



Waterloo Region Master Gardeners Information Sheet

DIAGNOSTIC KEY FOR SEEDING AND TRANSPLANT PROBLEMS

SYMPTOMS	POSSIBLE CAUSES	CONTROLS/COMMENTS
Poor germination	<p>Cold soil: seeds (especially corn and bean) rot in cold, wet soil.</p> <p>Clay soil: seedlings can't penetrate crusted surface easily.</p> <p>Seeds planted too deeply</p> <p>Low germination vigour: seeds not viable.</p> <p>Species characteristic: e.g., spinach.</p> <p>Fungal disease: seedlings fail to reach soil surface.</p>	<p>Determine germination requirements of crop (use a soil thermometer). Pre-sprout seed where appropriate.</p> <p>Amend furrow with organic matter or cover seeds with vermiculite. Create raised beds and pre-sprout seeds.</p> <p>Rule of thumb for seeding depth: 2-3x seed diameter.</p> <p>Buy seed packed for current year. Pre-test germination rates of questionable seeds.</p> <p>Seeds that germinate slowly can be pre-sprouted.</p> <p>Use a well-drained, sterile growing media. Allow surface to dry between waterings.</p>
White-tipped leaves	Frost damage	Plants seeded or set-out too early or insufficiently hardened
Leaf yellowing	<p>Spider mites: fine stippling, especially in warm weather.</p> <p>Whitefly: tiny, white insects fly up when plant is disturbed.</p>	<p>If necessary, use insecticidal soap or pyrethrum spray. Be careful on tender transplants. Predatory mites are another control option.</p> <p>Usually from greenhouse where plants were grown. Control with insecticidal soap or pyrethrum based insecticide. Be careful on tender transplants</p>
White-tan spots, leaves turn brown and papery	Sunburn, cold damage, wind whipping	Protect seedlings and transplants. Harden plants off prior to transplanting. Protect transplants in extreme weather conditions.
Stunted growth	Cold soil, cool air temperatures	Avoid planting too early. Try warming the soil with clear or black plastic. Harden plants off prior to transplanting.
Pale green leaves	<p>Lack of nitrogen</p> <p>Low light conditions, cloudy weather</p>	Cool soils contribute to poor nutrient uptake.
Purple leaves	Cold damage, phosphorous deficiency	Low soil temperatures prevent phosphorous uptake by plant roots.
Weak plants, whole plant wilts	<p>Desiccation</p> <p>Water stress: excessive or deficient soil moisture.</p> <p>Seed corn maggots: small, white grubs feed on germinating seeds and chew on young plants below soil level. May introduce rot organisms. Problem on many different types of vegetables.</p> <p>Corn rootworm (cucumber beetle larvae): 1 cm long, whitish body, brown head. Larvae tunnel into roots and stems of corn, bean, cucurbit seedlings.</p>	<p>Leaves become dry and pale in cool wind. Plant in loose, well-drained soil.</p> <p>Do not plant too early or deeply. Slow germination in cold soils encourages problem. Use a floating row cover, other plant protectors or place paper collars around individual plants. Incorporate organic materials in fall rather than spring.</p> <p>Select resistant varieties. Plant extra seed or transplants. Use a floating row cover.</p>



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Seedlings fall over and die	Damping-off disease: roots and lower stems shrivel and darken. Cutworms: variously patterned, night feeding caterpillars that cut plants off at soil line.	Use a sterile, well drained media and allow surface to dry between waterings. Place paper plant collars around individual plants. Early spring tillage may reduce populations.
Plants cut off at soil line	Cutworms (see above) Slugs: night feeders. Slime trails may be seen. Birds, voles, squirrels, rabbits, chipmunks: newly emerged seedlings eaten.	Plants seem to "disappear" (dragged into underground burrows). Most common in April-June. (see above) Hand pick at night. Lay down abrasive barriers (diatomaceous earth, coarse sand, egg, oyster or crab shell). Use a floating row cover, fencing, or hot pepper flakes sprinkled around vulnerable plants.
Leaves and stems chewed	Deer, rabbits, groundhogs, birds, earwigs, slugs	See section above and Chapter 9 - Wildlife Management.
Small holes in leaves	Flea beetles: small, dark shiny beetles that jump when disturbed and produce a shotgun feeding pattern.	Use a floating row cover.
<p>TIPS</p> <p>Pre-germination: Seeds of vegetable crops that are difficult to germinate can be pre-germinated. Simply place seeds between moist paper towels in a plastic bag at 20-25°C. Check daily for signs of germination and plant when roots are extended but before leaves unfold.</p> <p>Hardening off: Vegetable, herb and flower transplants are easily shocked when planted out in early spring weather. Plants that undergo a "hardening off" process can better withstand these changes. Two weeks prior to planting, progressively expose plants to outdoor conditions by placing on a sheltered back porch or patio. Bring plants in at night.</p> <p>Pesticides: Many pesticides can damage tender transplants. Use care when spraying transplants that have been damaged by spider mites or whiteflies.</p>		