

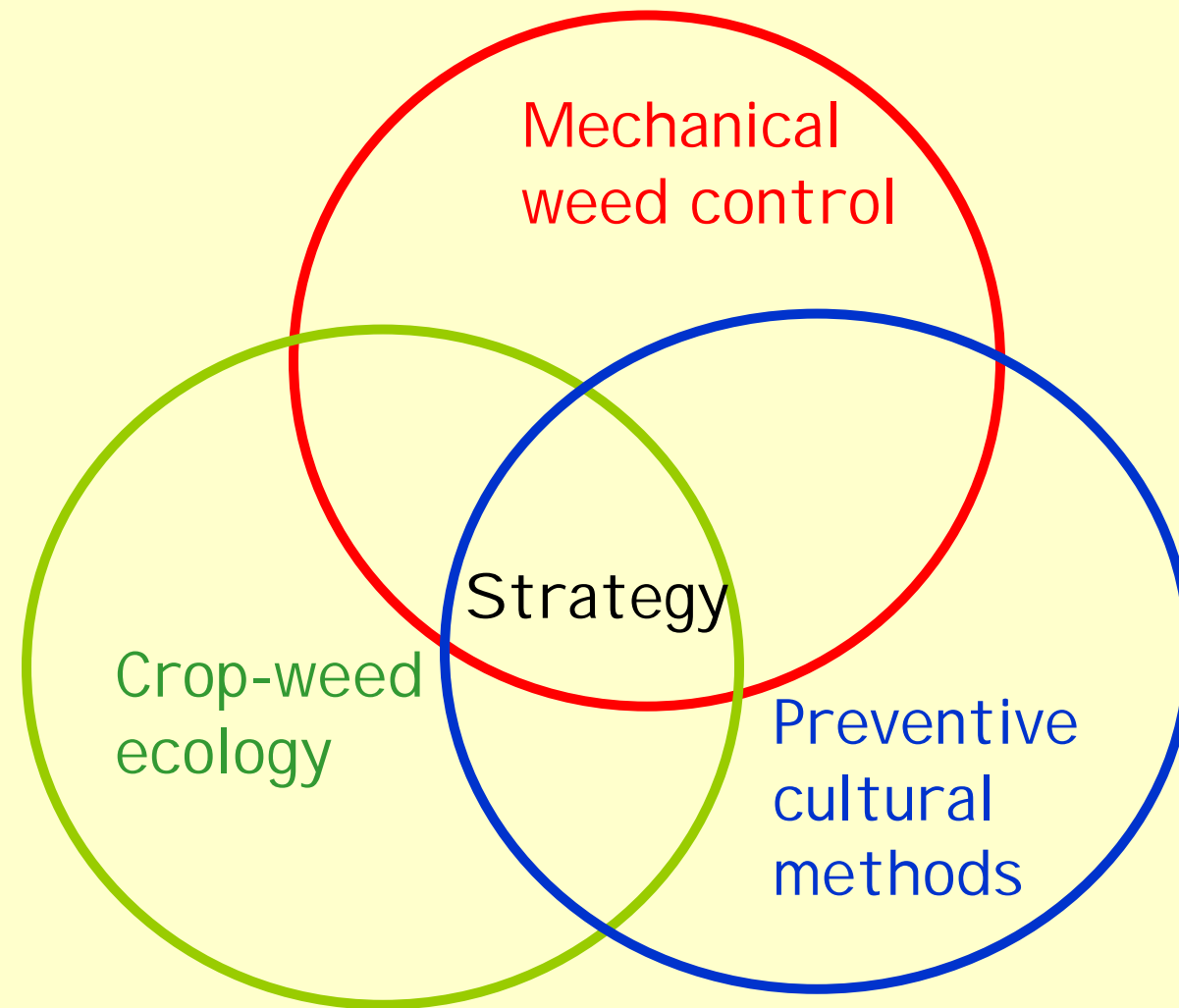


**Management of
annual weeds in cereals
- recent advances in Denmark**

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Preventive cultural methods



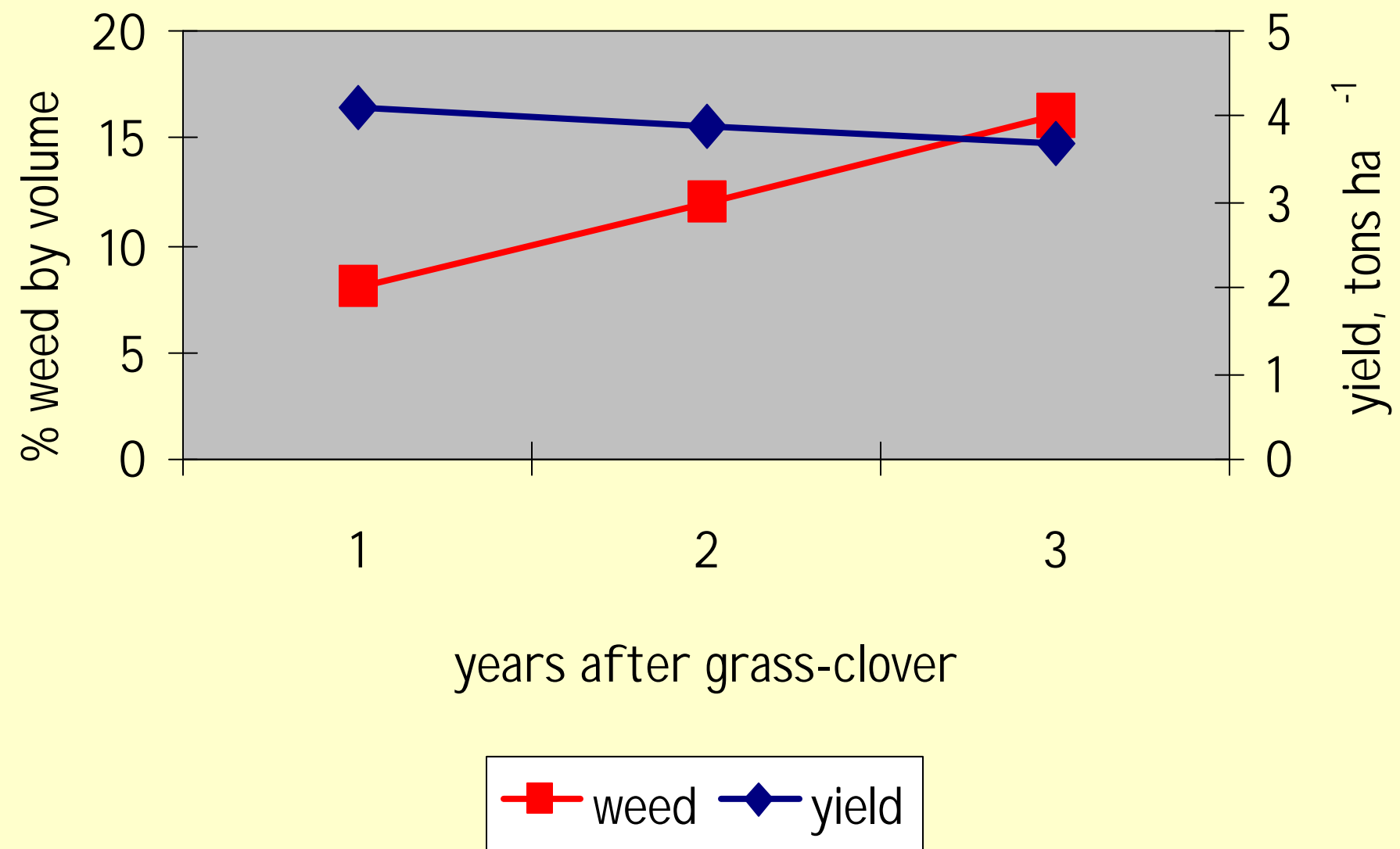
- **crop rotation**
- **competitive crop cultivars**
- **sowing time**
- **manure placement**



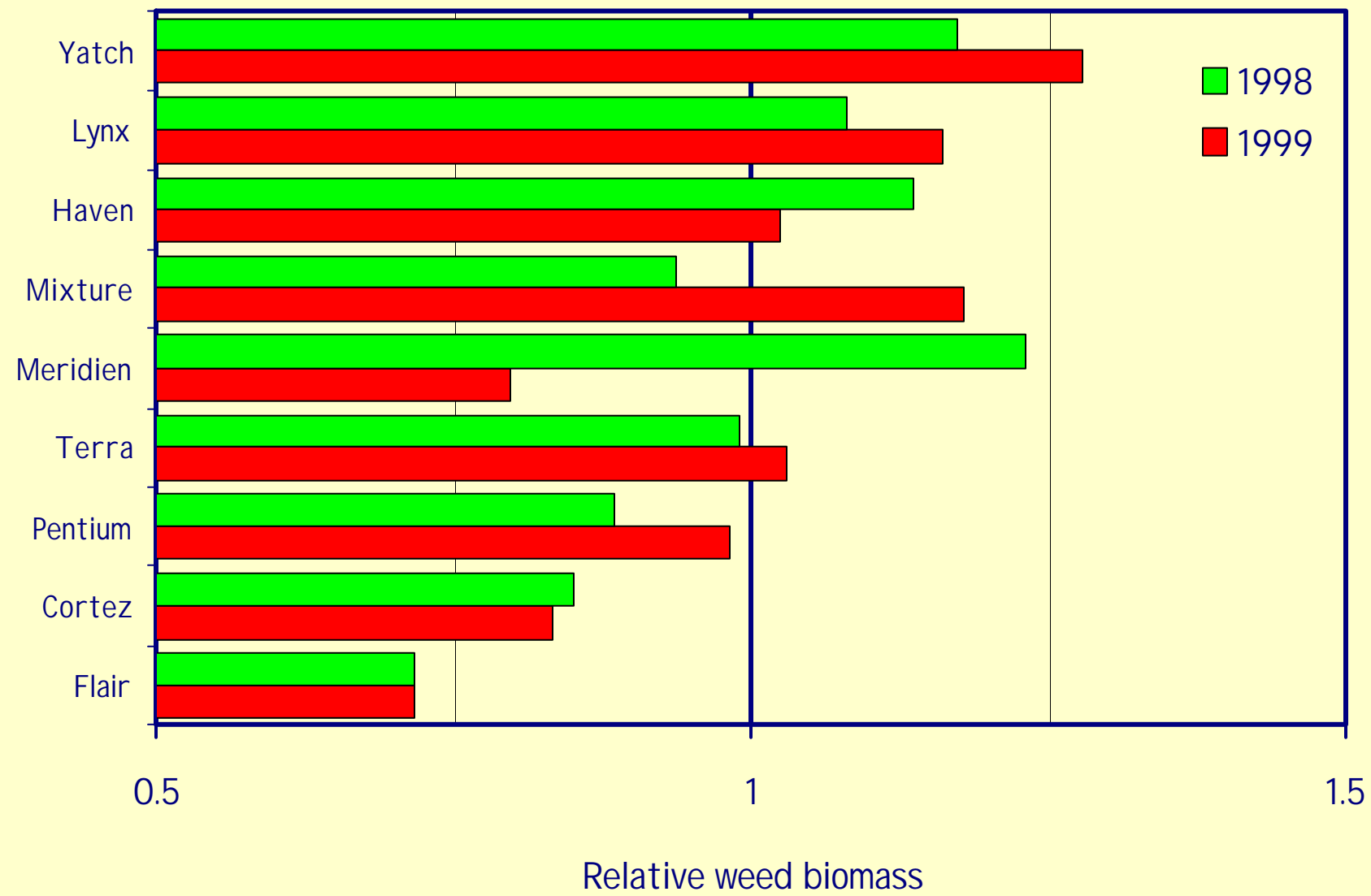
Crop rotations

- **Diversified choice of crops**
 - sowing time (autumn/spring)
 - duration (annual/several years)
 - harvest time (silage/maturity)
 - spatial arrangement (broadspread/row)
- **Nutrients**
- **Perennial crops "cleaning"**

Weeds and yield after grass-clover



Competitive crop cultivars winter wheat



Choose a cereal variety which:

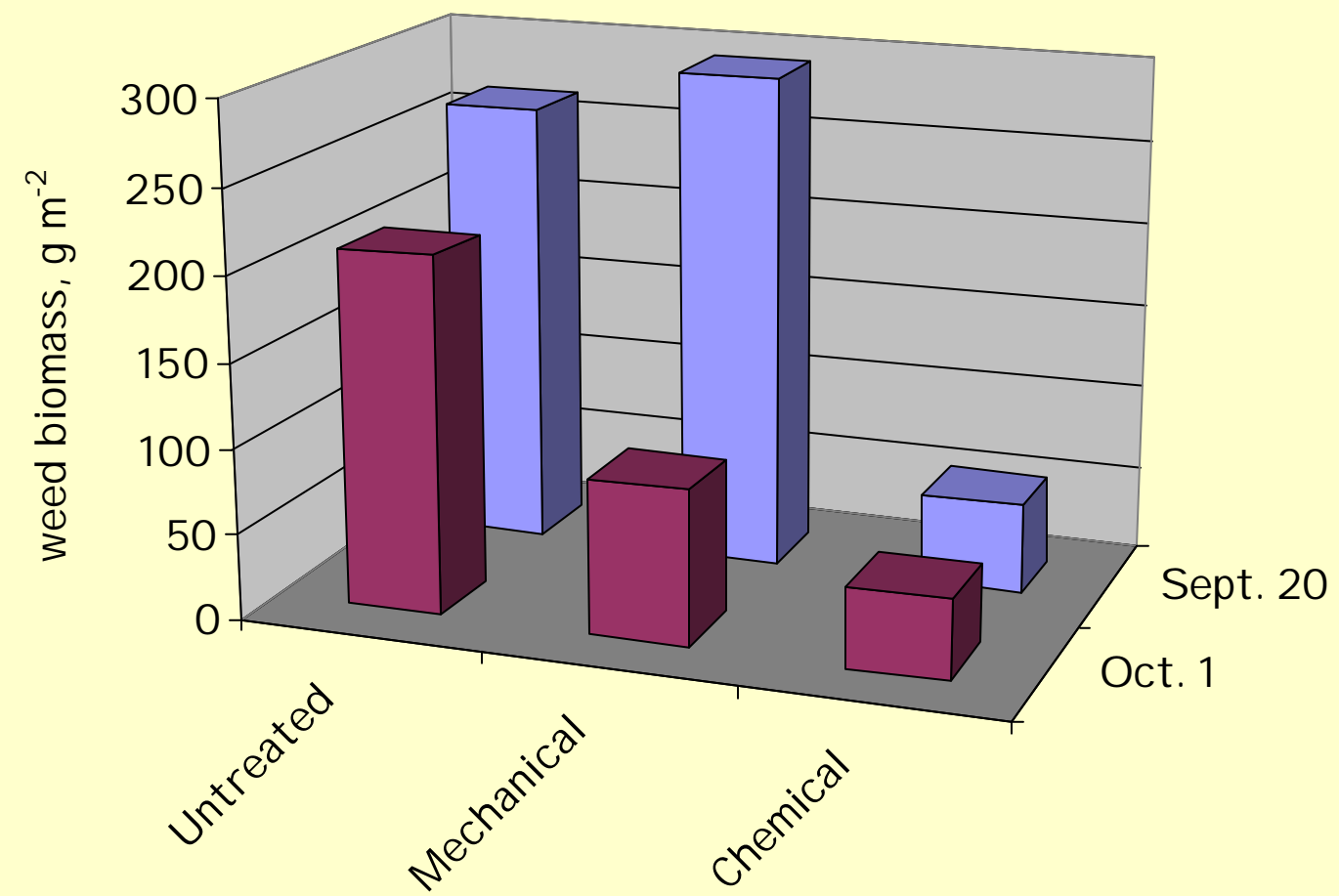


- **is tall**
- **grows fast**
- **has large leaves**

Help the cereal by:

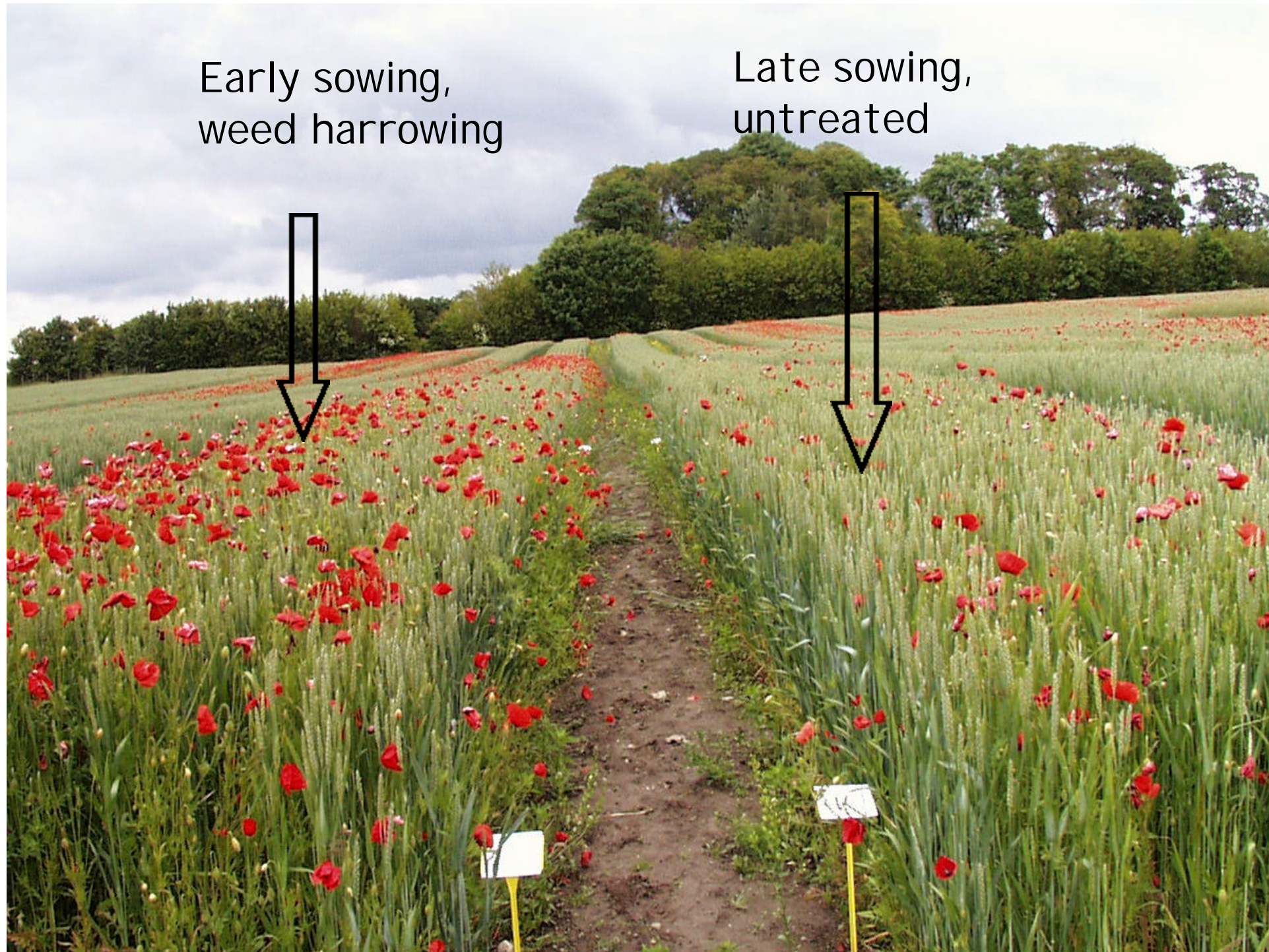
- **high seed rate**
- **seeds with high vitality**

Sowing time and weed control in winter wheat

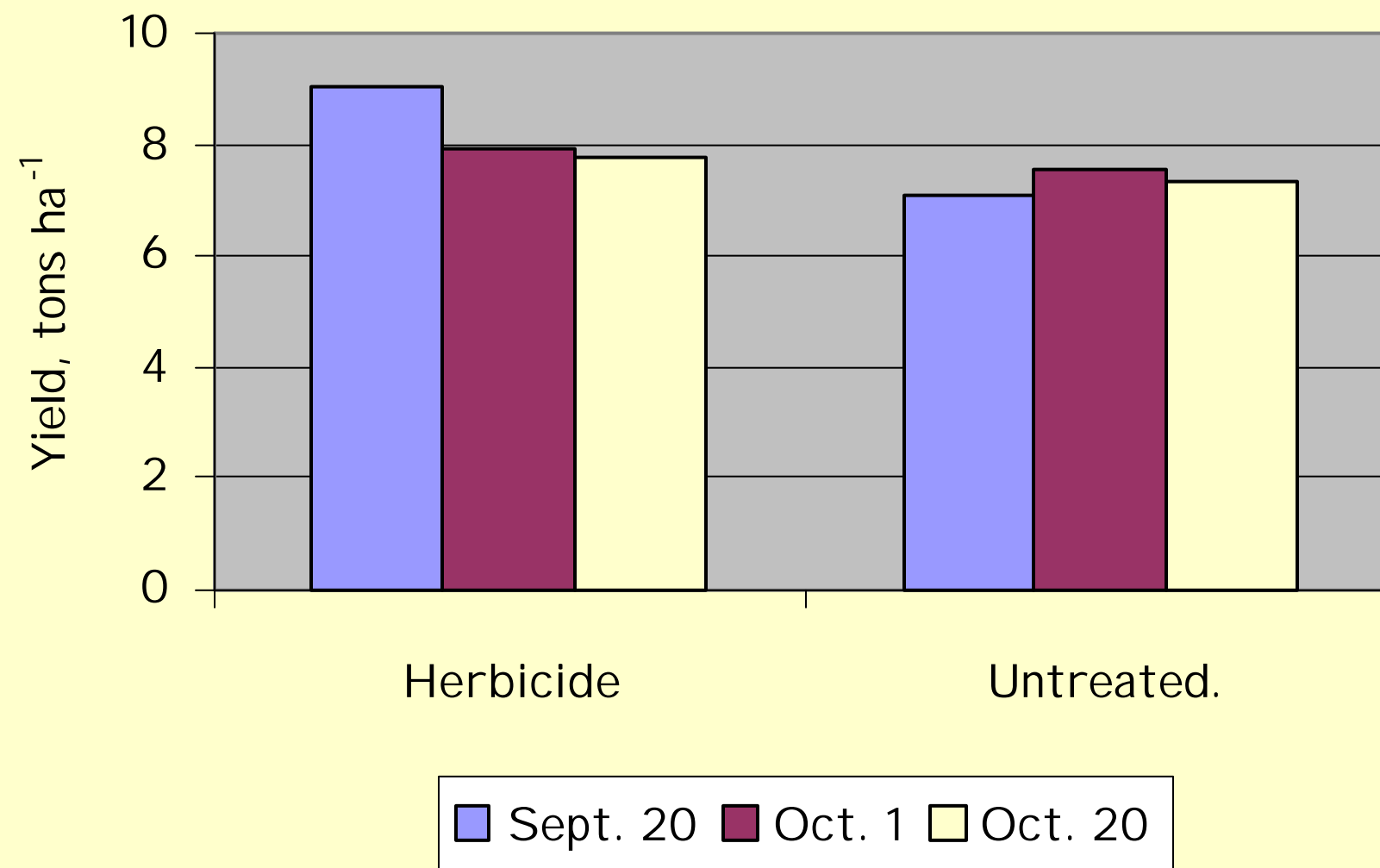


Early sowing,
weed harrowing

Late sowing,
untreated



Yield of winter wheat at different sowing times

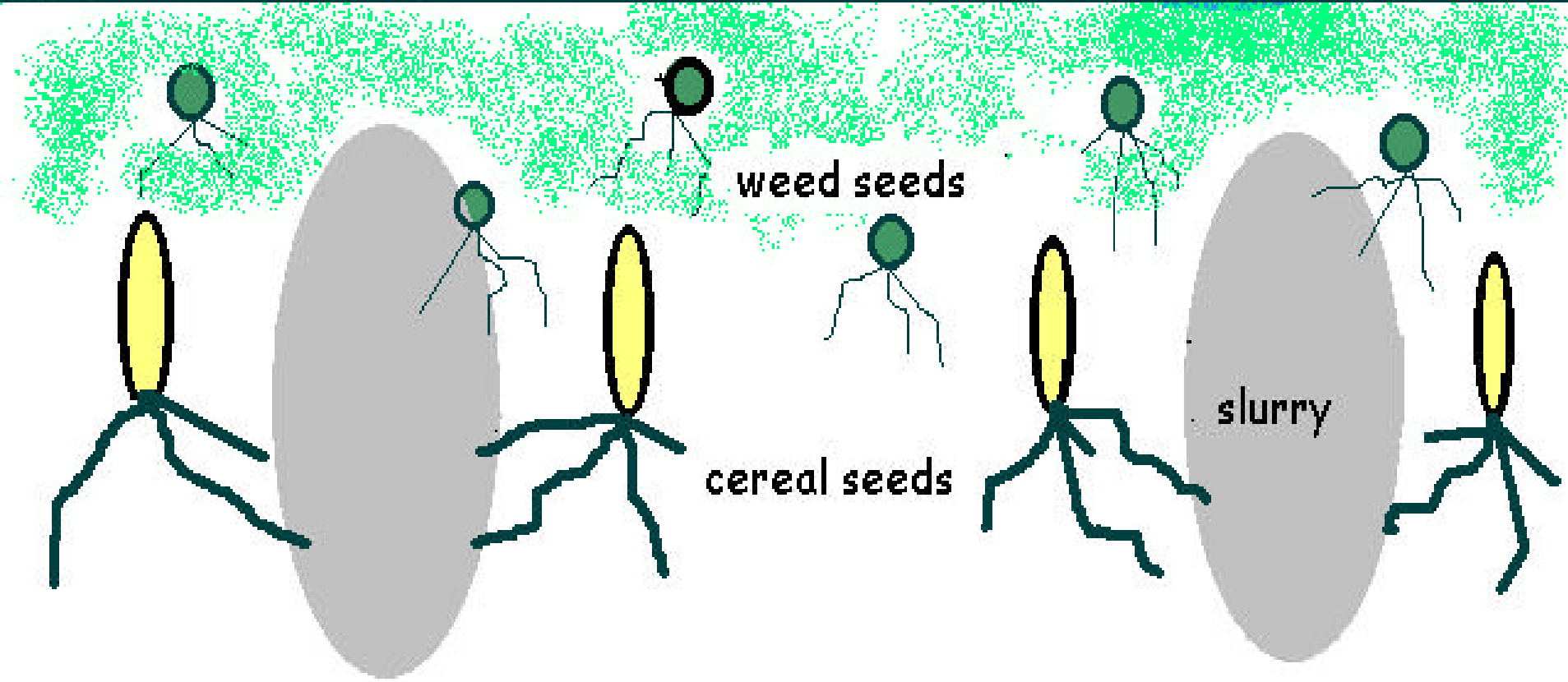


Sowing time of winter wheat:

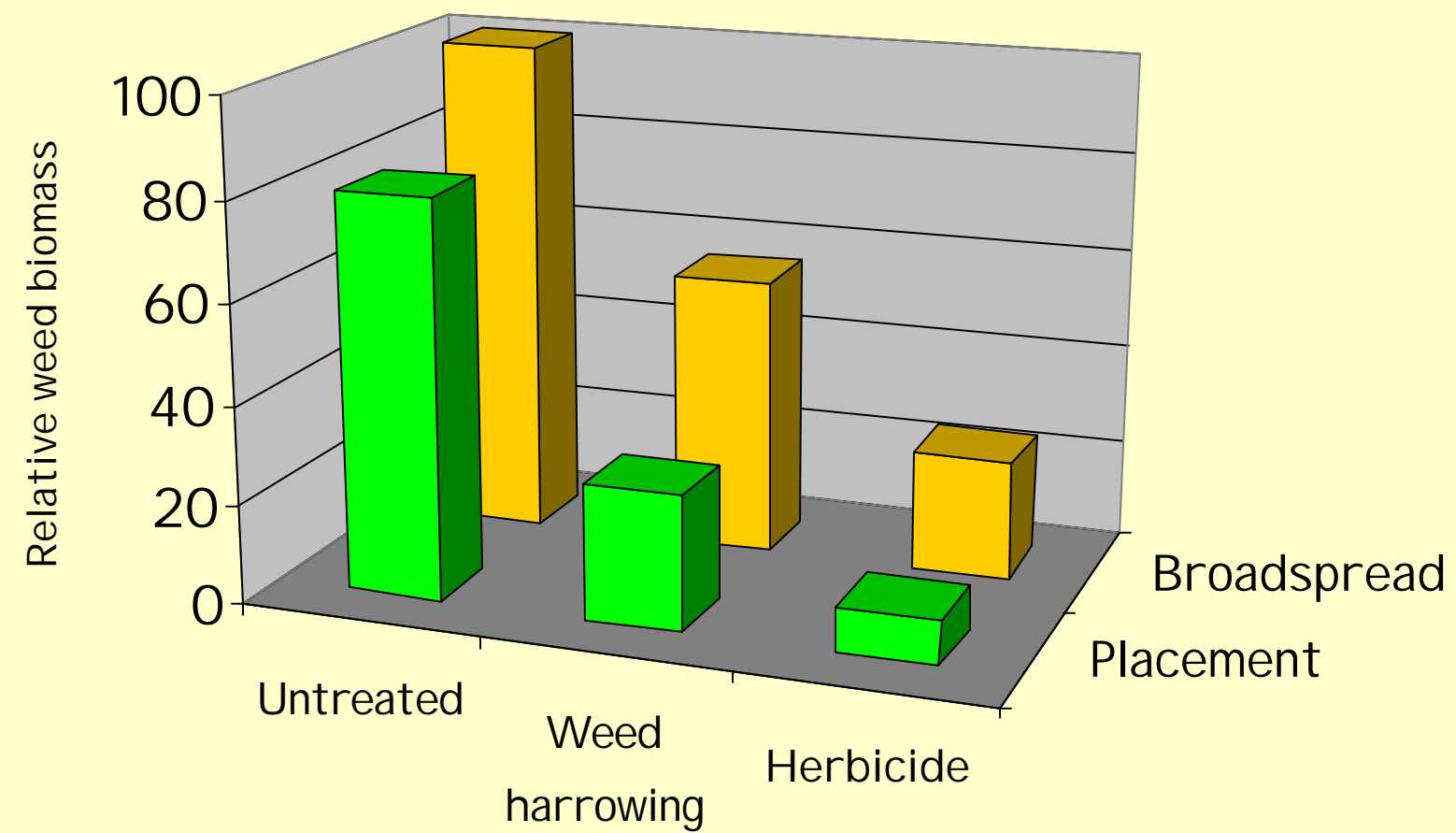


- sow early if there is a low weed pressure
- sow late if the weed pressure is large

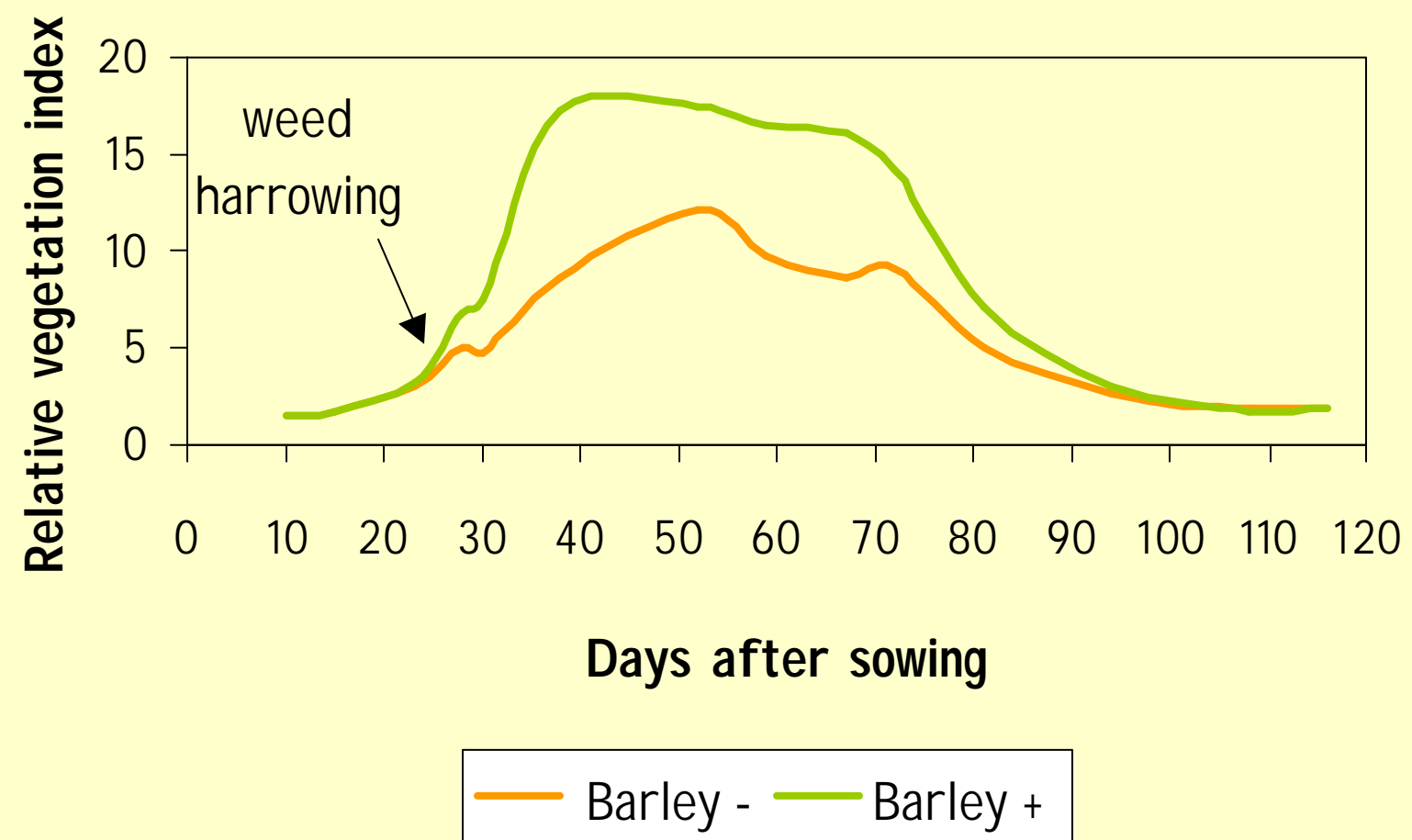
Placement of slurry



Effect on weeds of placement of slurry and weed control



Growth of barley with (+) and without (-) slurry placement





Placement of slurry:

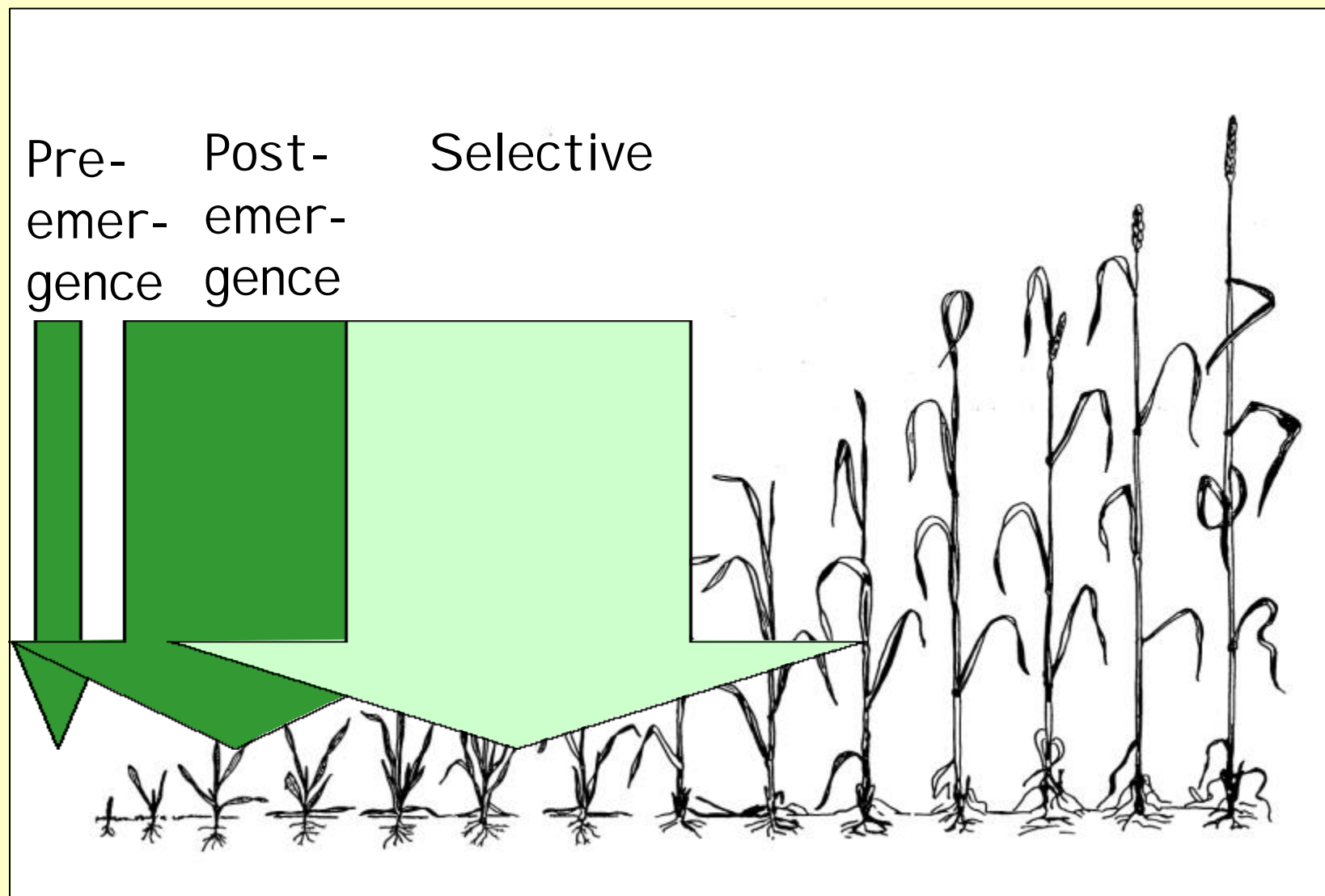
- **crop**
 - easier access to nutrients
 - bigger yield and
 - more competitive
- **weeds**
 - less access to the nutrients
 - less competitive



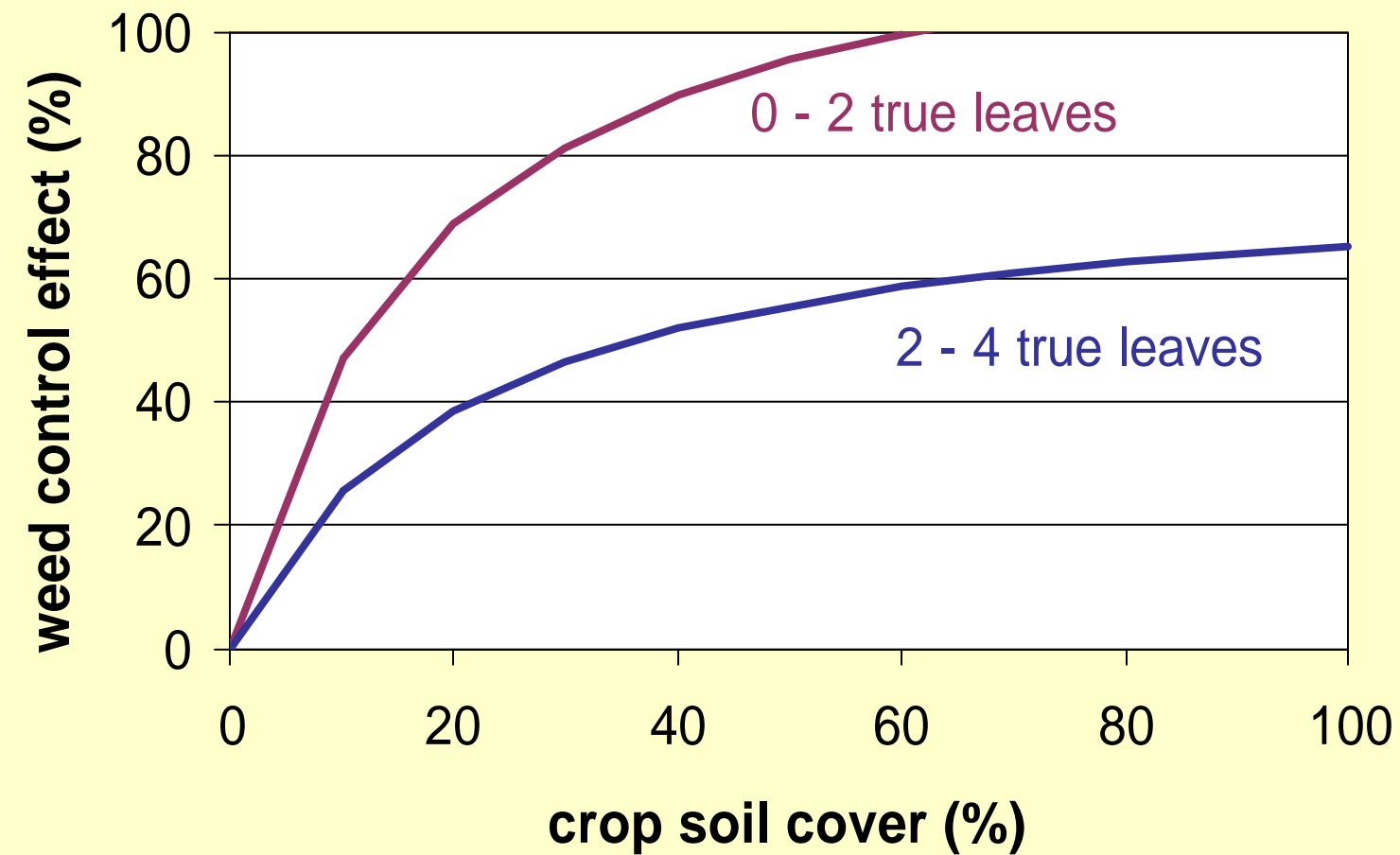
Mechanical weed control

- **Weed harrowing in spring cereals**
 - Pre-emergence
 - Post-emergence
 - Selective
- **Row hoeing in winter cereals**
- **Weed control in cereals with underseed**

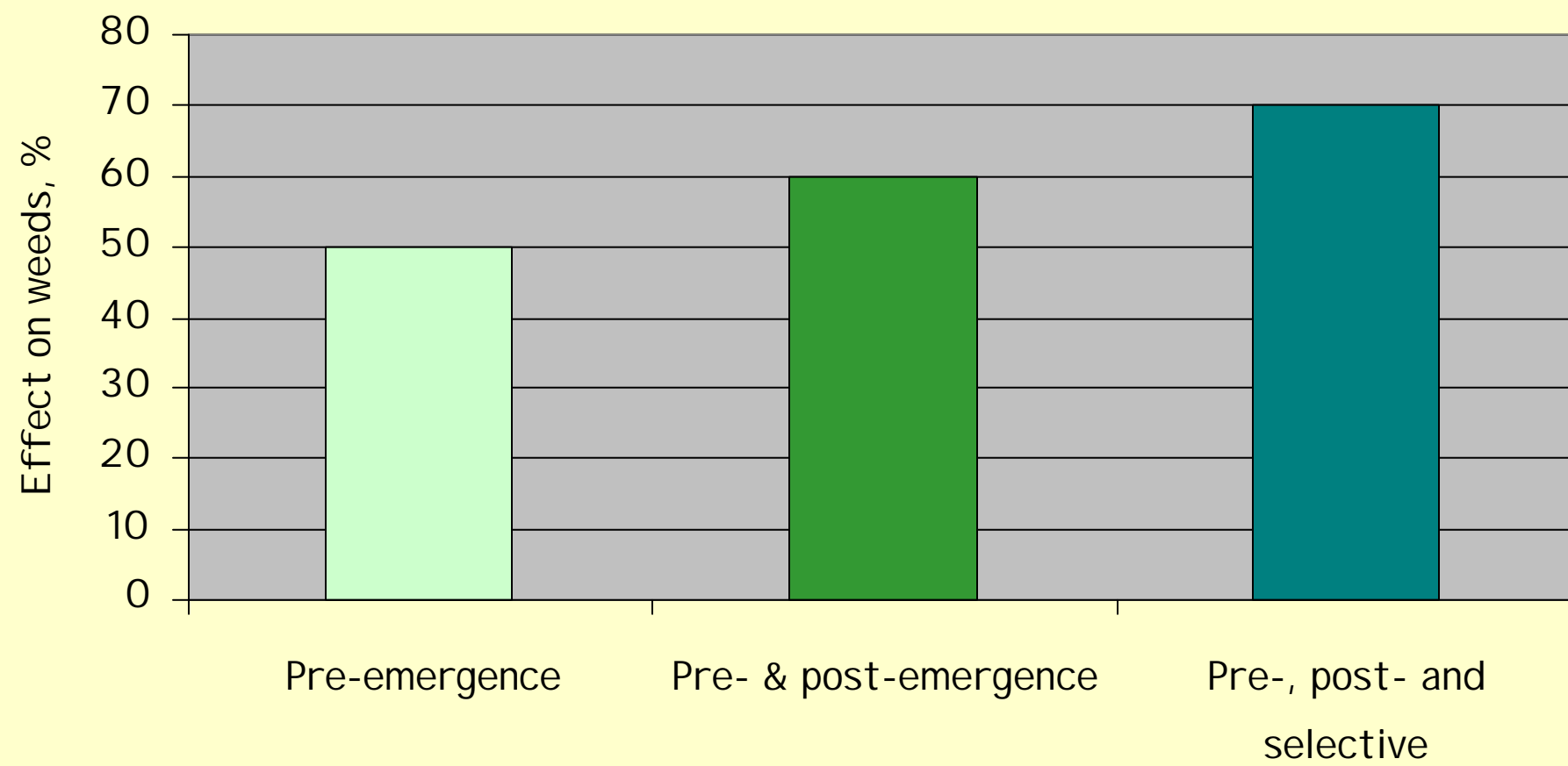
Weed harrowing in spring cereals



Effect of weed harrowing on *S. arvensis* at different weed stages



Effect of weed harrowing in spring barley

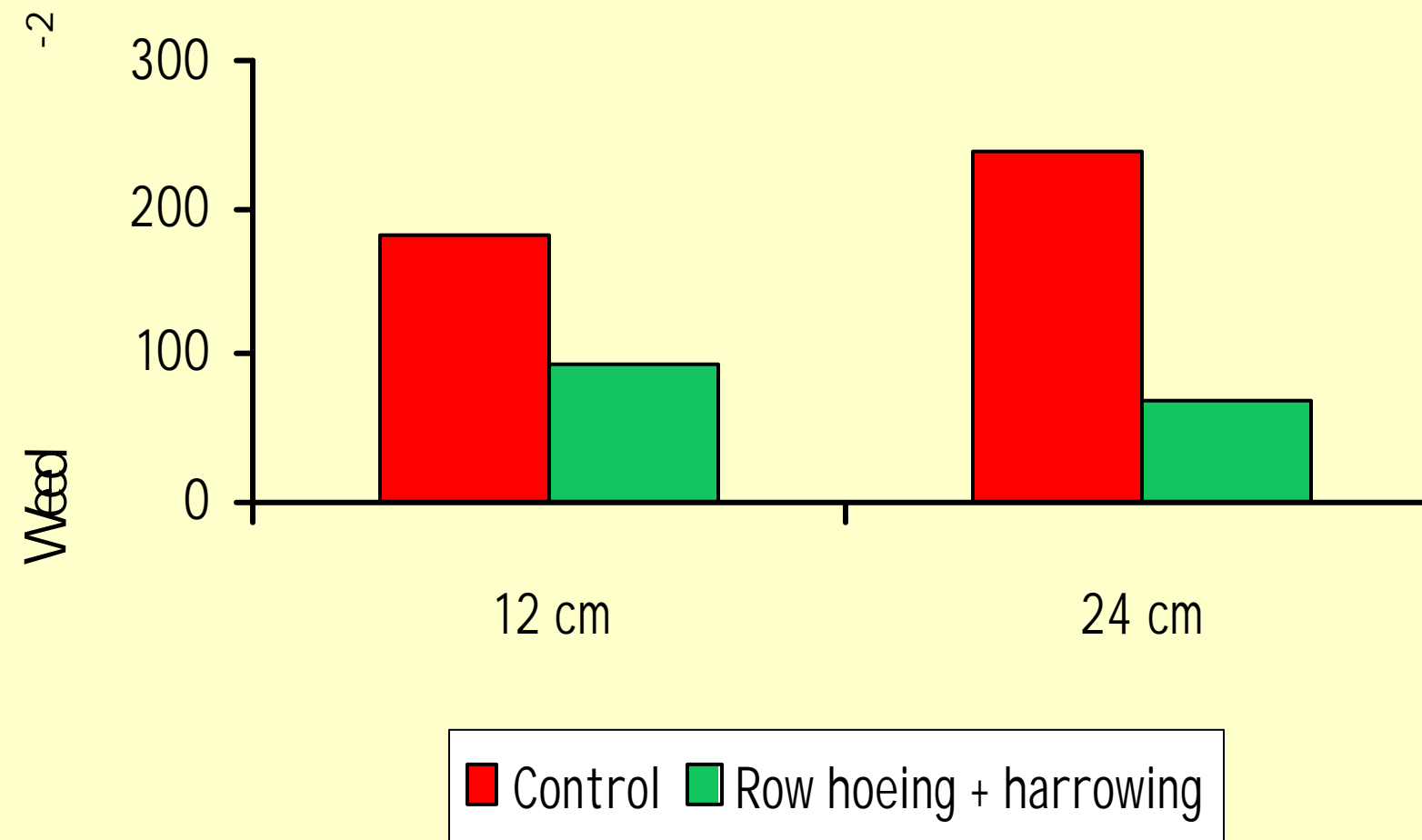




Weed harrowing

- **pre-emergence harrowing before the weeds develop true leaves**
- **post-emergence harrowing when the crop has two-three leaves**
 - in case of very competitive weeds:
better sooner than later!
- **selective harrowing if needed**

Effect of weed control and row distance in winter barley



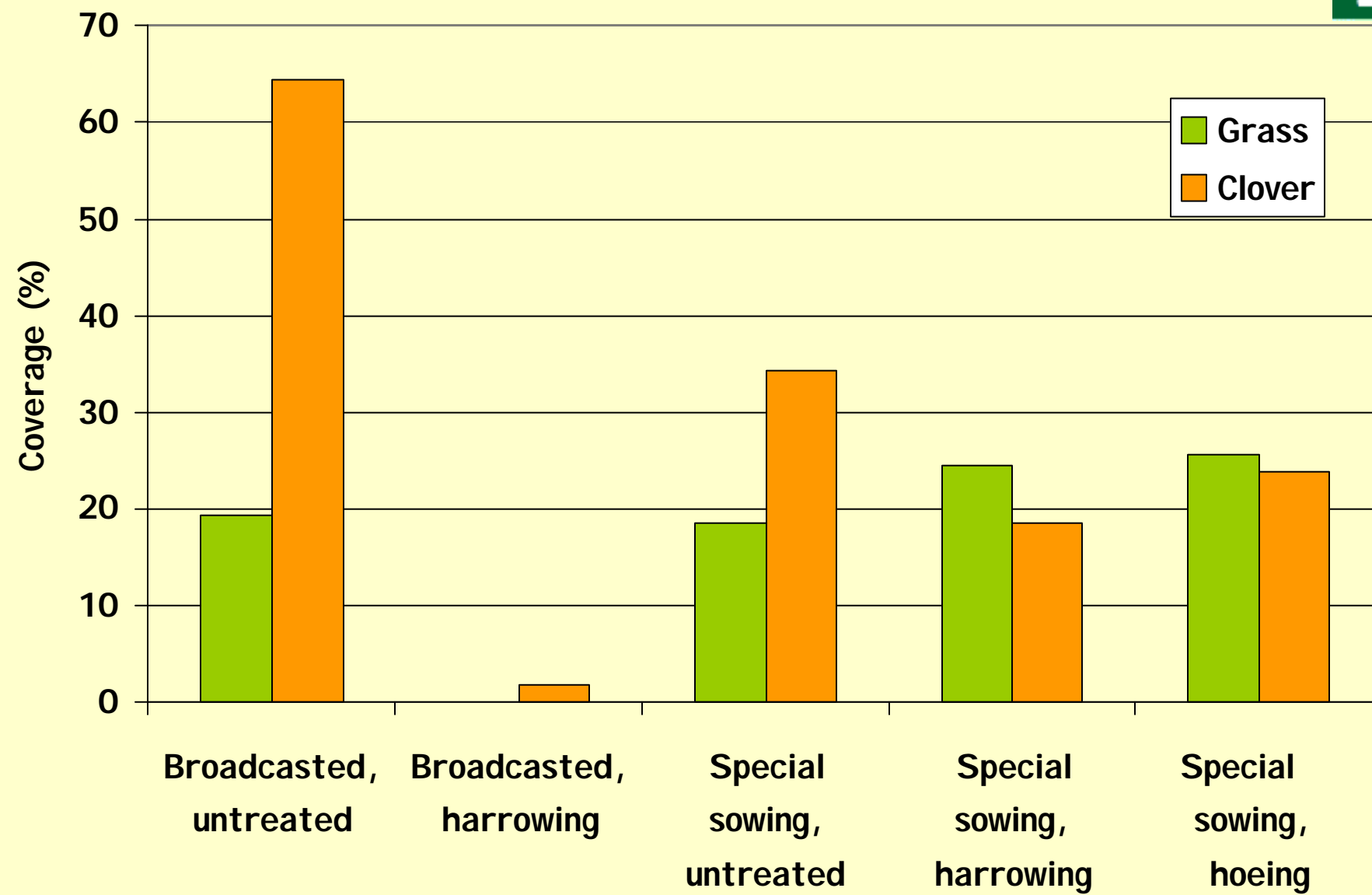
Row hoeing in winter cereals



- **If large row distance: always intensive mechanical control!**
- **Large row distance and row hoeing at high weed pressure**



Effect of weed control on undersown ley in spring barley

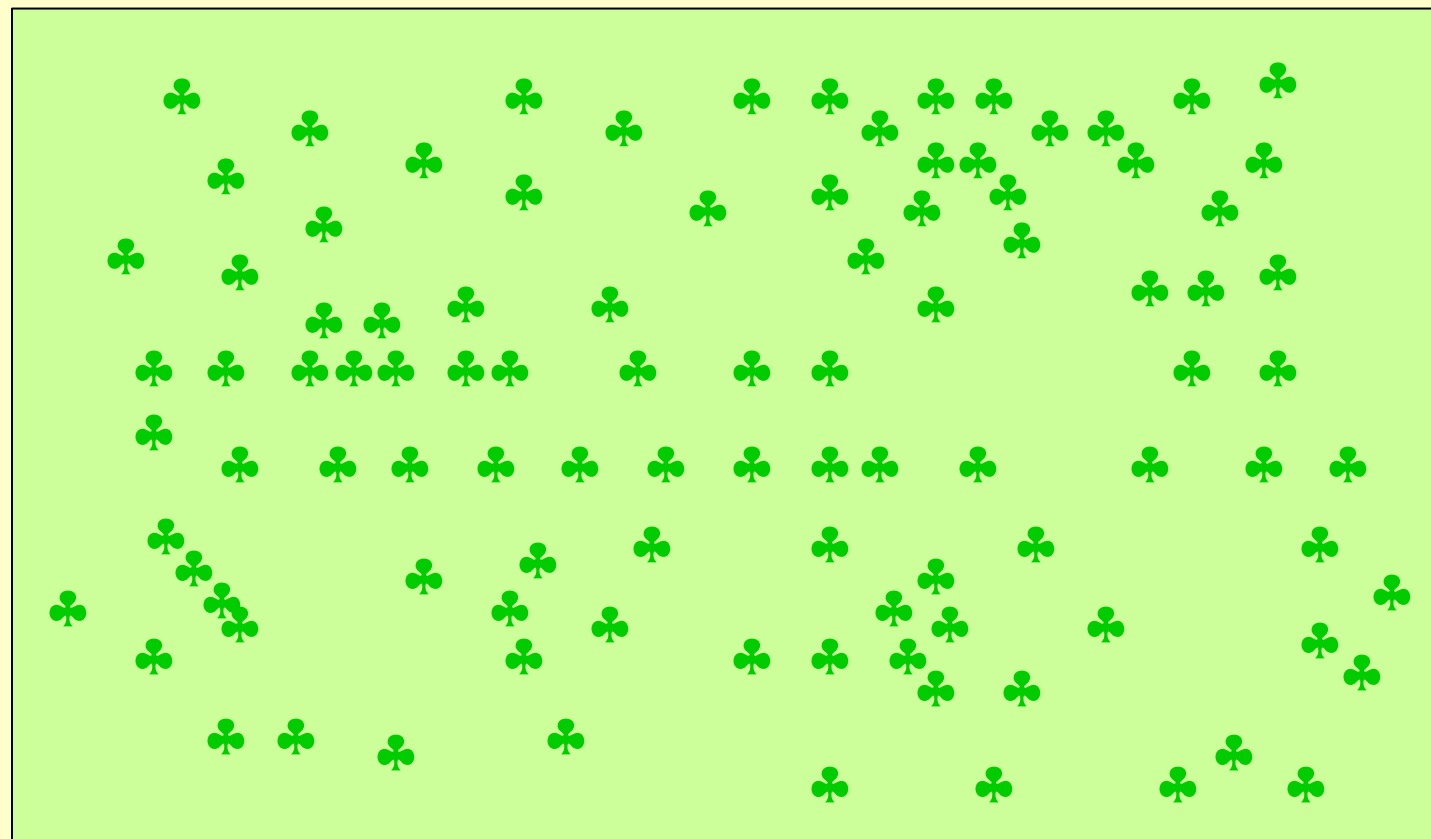


Weed control in cereals with undersown ley

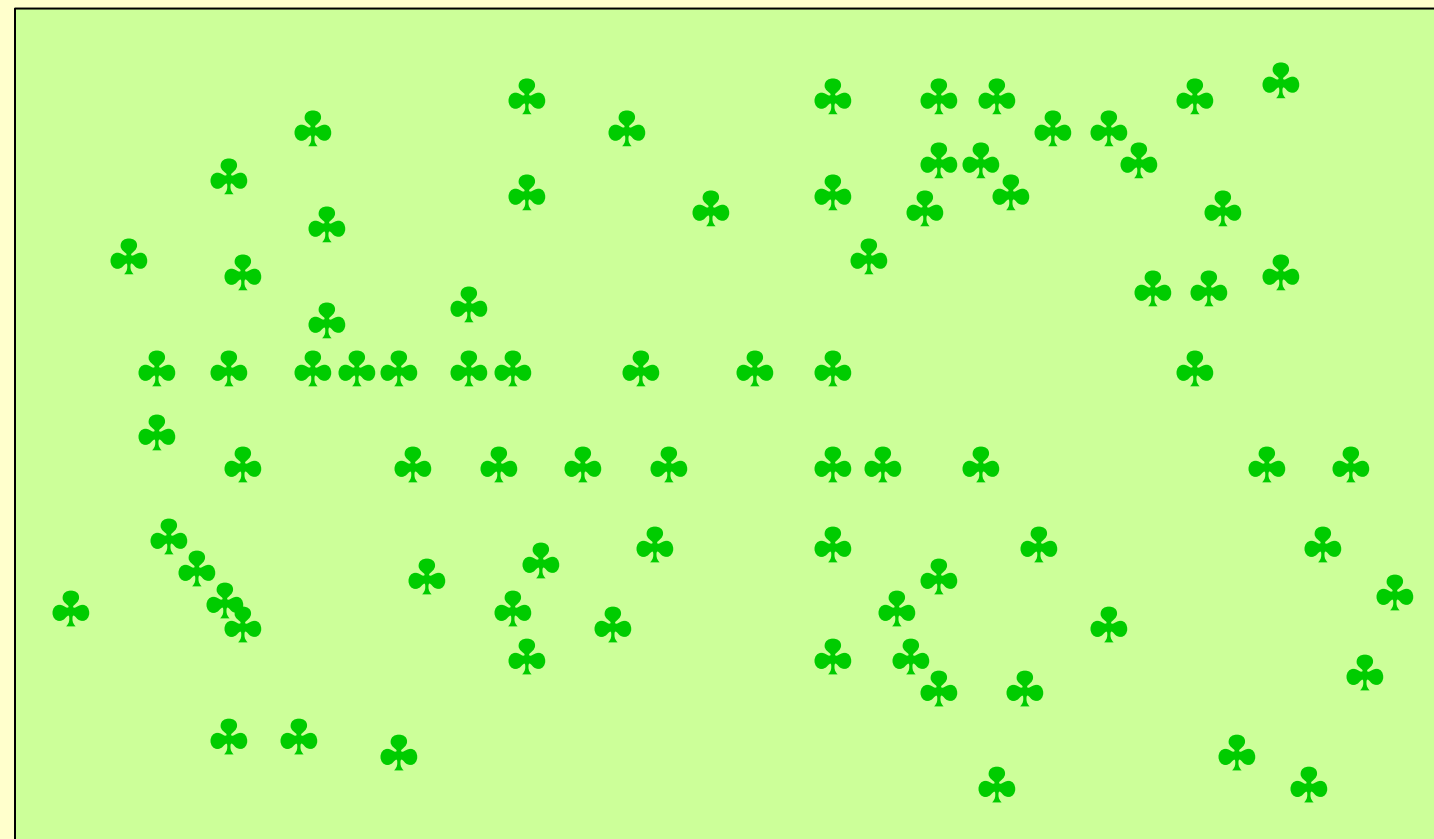


- **Low weed pressure:**
 - normal row distance
 - no weed control
- **High weed pressure:**
 - large row distance
 - sow cereal and ley seeds in same row
 - weed harrowing and row hoeing

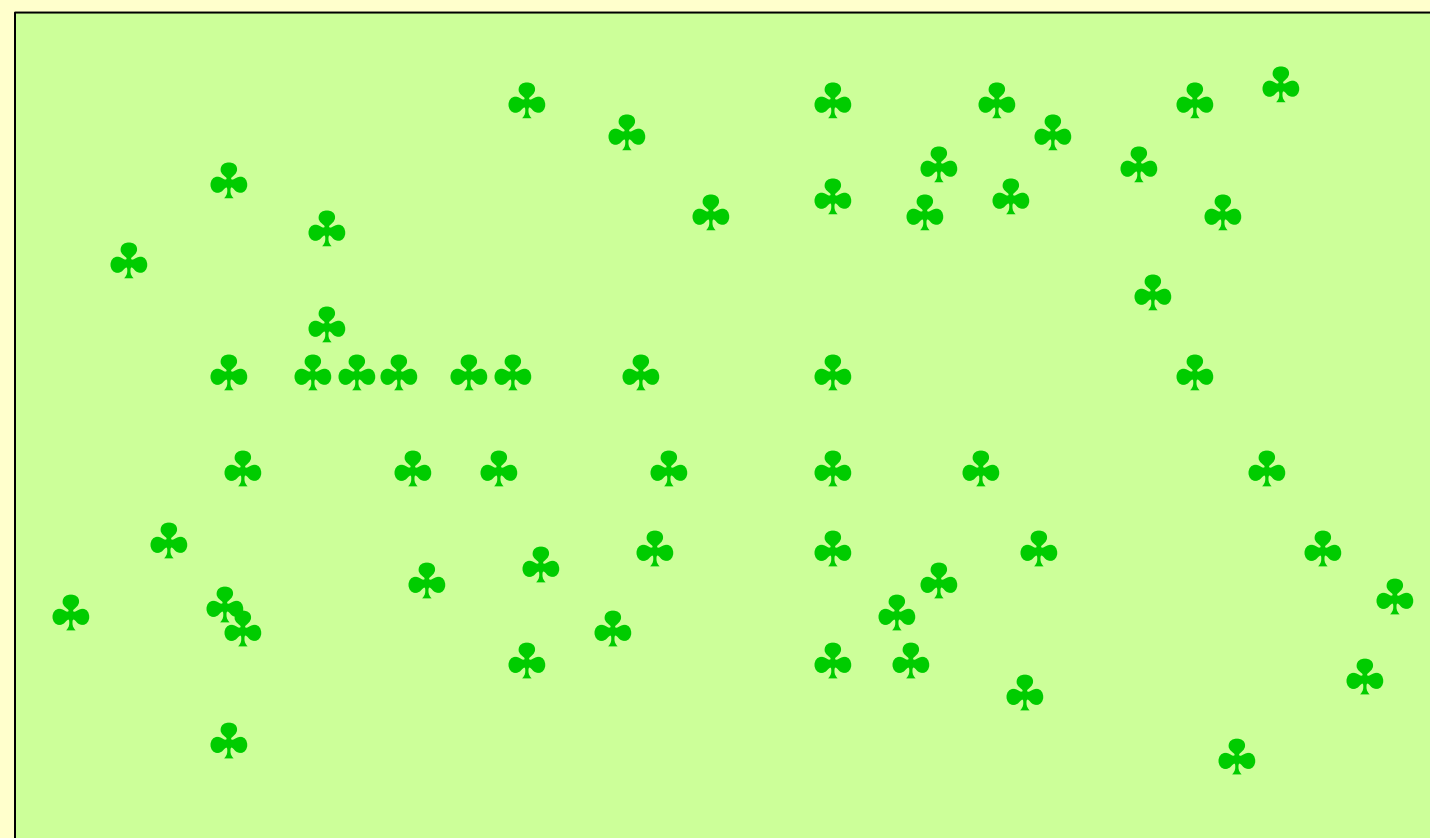
Strategy - winter wheat



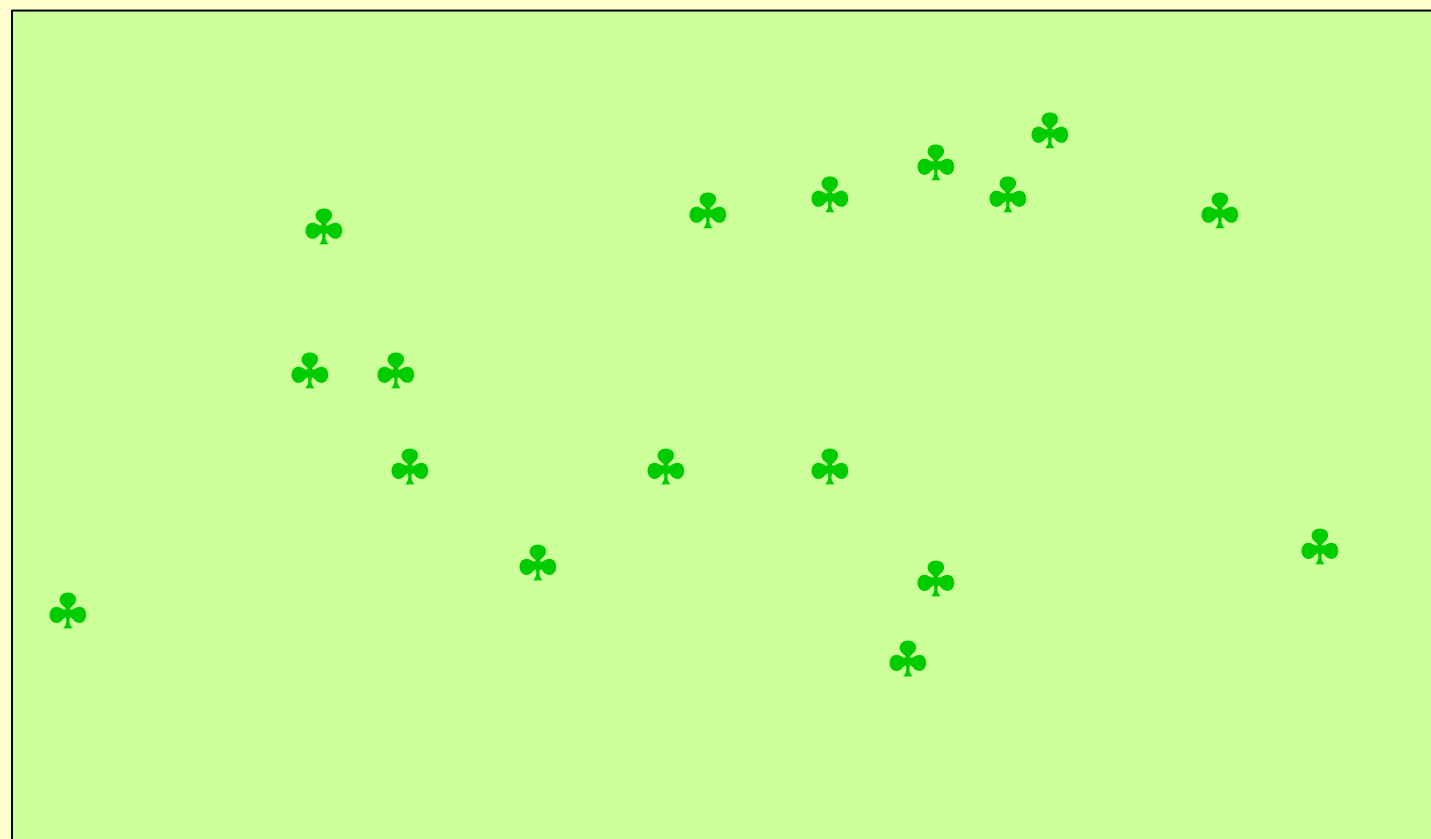
Strategy - choice of cultivar 20 % less weeds



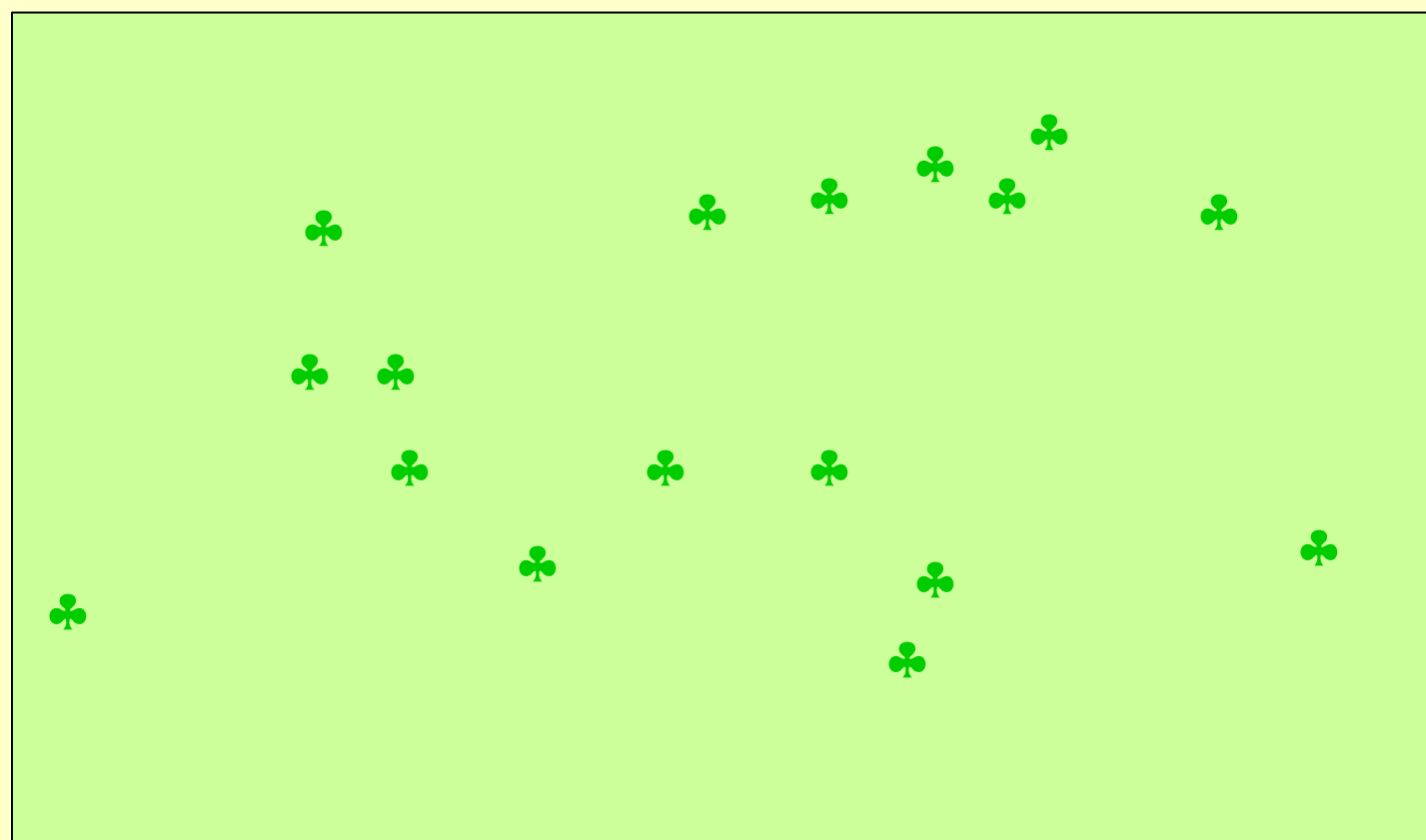
Strategy - delayed sowing 30% less weeds



Strategy - weed harrowing + hoeing 70% less weeds



Strategy - all methods 83% less weeds



Strategy - spring barley



variety - 20%
placement of slurry - 30%
weed harrowing - 80%
all methods - 88%



List of references

- ask me
- pick one up at my poster