SEED SAVING

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Introduction

This book is a practical pocket guide to seed saving in Scottish conditions. Designed for back garden and small-scale growers, it covers the essential techniques for saving seeds from common vegetables, fruits and herbs. While not exhaustive, it provides the core information you need to start saving your own seeds successfully.

Successful seed saving helps preserve varieties that grow well in our unique climate, reduces growing costs, and contributes to local food security. It also helps reduce our carbon footprint by lowering food miles and creates more resilient local food systems.

Understanding a few key principles will help you succeed:

Population Sizes

When saving seeds, we need to collect from a minimum number of plants to maintain healthy populations from year to year. Using too few plants repeatedly will, in time, reduce their resistance to pests and diseases, as well as their overall vigour (health and strength). This process is called inbreeding depression and can significantly impact your crops over generations. We've included suggested minimum numbers for each crop as a guide.

Cross-Pollination

Some crops will cross-pollinate more readily than others, which is important to note as we save seeds year after year. Plants within the same family can sometimes breed with each other - for example, all brassicas (cabbages, kales, broccoli) can cross. In the Cucurbit family (squashes, pumpkins, courgettes), members of the same species can cross-pollinate. When this happens, the resulting seeds might not produce plants true to type, meaning they won't have the same characteristics as the parent plants.

Scottish Climate Considerations

Our unique climate presents both challenges and opportunities for seed saving. While some crops are challenging to save seed from,

others thrive in our conditions. This guide focuses on techniques adapted to Scottish growing conditions, including specific advice for dealing with our weather patterns.

Each crop section includes detailed information about:

- How suitable it is for Scottish seed saving
- Minimum population sizes needed to maintain variety
- Minimum plants needed for viable seed
- Isolation distances required
- Specific techniques for seed saving
- Additional notes for success in our climate

How To Use This Guide

We've organised crops into three categories based on how challenging they are to save seeds from in Scottish conditions:

Easy Crops - These are ideal for beginners and reliably produce seeds in our climate. They include:

- Peas, beans, spring onions, sunflowers and tomatoes (under cover)

Moderate Difficulty - These crops need more attention but are still achievable for most growers:

- Courgette and pumpkin

Challenging Crops - These require specific conditions and more experience:

- Sweetcorn

Understanding the format for each crop, you'll find:

- A Scottish growing rating
- Required population sizes
- Isolation distance needed
- Seed viability period
- Step-by-step technique
- Additional notes specific to Scottish growing

The guide also includes detailed information on:

- Fermentation processes
- Seed storage
- Troubleshooting
- Scottish climate considerations

Understanding Key Concepts

Pollination Types

Self-pollinating plants -

- these plants mostly pollinate themselves
- easier for seed saving
- include: tomatoes, peas, lettuce, beans
- need smaller isolation distances
- require fewer plants for saving seed

Cross-pollinating plants -

- need pollen from other plants
- more challenging for seed saving
- include: all brassicas, onions, carrots
- need larger isolation distances
- require more plants for saving seed

Isolation Distance

This is how far apart different varieties need to be to prevent crossing. For example:

Self-pollinators: often just a few feet

Brassicas: up to 1 mile

Most root crops: 1/2 mile

Squash family: 1/2 mile

For back garden seed saving these distances are not as important and can be greatly reduced. Isolation distance becomes more important in large scale growing projects where lots of different plants are grown in proximity. The need for isolation distance can be removed

using isolation cages or by covering flowers and using hand pollination methods. This technique is recommended for back garden seed saving as many of the isolation distances would be unachievable. Also bear in mind that wind pollinated plants will still require isolation distances and barrier methods will only work for insect pollinated plants.

Population Size

The minimum number of plants needed to maintain:

- genetic diversity
- healthy seed stock
- strong future crops
- disease resistance

As with isolation distance, population size is not as important for back garden or small-scale seed saving if we keep in mind that constantly using seed from the same plants will eventually result in loss of vigour and resistance to pests and diseases. Crops in the guide also have a minimum number of plants for viable seed. This will allow us to save useable seed from year to year but will eventually lead to inbreeding depression, in this case it is important to swap seeds of the same variety with other gardeners or to gradually increase the population over time to maintain healthy plants.

Essential Equipment for Seed Saving

Collection and cleaning:

- paper bags or envelopes
- clean containers for wet seed processing
- fine mesh sieves (different sizes)
- clean buckets for washing seeds
- small scissors or secateurs
- clean labels and permanent markers

Drying and storage:

- paper sheets
- mesh drying screens
- glass jars with tight-fitting lids
- paper envelopes
- silica gel packets
- airtight containers
- temperature and humidity meters

Protection:

- Fleece or row covers for frost protection on tender crops
- Plant labels
- Support canes
- String or plant ties
- Netting for bird protection

Getting Started

1. Start with easy crops suitable for Scottish growing
2. Choose open-pollinated varieties
3. Learn your plant families
4. Keep good records of:
    - variety names
    - planting dates
    - number of plants
    - collection dates
    - special characteristics

Planning your garden:

- consider isolation distances if needed
- allow extra space for seed plants
- consider protection needs
- think about indoor drying space

Why Save Seeds?

Saving your own seeds is a rewarding practice that connects you to the full cycle of food growing. There are several compelling reasons to save seeds:

- preserve varieties that grow well in Scottish conditions
- reduce growing costs and become more self-sufficient
- develop plants better adapted to your local climate
- maintain crop diversity and food security
- reduce your carbon footprint by lowering food miles
- share successful varieties with other local growers

Understanding Seed Saving Basics

Types of pollination

- Self-pollinating plants (like tomatoes and peas) are easiest for beginners
- Cross-pollinating plants (like brassicas) need isolation or barriers
- Some plants cross within their family group and need special attention

Key terms

True to type - plants that maintain their parent characteristics

Viable - seeds capable of germinating and growing

Isolation distance - space needed between varieties to prevent crossing

Bolting **-** when plants flower to produce seeds

Vernalisation - cold period some plants need to produce seeds

Fermentation - process used to clean some wet seeds

Basic equipment needed

- paper envelopes or bags for storage
- glass jars with tight-fitting lids
- silica gel packets for moisture control
- labels and permanent markers
- fine mesh sieves
- paper plates or sheets for drying
- small scissors or pruners
- clean containers for fermentation

Plant Selection and Population Sizes

Choosing the Best Plants

Always select plants that show:

- strong healthy growth
- good disease resistance
- typical variety characteristics
- quality fruit or vegetables
- strong root systems
- ability to cope with local conditions

Understanding population sizes

Maintaining enough plants is crucial for:

- preventing inbreeding depression (reduced plant vigour over generations)
- maintaining genetic diversity
- ensuring strong future crops
- preserving variety characteristics

Crop Family Guide

Plants in the same family often share:

- similar growing needs
- cross-pollination risks
- seed saving techniques
- disease susceptibilities

Main plant families in this guide:

Cucurbits (squash family)

- Includes: courgette, cucumber, pumpkin
- minimum population: 10-20 plants
- isolation distance: 1/2 mile (or hand pollination)
- may need protection in Scottish climate
- risk of cross-pollination within species

Solanaceae (tomato family)

- Includes: tomatoes, peppers, chillies and aubergine
- minimum population: 6-10 plants (self-pollinating varieties)
- no isolation needed for most home gardens
- best grown under cover in Scotland

Fabaceae (pea family)

- Includes: Peas, broad beans, French beans, runner beans
- minimum population: 10-15 plants
- isolation distance: 50 feet
- key characteristics:
    - mostly self-pollinating (except runner beans)
    - easy to save seeds
    - seeds viable 3-4 years
    - well-suited to Scottish climate

Basic Seed Saving Techniques

Selecting Plants

Always choose plants that show:

- strong healthy growth
- good disease resistance
- typical variety characteristics
- weather resilience
- strong root systems

Timing Your Harvesting

Dry Seeds (peas, beans, brassicas etc)

- Leave seeds on plant until almost dry
- Harvest before seed falls or seed pods split
- Seeds should rattle in pods
- Complete drying indoors
- Watch weather forecast

Wet Seeds (tomatoes, cucumbers etc)

- Allow fruit to fully ripen
- Often past eating stage
- Look for colour changes
- Choose earliest ripening fruits
- Process promptly after harvest

Cleaning Methods

Dry Seeds

1. Thresh (break open pods/heads)
2. Winnow (separate seeds from chaff)
3. Sieve if needed
4. Final hand sorting
5. Dry thoroughly

Wet Seeds

1. Scoop seeds from fruit
2. Ferment if needed
3. Wash thoroughly
4. Strain and clean
5. Dry immediately

Crop Guide

This guide contains seed saving information about some of the seeds available as part of the Lanarkshire Seed Savers Network project.

Easy Crops

Peas

Scottish growing rating	Easy
Population size to maintain variety	10 - 15 plants
Minimum for viable seed	1 plant
Isolation distance	20 feet
Seed viability	3-4 years

Technique:

1. Sow successive crops March-June for crop security
2. Provide strong support systems for wind protection
3. Select the healthiest plants for seed saving
4. Allow pods to turn brown and dry on plant
5. Harvest when pods rattle but before they split
6. Complete drying indoors in wet weather

Additional Notes:

- Self-pollinating and naturally suited to Scottish climate
- Choose early-maturing varieties for seed security
- Traditional Scottish varieties often most reliable; disease resistant strains recommended
- Protection from birds essential - netting recommended
- Consider mangetout varieties for wet summers
- Harvest whole plants if wet weather threatens
- Store dried seeds with silica gel packets
- Yellow or pale pods indicate readiness for harvest
- Test seed readiness - should be hard with no indentation when pressed

Beans (French and Runner)

Scottish growing rating	Easy
Population size to maintain variety	10 – 15 plants
Minimum for viable seed	1 plant
Isolation distance	50 ft between varieties
Seed viability	3-4 years

Technique:

1. Choose early-maturing varieties for Scottish growing season
2. Plant in late May after last frost risk
3. Support plants well against wind
4. Allow pods to dry and turn brown on plant
5. Harvest when pods rattle but before they split
6. Complete final drying indoors

Additional Notes:

- French beans more reliable than runners for Scottish seed saving
- Choose bush varieties for exposed sites
- Runner beans may need greenhouse growing for viable seed
- Protection needed in exposed areas
- Remove any diseased plants before seed saving
- Store with silica gel packets in our humid climate
- Check regularly during drying for mould
- Pods should crackle when ready
- Test seeds are fully dry before storage - should snap, not bend
- Heritage varieties often perform well in Scottish conditions

Sunflower

Scottish growing rating	Easy
Population size to maintain variety	10 - 15 plants
Minimum for viable seed	5 plants
Isolation distance	½ mile between varieties
Seed viability	5-7 years

Technique:

1. Start indoors in April
2. Plant out after frost risk (late May)
3. Support stems against wind
4. Cover ripening heads with mesh for bird protection
5. Harvest when backs of heads turn yellow-brown
6. Complete final drying indoors

Additional Notes:

- Choose shorter, early flowering varieties
- Single-headed varieties most reliable
- Wind protection essential in Scottish climate
- May need to complete ripening indoors
- Bird protection crucial as seeds mature
- Consider dwarf varieties for exposed sites
- Seeds ready when heads turn brown
- Back of head should be yellow, not green
- Test seeds are hard before harvesting
- Remove any diseased plants before saving seed

Tomato

Scottish growing rating	Easy (when grown under cover)
Population size to maintain variety	6 – 10 plants per variety
Minimum for viable seed	5 plants
Isolation distance	None for most varieties
Seed viability	4-10 years

Technique:

1. Start early (February-March) indoors
2. Grow under glass or polytunnel
3. Select best fruits from healthiest plants
4. Ferment seeds from fully ripe fruits
5. Dry thoroughly after fermentation
6. Store in cool, dry conditions

Additional Notes:

- Must be grown under protection in Scotland
- Most varieties self-pollinate reliably
- Choose reliable Scottish-proven varieties
- Bush types often ripen earlier
- Good ventilation essential
- Shorter fermentation time (2-3 days) in our climate
- Potato-leaf varieties good for cooler conditions
- Save from first-ripening fruits
- Remove any diseased plants
- Keep different varieties 3 feet apart if saving seed

Moderate Crops

Courgette

Scottish growing rating	Moderate
Population size to maintain variety	10 - 20 plants
Minimum for viable seed	1 plant
Isolation distance	½ mile or hand pollination
Seed viability	5-6 years

Technique:

1. Start early indoors (April)
2. Plant out after frost risk (late May)
3. Hand pollinate female flowers
4. Allow fruits to fully mature beyond eating stage
5. Harvest when fruit is hard and yellow
6. Complete final drying indoors

Additional Notes:

- Best grown under cover in Scotland
- Will cross with other courgettes and some pumpkins
- Hand pollination essential in polytunnels
- Choose early-maturing varieties
- Protection from wind and rain necessary
- Remove any diseased plants
- Fruit should be large and hard
- Seeds ready when fruit yellows
- Store with silica gel in our climate
- Watch for powdery mildew

Pumpkin

Scottish growing rating	Moderate - challenging
Population size to maintain variety	10 - 20 plants
Minimum for viable seed	1 plant
Isolation distance	½ mile or hand pollination
Seed viability	5-6 years

Technique:

1. Start indoors in April
2. Plant out in late May under protection
3. Hand pollinate female flowers
4. Limit fruits for better seed maturation
5. Allow fruits to fully mature
6. Optional seed fermentation (2-3 days)

Additional Notes:

- Will cross with other pumpkins and some courgettes
- Choose small, early maturing varieties
- Hand pollination may be needed
- Focus on crown pumpkins rather than large varieties
- Remove any diseased plants
- Seeds ready when fruit fully coloured
- Store with silica gel in our climate
- Watch for powdery mildew

Challenging Crops

Sweetcorn

Scottish growing rating	Challenging
Population size to maintain variety	100 - 200 plants
Minimum for viable seed	10 plants
Isolation distance	½ mile or hand pollination
Seed viability	3-5 years

Technique:

1. Start indoors in April
2. Plant out under protection late May
3. Hand pollinate to ensure good seed set
4. Protect from wind and rain
5. Allow cobs to fully mature on plant
6. Complete ripening under cover

Additional Notes:

- Very challenging for seed saving in Scotland
- Large population needed for genetic diversity
- Best grown in polytunnel or greenhouse
- Super-sweet varieties not recommended
- Choose earliest maturing varieties
- Protection from wind essential
- Consider focusing on more reliable crops
- Seeds ready when kernels hard and glossy
- Store with silica gel in our climate
- Remove any weak plants early

Fermentation Process

Basic Fermentation Guide

Why Ferment Seeds?

- Removes germination-inhibiting compounds
- Helps prevent seed-borne diseases
- Separates viable seeds from non-viable ones
- Mimics natural rotting process of fruits

General Rules for Fermentation:

1. Maintain consistent temperatures (20-25°C)
2. Use clean containers (glass or plastic)
3. Never use metal containers
4. Stir twice daily
5. Keep track of time - don't over-ferment
6. Complete process indoors

Scottish Climate Considerations:

- Indoor fermentation essential
- May need slightly longer fermentation times
- Maintain consistent warmth
- Good ventilation necessary
- Use thermometer to monitor temperature

Tomato Seed Fermentation

Fermentation Time: 2-3 days in Scottish conditions

Technique:

1. Select fully ripe, disease-free fruits
2. Scoop out seeds and surrounding gel
3. Add 60ml water per tomato's worth of seeds
4. Place container in warm location (20-25°C)
5. Stir twice daily
6. Monitor for signs of completion

Signs of Completion:

- White mould layer forms on top
- Seeds sink to bottom
- Gel coating separates from seeds
- Mild, fermented smell

Post-Fermentation:

1. Add more water and stir
2. Pour off pulp, debris, and floating seeds
3. Repeat until water runs clear
4. Strain through fine mesh
5. Dry immediately on paper plates or coffee filters
6. Provide good air circulation

Pumpkin Seed Fermentation

Fermentation Time: 24-36 hours (Optional process)

Technique:

1. Scoop seeds from fully ripe pumpkin
2. Remove most of the stringy pulp
3. Place in container with equal parts water
4. Keep at room temperature (20-25°C)
5. Stir twice daily
6. Watch carefully - don't over-ferment

Signs of Completion:

- Pulp begins to separate from seeds
- Seeds should still be firm
- Mild fermentation smell
- No sliminess on seeds

Post-Fermentation:

1. Rinse thoroughly in colander
2. Remove any remaining pulp
3. Dry immediately with good air circulation
4. Use paper plates or mesh screens
5. Turn seeds daily while drying
6. Store when completely dry

Troubleshooting Fermentation

Over-Fermentation Issues:

- Seeds begin to germinate
- Strong ammonia smell develops
- Seeds become soft or mushy

Solution: Reduce fermentation time and monitor more closely

Prevention: Check every 12 hours after day 2

Under-Fermentation Issues:

- Gel still attached to seeds
- Seeds difficult to clean
- Seeds feel slimy

Solution: Continue fermentation process, checking every 12 hours

Prevention: Maintain correct temperature

Mould Issues:

- White mould is normal and beneficial
- Black or coloured mould indicates problems
- Green or blue mould needs immediate attention
- Solution: Ensure good air circulation and stir more frequently
- Prevention: Clean containers and fresh water

Seed Storage After Fermentation

Drying Process:

1. Dry seeds thoroughly until they snap when bent
2. Use paper plates or coffee filters
3. Maintain good air circulation
4. Keep temperature around 20°C
5. Turn seeds daily
6. Test by bending - should snap not bend

Storage Conditions:

1. Store in paper envelopes or glass jars
2. Add silica gel packets in humid conditions
3. Keep in cool, dry location (5-10°C)
4. Label with variety and date
5. Test germination after 6 months
6. Monitor regularly for moisture issues

Special Consideration for Scottish Climate

Indoor Drying Requirements

- Always dry fermented seeds indoors
- Use fan for air circulation if needed
- Maintain temperature around 20°C
- Avoid conservatories due to temperature fluctuations
- Never dry in greenhouse or polytunnel
- Check daily for mould development

Humidity Management

- Use dehumidifiers during drying if needed
- Add silica gel packets to all storage containers
- Check seeds regularly for moisture issues
- Consider using moisture meters for monitoring
- Paper bags better than plastic in our climate
- Avoid basements for storage

Timing Considerations

- Start crops early enough to ensure mature fruits
- Allow extra time for seed maturation
- Complete fermentation before autumn temperatures drop
- Allow longer drying times in humid conditions
- Plan for indoor ripening of many crops
- Consider weather forecasts when harvesting

Protection Methods

1. Use polytunnels and greenhouses effectively
    - Maintain good ventilation
    - Avoid overcrowding
    - Monitor temperatures
    - Control humidity levels
2. Outdoor Protection
    - Provide wind breaks in exposed sites
    - Use fleece covers appropriately
    - Ensure good drainage
    - Protect from excessive rain
    - Consider raised beds
    - Use cloches when needed

Recommended Resources

Books:

Fruit and Vegetables for Scotland: What to Grow and How to Grow It -

Kennith Cox & Caroline Beaton

Back Garden Seed Saving: Keeping Our Vegetable Heritage Alive -

Sue Stickland & Susanna Kendall

Grow Your Own Vegetables -

Joy Larkcom

Breed Your Own Vegetable Varieties: The Gardeners and Farmers Guide to Plant Breeding and Seed Saving -

Carol Deppe

Online Resources:

- Real Seeds Catalogue (www.realseeds.co.uk)
    - Specific growing information
    - Heritage variety resources
    - Detailed seed saving guides

Organisations:

- Scotland's Seed Sovereignty Programme
- Garden Organic Scotland
- www.seedsovereignty.info

Local Resources:

- Local seed swaps and seed libraries
- Community gardens with seed saving programs

Glossary of Terms

Bolting: When a plant moves from leafy growth to producing a flowering stem, usually triggered by day length or temperature changes.

Cross-pollination: Transfer of pollen between different plants of the same or similar species.

Fermentation: Process used to clean some wet seeds by breaking down the gel coating and reducing seed-borne diseases.

F1 Hybrid: First generation cross between two different parent varieties. Seeds from these plants won't grow true to type.

Inbreeding Depression: Loss of vigour and genetic diversity from repeatedly saving seeds from too few plants.

Isolation Distance: The space needed between different varieties of the same crop to prevent unwanted cross-pollination.

Open-pollinated: Plants that produce seeds that grow true to type when properly isolated.

Population Size: The minimum number of plants needed to maintain genetic diversity when saving seeds.

Self-pollinating: Plants that can pollinate themselves without needing pollen from other plants.

True to Type: Plants that maintain the characteristics of their parent plants.

Vernalization: The cold period some plants need to trigger flowering.

Viable: Seeds that are capable of germinating and growing into healthy plants.

Vigour: The overall health, strength and performance of a plant.

Winnowing: The process of separating seeds from chaff using wind or a fan.

This guide was created for the Lanarkshire Seed-Savers Network and funded by the Lanarkshire Climate Action Hub to strengthen and educate people on our local food systems. Growing your own food, whether in your garden or community spaces, offers profound benefits: reduced food costs, pesticide-free produce, and improved nutrition.

Home-grown food does more than just feed us - it builds resilient communities and nurtures our environment. By saving seeds and growing locally, we cut food miles, support pollinators, insects, wildlife, and preserves varieties adapted to Scottish conditions. Each garden, no matter how small, contributes to a more sustainable and food-secure future.

We hope you'll Join us in this movement. Your garden can help build a healthier, more sustainable Scotland.

Dave Matthews

Scottish Charity Number

SC048411