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Introduction to Saving Seeds from Biennial Vegetables

Carrot, Beetroot, Silverbeet,
Onion, Parsnip, Cabbage, Kale
and more



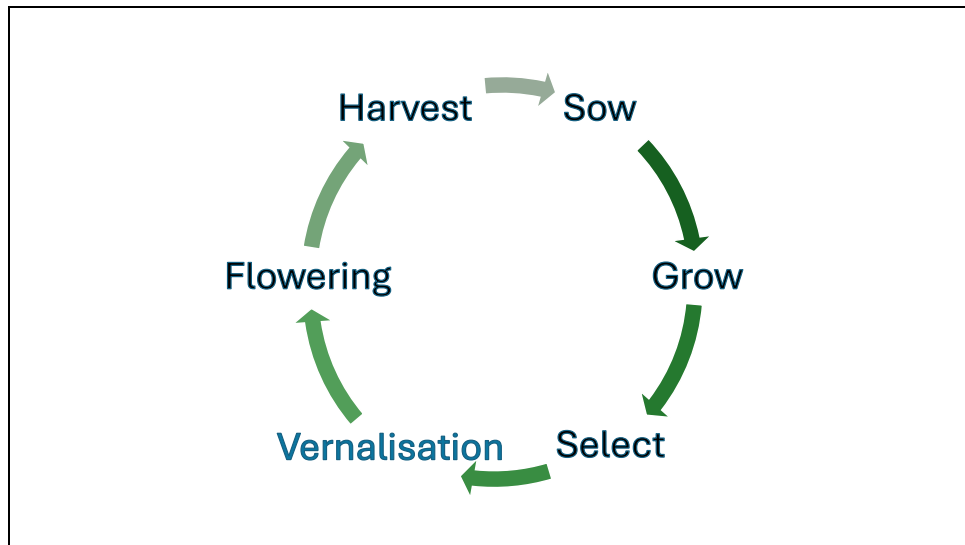
What does biennial mean?

- Two warm growing seasons with a cold season in between are required for seed formation

What it's not

- Two whole years
- Two different calendar years in the southern hemisphere
- Having to dig them up and store them in a root cellar

Our winter is in the middle of the calendar year, not between two calendar years.



All the basic seed saving steps apply. Seed is still produced through the same process of flower pollination. So cross-pollination issues are the same. Vernalisation is the only extra step for seed saving from biennials.

Biennial Crops

- Carrots
- Parsley
- Celery
- Parsnip
- Common onions
- Leeks
- Globe Artichokes & Cardoons
- Endive & Radicchio
- Chicory

Beta vulgaris

- Beetroot
- Silverbeet / Chard

Brassica napus

- Siberian kale
- Turnips

Brassica oleracea

- Brussels sprouts
- Cabbage
- Cauliflower
- European kale
- Kohlrabi
- Sprouting broccoli

Brassica rapa

- Chineses cabbage
- Rutabagas / Swede

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Choosing your biennial seed crop

- Population requirements
- Space needs – plants can get BIG
- Space needs – they are in the ground for a long time
- Cross pollination control



Many like carrots evolved in large populations in prairie like environments so they don't do well in very small populations.

Self-incompatibility with some brassicas

Are there any self-pollinating biennials? I didn't come up with any.

Cross pollination considerations – most are insect pollinated but beetroot & silverbeet are wind pollinated

They are in the ground for a long while so have the opportunity to get big, so they do!

Timing biennials for seed

- Need to be mature enough before vernalisation starts
 - 8 true leaves minimum
 - Stem $\geq$ 2cm diameter



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Selecting your seed plants

- Root crops are both a challenge and an opportunity to select for traits we want
- Taste
- Select for vigour and lack of disease

Not a great beetroot but how we would check for white rings if the variety was supposed to have them (this one wasn't – it's a standard Detroit).

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Centre bottom are the Chantenay Red-cored shape we thought were acceptable. Bottom left is showing the core colour we were looking for. The rest were thrown away. Our first attempt at carrot seed saving. Seed came from various sources and not all had the chantenary shape. Eg. Top left was from one supplier

Planting out the seed crop

- Plant at large spacings
 - Typically need at least 60cm between plants
- Plant growth point at soil level
- Support may also be needed
 - Horizontal mesh
 - Individual stakes
 - Florida weave along rows



For non-root crops we'd put the seedlings in at larger spacings to start with. Root crops we'd plant at 60 cm when we put the roots back in after selection.

Flowering biennials can get BIG and very top heavy. The roots that have been replanted are usually more prone to being blown over and tend to need a bit of support.

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What does Vernalization mean?

- A period of cold needed to initiate flowering
- How cold and for how long depends on variety
- Most info comes from the northern hemisphere and suggests 8 to 10 weeks of cumulative hours below 10C for Brassicas and as much as 10 weeks below 4C for things like beetroots.
- If you have enough cold to grow apples and pears successfully then you are likely cold enough for growing seed from biennials.

Locations south of Sydney or in the inland ranges are good enough.

I don't think I get 10 weeks equivalent of hours below 4C but have done beetroots and silverbeet successfully

Do we think my equating growing apples is a reasonable guide for people?

Flowering

- Cabbages may need a cross cut into the top of tightly wrapped heads so that the flower stalk can push through.
- CABBAGE PIC HERE

Cabbages are an example of where the traits we select for, ie a tightly wrapped head, are actually a detriment to the ability of cabbages to produce seed on their own. As always first to set will be bigger seed with more stored energy for the next generation. Like annuals some will flower and set seed progressively up the stem and others will form a central flower followed by side shoots.



Harvesting

- Exactly the same issues as annual seed saving
- Harvest time can clash with Christmas holidays

Onions – a special case (sort of)

- Grow the onions to bulb stage first
 - This means growing from winter into spring/summer one year
 - They are not mature enough during the first winter for vernalisation to occur
- Replant the bulbs the following autumn so they are vernalised over the next winter to initiate flowering
- Harvest seed in summer in the second year



Summary

- Get them big enough before cold weather starts
 - Usually sow in January or Feb, except onions
- Leave them in the garden over winter
- Let them flower in spring
- Harvest seed in summer

