

BUILDING A MORE RESILIENT GARDEN



Practical Strategies for Reducing Crop Loss
During Wet Growing Seasons



ST. JAMES HORTICULTURAL SOCIETY
Community Garden Education Series



2026 EDITION

PRACTICAL TIPS FOR REDUCING CROP LOSS

During Wet Seasons



WET YEARS HAPPEN

This season has been unusually wet, and many gardeners have experienced standing water or crop loss. Community gardens across Winnipeg have faced similar challenges.



It's important to remember that crop loss during extreme weather is not a sign that you are a poor gardener.



Gardening and farming are always influenced by the weather.



While we can't control rainfall, we can make our plots more resilient over time.



The goal isn't to eliminate risk—it's to reduce it.



UNDERSTANDING OUR SOIL

Most of our garden consists of heavy clay soil.



Clay soils:

- Hold nutrients well.
- Retain water for long periods.
- Drain slowly.
- Compact easily.
- Become sticky when wet and hard when dry.

Healthy soil contains four main components:



Mineral particles
(sand, silt and clay)



Organic matter



Water



Air



Plant roots need both water and oxygen. When soil remains saturated for too long, the air spaces fill with water, reducing oxygen available to roots and increasing plant stress.



Adding organic matter such as compost helps improve soil structure over time by creating more pore spaces. This allows water to infiltrate more easily while also improving aeration for roots.



STRATEGIES TO IMPROVE WET-WEATHER RESILIENCE

1 BUILD HEALTHY SOIL

Adding compost and other organic matter is one of the best long-term investments you can make.

Benefits include:

- ✓ Improved soil structure
- ✓ Better infiltration
- ✓ Better root growth
- ✓ Increased resilience during both wet and dry periods



WHAT HEALTHY SOIL LOOKS LIKE

Poor soil structure
(compacted clay)



Water sits on the surface or moves through slowly.

vs.

Healthy soil structure
(with organic matter)



Water infiltrates, air moves freely, roots grow deeper.

2 IMPROVE DRAINAGE ON YOUR PLOT

Use raised beds, hilled rows, swales, or build up soil levels to keep water moving and roots above excess water.



3 MULCH REGULARLY

Mulch protects soil from heavy rain impact, reduces runoff, and helps retain moisture during dry periods.



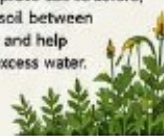
4 KEEP SOIL LOOSE

Avoid compaction by not working wet soil and by avoiding walking on garden beds.



5 PLANT DIVERSITY AND COVER CROPS

Diverse plants and cover crops improve soil structure, protect soil between seasons, and help absorb excess water.



6 BE PATIENT AND CONSISTENT

Soil improvement takes time. Small steps each season create big changes over years.



Healthy soil is the foundation of a *resilient* garden.

Small steps today lead to stronger plants, fewer losses, and better harvests—rain or shine.





RAISED BEDS FOR A HEALTHIER GARDEN



Better Drainage • Healthier Roots • Resilient Harvests



Raised beds lift your plants above heavy, waterlogged soil, improving drainage and creating ideal growing conditions for many vegetables and flowers.



RAISED BED OPTIONS



METAL RAISED BEDS

- Durable (10–20+ years)
- Many standard sizes
- Modern look
- Quick to assemble



WOODEN RAISED BEDS

- Customizable size & height
- Blends with garden setting
- Use rot-resistant wood (e.g., cedar, larch)



OTHER / CUSTOM BUILT

- Stone, brick, concrete blocks
- Repurposed materials
- Design to fit your space
- Can be any height or shape



BENEFITS

- ✓ Excellent drainage – roots stay above saturated soil
- ✓ Warms up faster in spring
- ✓ Better soil structure for healthier root development
- ✓ Defined growing area – easy to manage and weed
- ✓ Can be built to a comfortable working height
- ✓ Ideal for many vegetables, herbs and flowers



CONSIDERATIONS

- Dry out more quickly in drought years – need more watering
- Must be filled with good quality soil (e.g., 4-way mix)
- Moderately expensive (materials + soil)
- Some materials have a limited lifespan (wood will eventually rot)
- Take time to plan, prepare and fill



TIP: Use mulch to help keep soil moist during dry periods.



INVESTMENT (UPDATED)

The cost depends on materials, size and how you build it. Investment levels are estimates only.

Option	Investment Level	Notes
Metal Raised Beds (e.g., 4' x 12')	MODERATE	Prices change often
Wooden Raised Beds (cedar/larch)	MODERATE to HIGH	Varying sizes and wood type
Custom / Built with Block or Stone	HIGH	More materials and labour
Soil / Compost (4-way mix)	MODERATE	For filling bed



Soil and compost can be delivered to the gardens (where available). Plan ahead!



FILLING YOUR RAISED BED

Use a high-quality soil mix for best results.



Fill the bed in layers, watering as you go to reduce settling.



TIPS FOR SUCCESS

- ✓ Choose a location with full sun (6+ hours if possible).
- ✓ Line the bottom with hardware cloth if burrowing pests are a problem.
- ✓ Water deeply, especially during hot, dry periods.
- ✓ Add compost each season to maintain soil health.
- ✓ Use mulch on top to conserve moisture.
- ✓ Rotate crops for healthy soil.



A MEDIUM-TERM INVESTMENT

Moderately expensive, but long-lasting garden improvement that pays off with healthier plants and higher yields.



KEY TAKEAWAY

Raised beds aren't the only solution, but they are an effective way to build a more resilient, productive garden—especially in our heavy clay soils and changing weather.

*Build Resilience.
Grow Success.*



St. James
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COMMUNITY GARDEN EDUCATION SERIES



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HILLED GARDENS

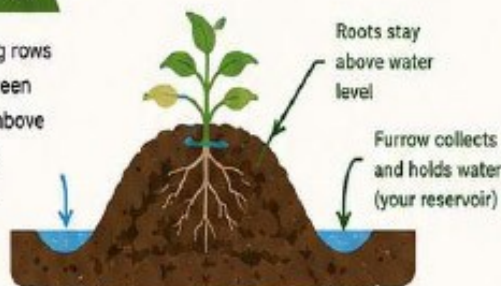
Simple. Effective. Resilient.

Hilled rows raise plant roots above wet soil, improve drainage, and help your garden thrive in wet years.



What Are Hilled Gardens?

Hilled gardens are raised planting rows with lower furrows (swales) between them. The hills keep plant roots above standing water while the furrows capture and store excess water.

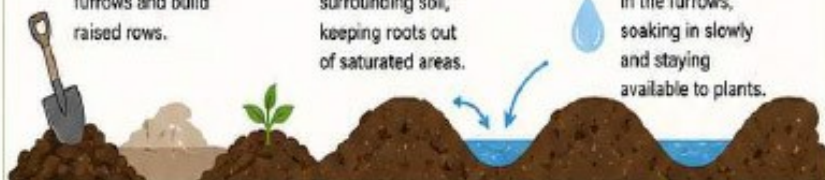


Why Hill?

- ✓ Improves drainage in wet seasons
- ✓ Keeps roots oxygenated and healthy
- ✓ Furrows capture rainfall and act as a reservoir
- ✓ Uses the soil you already have—no new materials
- ✓ Works for many vegetables and flowers
- ✓ Easy to adjust to your space
- ✓ Inexpensive and effective

How It Works

- 1 Hill the Soil**
Pull soil from the furrows and build raised rows.
- 2 Plant on the Hills**
Plants sit above the surrounding soil, keeping roots out of saturated areas.
- 3 Furrows Hold Water**
Rainwater collects in the furrows, soaking in slowly and staying available to plants.



Think of the furrows as mini-reservoirs that treat and store water while protecting roots on the hills.

Best For



Vegetables: potatoes, corn, beans, peas, squash, pumpkins, cucumbers, tomatoes, peppers, and more



Root crops: carrots, beets, parsnips, onions



Many flowers and herbs



Gardens with heavy clay or poorly drained soil

Benefits

- ✓ Improves drainage without adding materials
- ✓ Roots stay above saturated soil, reducing rot and disease
- ✓ Furrows collect and slowly release water during drier periods
- ✓ Warms up faster in spring
- ✓ Soil is easier to work
- ✓ Can be rebuilt each season

Considerations

- ⚠ Moderate labour to build and rebuild each year
- ⚠ Furrows can dry out quickly in drought years – may need more watering
- ⚠ Soil can erode on steep slopes or during heavy rain
- ⚠ Needs space for furrows

How to Build Hilled Rows

- 1 Wet or loosen the soil if possible.
- 2 Use a shovel or hoe to pull soil from the furrows and build hills 8–12 inches high.
- 3 Shape furrows 12–24 inches wide between hills to catch water.
- 4 Plant seeds or transplants on top of the hills.
- 5 Re-hill as needed throughout the season.

TIP!

Add compost or organic matter when building your hills to improve soil structure over time.



Labour & Cost



Labour: Moderate

Cost: Very Low

Materials Needed: None



You use the soil you already have. No new materials required!

Water Advantage



During heavy rains: Furrows capture excess water and reduce flooding.

During dry periods: Stored water in the furrows becomes available to plants as it soaks in.

Nature's reservoir—right in your garden.

Good Neighbour Practice

Manage water within your own plot. Do not direct water onto neighbouring plots or through shared pathways.



BUILD RESILIENCE. GROW SUCCESS.

Small changes today = healthier gardens tomorrow.

Every garden is unique.
Keep experimenting and learning!



BUILDING UP *Your Entire Garden*

A LONG-TERM INVESTMENT IN RESILIENCE

Raising your entire garden bed above the surrounding grade improves drainage, builds healthier soil, and gives your crops the best chance to thrive — especially in wet years.



HOW IT WORKS



- Garden is built up over time using compost and quality soil.
- Wood or other edging keeps soil and compost in place and prevents washout downstream.
- The raised bed improves drainage and creates a deep, loose root zone full of air and water pockets.

BENEFITS

- Better drainage:** Reduces standing water and keeps roots above saturated soil in wet years.
- Healthier roots:** More oxygen in the soil leads to stronger, more productive plants.
- Built to last:** A long-term improvement that gets better every year.
- Improved soil:** Adds organic matter, improves soil structure, and increases fertility.
- Great for many crops:** Supports vegetables, flowers, and herbs.

BUILT UP OVER TIME



Year 1 – Start with compost and improve soil.



Years 2–3 – Soil level rises, drainage improves, and plants thrive.



Years 4+ – Deep, rich soil full of life and resilience.



GOOD TO KNOW

Building up your entire plot is one of the best ways to create resilient soil that can handle both wet and dry years.



LABOUR & TIME



Labour:
High – moving compost and building up the bed takes effort.



Time commitment:
Long-term – build gradually over many seasons.



Spread it out:
Add a few yards of compost each year. Small steps make a big difference.



WET YEAR PERFORMANCE



Excellent drainage – keeps roots above saturated soil.



Deep, loose soil holds excess water in air and soil pores.



More resilient to heavy rain and flooding.



DRY YEAR CONSIDERATIONS



Dries out more quickly than lower ground.



Requires more watering, especially during hot, dry periods.



Use mulch and organic matter to help retain moisture.



BEST FOR



Most vegetables, flowers, and herbs.



Gardeners planning for the long term.



Plots that need better drainage and healthier soil.



GOOD NEIGHBOUR PRACTICE

Manage water within your own plot.



Do not direct water onto neighbouring plots or through shared pathways.



Healthy soil and good stewardship benefit everyone in the garden.



BUILD RESILIENCE. GROW SUCCESS.

Small steps today = healthier soil and bigger harvests tomorrow.



Every season you add compost, you build a stronger garden.

ON-PLOT DRAINAGE: CREATING SWALES

Slow it. Spread it. Soak it in.

Swales are shallow, level trenches that capture excess rainfall and let it soak into your soil—reducing runoff and keeping water where your plants can use it.



Capture overland water from heavy rains



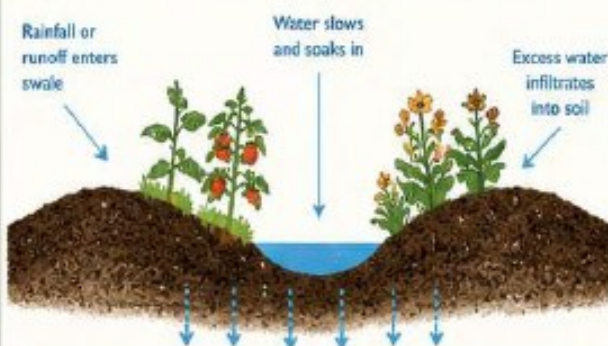
Increase infiltration and recharge your soil



Store water in the soil for plants to use later

HOW SWALES WORK

Swales intercept and slow down runoff, allowing water to soak in instead of rushing off your plot.



Think of a swale as a mini-reservoir.
It holds water temporarily and gives it time to soak in—benefiting your soil and your plants.

BENEFITS



Manages excess water
Reduces puddling, flooding, and soil erosion.



Improves soil health
More water infiltration increases moisture and microbial activity.



Supports plants
Keeps roots from sitting in water while providing moisture during drier periods.



No new materials needed
Built using the soil you already have.



Low cost
Uses simple tools and your own labour.



Works with your garden
Fits in between rows or along the contour within your plot.



GOOD TO KNOW

Swales won't hold water permanently. They drain slowly into your soil where plants can use it.



WHEN & WHERE TO USE SWALES



- ✓ In low spots where water tends to collect
- ✓ Below slopes or along contour in your plot
- ✓ Between garden rows or beds
- ✓ Anytime you want to slow, spread, and soak up excess water on your own plot



IMPORTANT!

Keep swales within the boundaries of your own plot.

Do not direct water onto neighbouring plots or into pathways.



INVESTMENT

Low

No special materials. Just your time and tools.



LABOUR

Moderate

Digging takes effort, but can be done in stages.



TIME TO BUILD

Short-Term

Swales can be built in a day or over several sessions.



WET YEAR PERFORMANCE

★★★★☆

Excellent for capturing and soaking up excess water.



DRY YEAR CONSIDERATIONS

★★★☆☆

Moisture stored in soil becomes available to plants over time.



BEST FOR



Gardens with low spots or heavy clay soils



Plants between rows or on slopes



Gardeners looking for low-cost flood management.



TIPS FOR SUCCESS



Make swales level (side to side) so water spreads evenly.



Use the excavated soil on the downhill side to build a small berm.



Keep swales shallow (4–8 inches deep) and wide (12–24 inches).



Mulch and add organic matter to help the soil soak up more water.



Maintain swales regularly—remove weeds and debris.



KEEP WATER ON YOUR PLOT. HELP YOUR SOIL. GROW RESILIENT FOOD.



CROPS FOR WET vs DRY YEARS

Build Resilience. Grow Success.

Weather varies from year to year. Choosing a mix of crops that tolerate both wet and dry conditions helps protect your harvest.



WET YEARS

Crops that handle wetter soils

ROOT CROPS

Tolerate moisture well once established.

- Carrots
- Beets
- Turnips
- Parsnips



BRASSICAS

Generally tolerant of damp soil.

- Cabbage
- Kale
- Broccoli
- Brussels Sprouts



ALLIUMS

Strong in cool, wet conditions.

- Garlic
- Onions
- Leeks
- Chives



LEAFY GREENS

Many varieties do well with extra moisture.

- Spinach
- Swiss Chard
- Lettuce (loose leaf)
- Mustard Greens



GOOD IN BOTH!

These crops can handle a range of conditions.



Peas



Summer Squash



Beans



Potatoes



Tomatoes



DRY YEARS

Crops that handle drought better

FRUITING CROPS

Deep roots and heat lovers.

- Tomatoes
- Peppers
- Eggplant
- Okra



VINES & CUCURBITS

Sprawling vines shade soil and conserve moisture.

- Cucumbers
- Melons
- Pumpkins
- Winter Squash



HERBS

Most herbs prefer well-drained soil and drier conditions.

- Basil
- Thyme
- Rosemary
- Sage



ALLIUMS

Well-established alliums handle dry spells well.

- Garlic
- Onions
- Shallots
- Leeks



TIPS FOR ALL YEARS



Build healthy soil:

Add compost and organic matter each season.



Mulch: Conserves moisture in dry years and protects soil in wet years.



Plant a variety:

Spreading risk improves your chances of success.



Observe & adapt:

Every garden and every year is different.



Healthy soil today.
Resilient harvests tomorrow.



DID YOU KNOW?



Approx. 3 cubic yards of compost will add 1 inch over a standard community garden plot.

*Small additions each year
make a big difference!*



**WE CAN'T CONTROL THE WEATHER, BUT WE CAN
BUILD GARDENS THAT ARE READY FOR IT.**



Good neighbours manage water within their own plots. Let's grow resilience—together.

THE BIG PICTURE

Trade-Offs

Every gardening decision involves trade-offs.

Features that improve drainage during very wet years may require additional watering during dry summers.



EXAMPLES: FEATURES THAT IMPROVE DRAINAGE (BUT MAY DRY OUT FASTER)

RAISED BEDS



Excellent drainage and healthier roots in wet years.



May require more watering in dry periods.

RAISED ROWS



Improved drainage by lifting roots above wet soil.



May require more watering in dry periods.

HIGHER SOIL LEVELS



Better drainage and more air in the root zone.



May require more watering in dry periods.

PRACTICES THAT BUILD RESILIENCE IN BOTH WET AND DRY YEARS



ADD COMPOST

Improves soil structure, water-holding capacity, and fertility.



BUILD ORGANIC MATTER

Increases soil life and creates stable soil aggregates.



MULCH

Conserves moisture, moderates temperature, and protects soil.



AVOID SOIL COMPACTION

Keeps air spaces open so water can soak in and roots can grow.



RATHER THAN DESIGNING FOR ONE EXTREME, AIM TO BUILD HEALTHY, RESILIENT SOIL THAT PERFORMS WELL ACROSS MANY DIFFERENT SEASONS.



FINAL THOUGHTS



There is no single solution that will prevent flooding during every extreme rainfall event.



However, improving soil health and thoughtfully managing your plot can significantly reduce the risk of crop loss over time.



Healthy gardens are built over many seasons. Small improvements made each year can have a lasting impact.



Happy gardening!



HEALTHY SOIL. RESILIENT GARDENS. BETTER HARVESTS.



