

Rotten Tomatoes

One of the greatest joys in summer is to find the first ripe tomato in your garden. That said, one of the greatest disappointments in summer is to discover your first tomato is rotten!

This is blossom end rot—the #1 threat to tomatoes today.

Blossom end rot (BER) is a complicated problem, but it is most often associated with a lack of calcium in the fruits. Without enough calcium in their cell walls, the tomato fruits collapse at their bottoms.

BER is also associated with drought, salinity, high temperature, low humidity and high light intensity (all may occur in North Dakota).

What's the answer? We need to get more calcium to the fruits.

Don't focus on the soil. Most garden soils in North Dakota have plenty of calcium. Home remedies such as adding eggshells and Tums do little good; adding Epsom salts may worsen the situation.

Focus on watering. The uptake of calcium depends on the uptake of water. Irrigate regularly. Avoid extremes of waterlogged and droughty soil. Mulch to maintain consistent levels of moisture in the soil.

Cultivate shallowly. Don't damage the roots of your vines. We need these roots to absorb calcium.

Do not overfertilize. Avoid fertilizers containing ammonium nitrate (including 10-10-10).



A lack of calcium in fruits will cause their bottoms to rot.

Ammonium ions compete with calcium ions for uptake by roots. Calcium nitrate is a better choice. Fertilizers high in potash are also undesirable because potassium ions contend with calcium ions for uptake.

Avoid lush plants. Tomato leaves compete with the fruits for calcium. Lush, leafy vines “steal” the calcium ions before the fruits can get them. As a general rule, don't sidedress a vine until its first fruits set. Pinch suckers.

Grow resistant varieties. Plum- and pear-shaped tomatoes are more sensitive to BER than round varieties. Cherry tomatoes are resistant to it. Among standard tomatoes, Celebrity, Jet Star, Mountain Fresh Plus and other Mountain tomatoes have shown some resistance to BER.

Spray calcium? Researchers debate the usefulness of calcium sprays. If interested, mix 4 tablespoons of calcium nitrate per gallon of water.

Spray fruits, not leaves, two to three times a week. The key time is when tomatoes are dime-sized or smaller.

Let's get busy. Remove any damaged fruits. The first cluster of fruits is most often affected.

Subsequent clusters of fruits are less susceptible. Perhaps this has to do with the vines and fruits being in a better balance; perhaps it has to do with the expanding root network mining more calcium for the plants.

Focus on keeping some moisture in the soil and you'll find good times ahead in the tomato patch.

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Plant Health Care

Fruits and Vegetables



Early Blight

Remove foliage that is infected and/or touching soil. Protect with fungicides chlorothalonil, mancozeb or copper. Avoid overhead irrigation. Avoid splashing soil (the source of the fungus) onto vines. Stake and prune vines.



Tomato Cracking

Caused by rapid growth of fruits, often due to rains after a period of drought. Cracks may become infected. Mulch plants to maintain uniform moisture conditions. Use resistant varieties; 'Juliet' is a crack-resistant cherry type.



Crooked Cucumbers

Misshapen fruits are caused by insufficient pollination due to extreme temps or lack of bee activity. Avoid using persistent insecticides, especially carbaryl, when vines are blooming. Limit sprays to evenings.



Leafhoppers on Beans

Small, green, wedge-shaped pests suck sap and inject toxin in leaves, causing "hopper burn". Leaf edges and tips turn yellow. Plants usually tolerate the damage. Control weeds. Spray with pyrethroids or pyrethrin if needed.



Sap Beetles in Raspberries

These pests seek overripe fruits. Harvest regularly. Avoid dropping berries in the garden where they rot and attract beetles. Insecticides are sprayed only in severe cases; choose a product with a short residual such as spinosad.



Onion Thrips

Thrips feed on stalks, creating silvery blotches. These tiny pests hide within leaf folds. Jet sprays of water into folds can dislodge them. If damage is severe, spray spinosad or pyrethroids down the centers of plants.



Herbicide Injury on Potato

Leaves are distorted. The herbicide came from either spray drift, contaminated manure or lawn clippings. Plants become stunted. Harvested tubers may be cracked and unsafe.



Bumpy Broccoli

Heat stress may cause broccoli heads to develop unevenly. Leaves may grow inside the heads. Keep soil moisture uniform. Plant heat-resistant varieties.



Sow Spinach

This is a great time to sow spinach. It will be ready within 40 days. Spinach seeds struggle to germinate in hot soil; keep the seed bed moist.

Plant Health Care

Landscapes



Lily Leaf Beetle

This pest has been found in the Twin Cities and may be headed our way. The scarlet adult beetle and its larvae will devour true lilies and fritillarias.

Its defense mechanisms are amazing. The larvae camouflage themselves with their excrement (*see small photo*)—gross! When faced with an enemy, the beetles drop to the ground and pretend they are dead. If squeezed, they will squeal!

Conventional insecticides (carbaryl, pyrethroids) and botanical insecticides (neem, spinosad) will kill them. The pest does not harm daylilies, canna lilies or calla lilies.



Herbicide Injury on Spruce

Needles become curled, distorted and may die back. Young needles are most sensitive. Most plants survive. Use herbicides only when needed; autumn is best. Spray when wind is calm; use heavy droplets.



Remove Tree Guards

Tree guards during summer can strangle trunks, reduce growth, promote trunk rot and provide shelter to insect pests. Place guards back on trees after leaves drop in fall.



Fall Webworm

This pest is emerging now. The caterpillars eat leaves but cause minimal damage to overall tree health. Nests may be collected with a forked stick. Young larvae may be killed with *Bacillus thuringiensis*, carbaryl or a pyrethroid.



Lecanium Scale

Insects under shells suck sap, causing thin and dying branches. Crawlers may be hatching now. Spray with carbaryl, pyrethroids or summer oils. Suffocate with dormant oil in early spring.

Credits

Sources:

Liesch, P.J. and L. Johnson. 2020 (revised). Lily leaf beetle. Publ. XHT1274. University of Wisconsin Extension, Madison.

Sideman, B. 2017 (revised). Growing vegetables: Managing blossom end-rot. University of New Hampshire Extension, Durham.

University of Illinois. 1999. Blossom-end rot of tomato. Reports on plant diseases No. 906. University of Illinois, Champaign-Urbana.

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Written by Tom Kalb, who expresses gratitude to the Horticulture/Forestry Team for their contributions to this report.

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EXTENSION

Weather Almanac for July 19–25, 2020

Site	TEMPERATURE ¹				RAINFALL ^{1,4}				GROWING DEGREE DAYS ^{1,5}			
	July 19–25				July 29–25		2020		July 19–25		2020	
	Avg	Norm	Max	Min	Total	Norm	Total	Norm	Total	Norm	Total	Norm
Bottineau	68	69	84	51	1.27	0.54	7.75	9.46	111	114	1174	1128
Bowman	70	71	90	47	0.10	0.48	5.49	8.59	121	126	1118	1117
Carrington	70	70	90	54	1.43	0.71	7.85	10.57	118	126	1268	1229
Crosby	67	68	91	48	0.19	0.57	6.81	8.38	105	108	1072	1027
Dickinson	70	70	91	48	0.30	0.53	5.13	9.46	125	120	1209	1118
Fargo	72	71	93	55	1.94	0.54	10.88	10.42	129	132	1458	1328
Grafton	69	68	92	51	1.12	0.53	14.19	9.75	114	113	1299	1150
Grand Forks	69	69	92	50	1.12	0.63	9.84	9.79	114	119	1329	1184
Hazen	69	72	90	49	0.17	0.51	9.09	9.53	112	126	1219	1259
Hillsboro	70	71	93	51	2.14	0.68	11.03	10.48	117	126	1362	1243
Jamestown	71	71	93	54	1.34	0.67	6.39	10.08	121	126	1257	1218
Langdon	67	66	86	51	0.23	0.68	9.18	10.30	107	101	1129	968
Mandan	71	71	91	51	0.60	0.72	5.23	9.82	125	126	1289	1197
Minot	68	69	89	52	0.04	0.51	6.32	9.48	112	114	1167	1099
Mott	69	71	88	47	0.22	0.40	6.36	8.98	118	126	1183	1176
Rugby	69	68	88	51	0.13	0.75	6.47	10.43	115	110	1188	1134
Wahpeton	71	72	92	52	1.26	0.64	11.66	10.91	127	133	1397	1383
Watford City	70	70	93	52	0.30	0.48	5.90	8.29	121	124	1190	1141
Williston	71	73	98	51	0.21	0.46	4.02	7.89	120	132	1213	1296
Wishek	71	69	93	54	1.87	0.54	6.75	8.94	128	114	1223	1091

DAYLENGTH (July 27, McClusky, ND)²

Sunrise: 6:14 AM Daylength: 15h 9m
 Sunset: 9:23 PM Change since Jul 20: –16m

LONG-TERM OUTLOOKS³

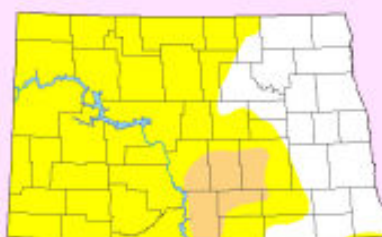
Aug 1–5: Temp.: Above Normal; Precip.: Normal
 Aug 3–9: Temp.: Above Normal; Precip.: Normal

^{1,2,3} Sources: North Dakota Agricultural Weather Network, www.sunrisesunset.com, and National Weather Service, respectively.

^{4,5} Rain data begin April 1. GDDs for garden vegetables are not available. GDD data in this table are for corn, which responds to temperature as most vegetables grown in gardens. Data begin May 1 with base minimum and maximum temperatures of 50 and 86°F, respectively.

Drought Watch

Conditions generally improved across the state last week. Rains in the northwest were especially beneficial, and the percentage of ND being abnormally dry dropped from 72% to 52%. Drought persists in portions of south central ND. Above normal amounts of rain are expected in August. Source: Drought Monitor and Adnan Akyuz, State Climatologist.



July 14, 2020

Abnormally dry: 72% of state.
 Moderate drought: 7% of state.
 Severe drought: 0% of state.



July 21, 2020

Abnormally dry: 52% of state.
 Moderate drought: 10% of state.
 Severe drought: 0% of state.