



Vegetables: Vegetative Propagation

What is vegetative propagation?

Vegetative propagation is the growing of plants using roots, tubers, stems or leaves.

Why vegetatively propagate?

- Some vegetable crops do not produce seed under normal production conditions, or the seed produced differs from the mother plant and so would not produce uniform plants.
- Vegetatively propagated plants are identical to the “mother plant”.
- Most vegetables that are vegetatively propagated are cool season crops
- Storage life of vegetative material is much shorter than seeds and thus storage temperature and humidity are critical
- If “mother plants” are infected with disease, particularly viruses, the propagated plants will also be infected with these same diseases

Common vegetables and the plant part used for propagation

- Artichoke – Root
- Asparagus – Crown (stem)
- Garlic – Clove (leaf + stem)
- Onion Sets – Bulb (leaf + stem)
- Potato – Tuber (stem)
- Strawberry – Plants (stem + leaf + root)
- Sweet Potato – Roots to Plants (stem, leaf, root)



Vegetatively propagated plants are identical to the mother plants.

Storage conditions for plant parts used for vegetative propagation

Vegetable	Temperature °C	Relative Humidity	Comments
Asparagus	0 – 1	85 – 90	Trim roots to approx 20 cm
Garlic	10	60 - 65	Use large cloves
Onion Sets	0	60 - 70	Many varieties will bolt (form seed stalks)
Potato	4 - 6	90 – 95	Warm to soil temp before planting
Strawberry	-1 - 0	85 – 90	Keep plants moist; apply water at planting
Sweet Potato	12 - 14	85 - 90	Trim to 20 – 30 cm; apply water at planting

Typical seed potato production scheme

Note: Garlic, strawberry and sweet potato use similar schemes to assure disease-free vigorous plants

- Produce disease free plantlets from meristem of tuber sprouts using tissue culture
- Multiply tissue in the laboratory using growth media and growth chambers
- Transfer plants to trays with potting mix and grow in greenhouse
- Transplant into fields or grow small tubers (mini-tubers) in pots in greenhouse
- Field Generation 1 is for seed and is field grown in isolation away from other potato plants
- Field Generation 2 is for seed and is field grown near other Generation 2 fields
- Field Generation 3 is grown in production fields for market or increased again for seed
- Field Generation 4, if it exists, is grown in production fields for market
- System requires 5 – 6 years from laboratory to consumer
- System requires new Generation 1 seed stock from tissue culture each year
- Seed stock material may be purchased at any generation, from tissue culture to Generation 4

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References: <http://oregonstate.edu/potatoes/seed.htm> www.ipm.ucdavis.edu/ www.vric.ucdavis.edu/; Donald Maynard and George Hochmuth. 2007. Knott's Handbook for Vegetable Growers, fifth edition. John Wiley & Sons, Inc. 621 pp.

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