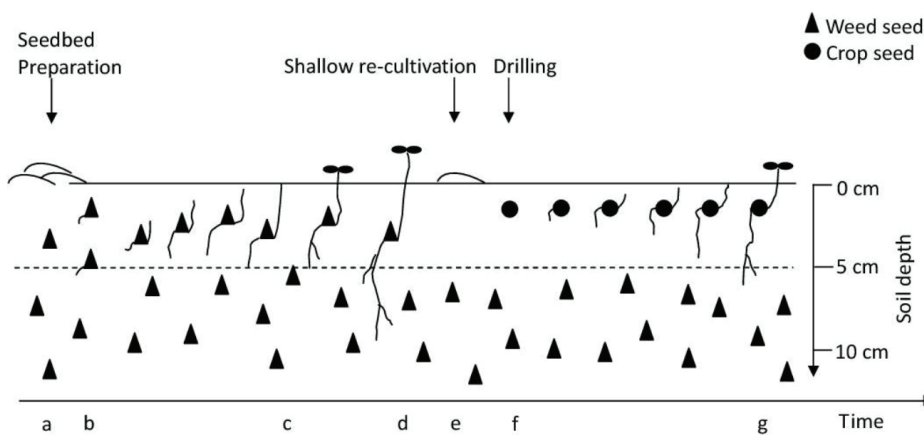


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FALSE SEEDBEDS (cont'd)

Steps for a proper false-seedbed:

- (a) seedbed is prepared for planting,
- (b-c) non-dormant weed seeds in the top 3-5 cm / 1.5-2" of soil germinate,
- (c-d) weeds emerge,
- (e) weeds are killed by tillage,
- (f) the crop is sown or planted,
- (g) the crop germinates and emerges.



NOTE: Most weed seeds germinate from the top 1.5-2" of soil – weed seeds buried deeper than this will not germinate. Constrain your tillage/cultivation before and during crop growth to this top 1.5-2" to avoid bringing new weed seeds up

Source: Merfield, C. N., *False and Stale Seedbeds: The most effective nonchemical weed management tools for cropping and pasture establishment*, 2015

SEEDBED - UNIFORMITY FOR YOUR CROP

A uniform seedbed is the first step towards a uniform crop - you don't want half of your crop to be twice as big as the other half, or you end up with two different crops to manage.

- You know that seeds need oxygen and moisture to germinate, so the better tilth your soil has, the more even conditions you will have.
- Prepare your field so that your planter can place seeds precisely and uniformly, leaving every seed in the field in as similar conditions as possible.
- Supply even moisture to all plants and be aware of clods as weeds will survive in their 'shadow.'
- For mechanical cultivation, especially blind harrowing, increase seeding rates by 5-10% from conventional recommendations.

THE CULTIVATION PROGRESSION

Each crop requires a progression of techniques, tools, and tool settings. Here is a sample progression for corn: **False or Stale Seedbed** [7-10 days before planting]; **Pre-emergence Flextine or Rotary Hoe** [2-3 days after planting]; **Post-emergence Flextine or Rotary Hoe** [3-4 days after emergence]; **Between-row Cultivator - Knives Only** [15-21 days after planting]; **Between-row Cultivator w/ Finger Weeders** [21-28 days after planting]; **Between-row Cultivator w/ Finger Weeders and Hilling** [28-40 days after planting - if necessary]

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