

YARD & GARDEN REPORT

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Is today the day?

When it comes to planting trees, there is an old proverb that goes: "Today is the *second* best day to plant a tree. The *best* day was *yesterday!*" Don't keep waiting.

Most apples in North Dakota take five or more years before they produce decent crops. That's a long time! Let's not wait any longer.

Pick a sunny site that has good drainage and is sheltered from strong winds. Keep out of frost pockets.

An apple variety will reject its own pollen. Pick at least two *varieties*. Two trees of the same variety will not produce fruit. You need two different varieties (or a crabapple) for fruit set. It is best if trees are within 100 feet of one another.

Look for varieties that are hardy, mature early, and produce quality fruit (*Table 1*). The earliest varieties are generally good for fresh eating but do not store well. Late ripening varieties store better. Some varieties are good for fresh eating; some are better for cooking.

Be aware that apples are susceptible to many diseases and insect pests. Commercial growers spray every two weeks, but we can minimize the need for spraying through proper pruning and good sanitation.

Prune every winter to maximize the amount of sunlight and air movement in the canopy. Rake and remove fallen fruits and leaves in fall. These steps alone will do a great job of minimizing diseases. Traps are available to monitor for pests such as apple maggot and codling moth.



Fig. 1. Today is a good day to start your backyard orchard.

Table 1. Sample of recommended apple varieties; listed in order of ripening.

Zestar!	Best quality among early varieties. Marginally hardy in Zone 3.
Red Baron	Bright fruits. Productive, precocious tree. Tolerates fire blight.
Sweet Sixteen	Spicy-sweet, crisp, aromatic taste. Fresh eating and desserts.
Honeycrisp	Most popular apple in Midwest. Unsurpassed flavor and crispness. Stores well. Marginally hardy in Zone 3.
Haralson	Top cooking apple for decades. Pleasantly tart. Easy to grow.
Wodarz	Yellow fruit with red blush. Very sweet; stores well. From ND.

Stake your tree using a 10-foot-long, 3/4-inch-diameter metal conduit pipe. Pound it two feet into the ground, a couple inches from the trunk of the tree. This will lead to a sturdy tree that will bear fruit earlier.

Place a white plastic tree guard around the trunk to protect it from sunscald and wildlife. Place a ring of shredded bark mulch around the tree to conserve moisture, keep the soil temperatures moderate, and protect the tree from lawn mowers.

Let's get started now. The sooner you plant, the sooner you can enjoy fresh, juicy apples and homemade apple pies!

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Is your garden GMO-free?

If you are not sure, the answer is yes.

You have to make special efforts to grow GMO crops. None of the major seed companies for home gardeners will sell GMO seeds. This includes Burpee, Cook's Garden, Fedco, Gurneys, Harris, Johnny's, Pinetree, Prairie Road, Seed Savers Exchange, and Territorial Seeds.

GMO seeds are sold only to farmers who must sign a contract before they are allowed to receive the seed. This seed cannot be given or resold to anyone else.

GMOs are defined as organisms whose genetic material (DNA) has been modified in a way that does not occur naturally. Genetic engineers cut-and-paste genes from one organism into another, even unrelated species. For example, engineers have cut the blue pigment genes from a pansy and pasted it inside a rose to create a blue rose. This cannot happen in nature.

Among vegetables, GMO varieties include sweet corn varieties that tolerate Roundup. This allows farmers to spray their corn fields with Roundup and kill all the plants (weeds) except the corn. There are sweet corn GMOs that kill caterpillars, and zucchini and yellow summer squash GMOs that protect against viruses. Other GMO "vegetables" include alfalfa and soy (used for sprouts), and sugar beets. Potato and tomato GMOs were discontinued over 13 years ago due to consumer dissatisfaction.

There are pros and cons to GMOs. BT-corn can be used to illustrate this point. *Bacillus thuringiensis* (BT) is a bacterium that kills caterpillars such as corn borers and earworms. BT is natural and is widely used by organic gardeners. It is considered safe to birds,



Fig. 2. Your garden is likely GMO-free and your corn is susceptible to earworms.

fish, mammals, humans, and most other types of insects in nature.

BT is a great tool but it has limitations. The caterpillars must be exposed to and eat BT to die. Once the pests are inside the corn stalk and ear, they are shielded from exposure to BT. Due to this limitation many farmers rely on more toxic and persistent chemicals to kill the pests.

Genetic engineers have solved this problem. They cut the gene that produces BT and pasted it into the genes of corn. The BT is now inside every cell of the corn and the caterpillars die when they nibble on the plant. The end results are sturdier stalks and worm-free corn—but this was done in a manner that is impossible in nature.

Proponents of this BT technology will note the marketability of worm-free corn, reduced use of toxic pesticides on the crop, lower production costs to farmers, lower consumer costs, and minimal measured impact on the environment (extensive testing must be done to prove minimal environmental impacts before a GMO can be sold). Opponents fear the unknown long-term health effects of eating this corn and the instability created in nature from the introduction of laboratory-created

crops. The debate rages on.

It is important to distinguish between GMOs and hybrids. GMOs cannot occur in nature. Hybrids can.

Hybrids are the crossing of two different but *closely related* organisms, for example two types of tomatoes. This type of crossing happens by bees and wind all the time in nature.

Let's say you have two varieties of tomatoes. One tastes great but is susceptible to disease. The other variety tastes bland but resists diseases. Breeders will cross the two together in the hope of creating a hybrid variety that consistently displays the best of both parents: great taste and outstanding resistance to disease. These are the types of varieties we grow in our gardens.

This type of breeding is not much different than what breeders do with race horses, purebred dogs or livestock to create superior offspring. This is controlled but natural breeding.

The GMO controversy is complicated and this article is not meant to be definitive. There are many pros and cons of GMOs. For better or worse, unless you signed a contract to grow GMOs the vegetables you grow in your garden are GMO-free.

Support your tomatoes

The sun is warm ... the garden seeds are sprouting ... and tomato plants are smiling—no more frost!

It is time to support your tomatoes. Let's keep the vines and fruits off the soil. We will have healthier vines and better quality fruits.

The **traditional stake** maximizes sunlight to the plant and leads to earlier yields. Bamboo poles or 1-inch square (or wider) stakes are used, spacing plants about 24 inches apart. Stakes are placed about 3 inches from the plants. Sisal twine or strips of cloth are used to secure the vines to the stakes.

Caging tomatoes will lead to high yields of quality fruits (Fig. 4). Get the strongest cages you can find. Better yet, make your own cages using 6-inch-mesh concrete reinforcing wire. Cut off 6.5 feet and bend it into a circle. This will make a cage 2 feet across and 5 feet high. Remove the bottom horizontal ring and poke the loose wires into the soil. Cages may be cut in half for determinate varieties, which grow shorter.

Many large-scale growers use the **string-weave system** (Fig. 3). Sturdy metal stakes are pounded at the ends of the row. Wooden or metal stakes are placed between every other plant. Weather-resistant sisal or nylon twine is tied at the end stake. The twine is then strung down to the next stake in the row and looped around the stake, keeping the twine tight. Stringing continues to the next stake, looped around, and so on to the end of the row. Then it is looped around the end stake and run down the other side of the row. The first twine is placed about 12 inches off the ground and new rows of twine are placed every 8 inches up the stakes as the vines grow.



Fig. 3. The string-weave trellis is an easy way to keep tomatoes off the soil.

Pruning strategies depend on the type of tomato variety you planted and the support system used. *Determinate* varieties have bushy vines that stop growing when fruits are set. Pruning is not needed, but suckers may be removed at the base of plants. Yields are early and concentrated—perfect for our short growing season. Examples of determinate varieties are Celebrity, Mountain Fresh Plus, Rutgers and Roma.

The vines of *indeterminate* varieties keep growing until frost. They must be trellised and pruned. Examples are Early Girl, Big Beef, most large-fruited heirlooms and most cherry tomatoes.

Pruning of indeterminates promotes earlier yields, larger fruits and healthier vines. Prune when vines are dry to prevent diseases. Pinch off suckers, located at leaf axils, when 2 to 4 inches tall (Fig. 5).

Growers who support each plant with its own stake remove all suckers. Growers using cages or string-weave systems usually prune each plant so it has two stems. The first stem is the main vine coming from the ground. The second stem starts as the sucker beneath the first cluster of fruit (Fig. 6). Other suckers are removed through the summer.

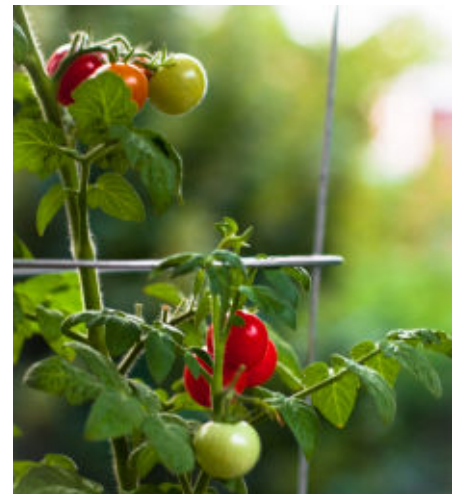


Fig. 4. Caging tomatoes leads to high yields of quality fruits.



Figs. 5, 6. Close-up of young sucker. The sucker below the first fruit cluster develops into a strong vine.

Survey of problems found in North Dakota yards and gardens:

TREES AND SHRUBS



Fig. 7. Ash anthracnose

Blotches appear on leaf margins; leaves curl and drop. Shaded areas in canopy are most affected. Rake fallen leaves. Fertilize if needed.



Fig. 8. Winter injury

Use a knife or thumbnail to scratch the young bark. If you see green tissue (shown at right), there is life in the tree. Be patient and hope for the emergence of new buds.



Fig. 9. Frost injury

Leaves/needles become shriveled w/ browned tissue. Branch tips are most sensitive (as shown). Established plants usually survive and may send out new sprouts.

TREES AND SHRUBS



Fig. 10. Chlorosis on maple

Leaves yellow, often with green veins. Associated with high pH. Spray foliage or use a root feeder to provide a soluble fertilizer containing iron.



Fig. 11. Herbicide injury

Leaves become elongated, curled or cupped. Most woody plants survive. In the future, use herbicides only when needed. Spray when wind is minimal; use heavy droplets; avoid hot days.



Fig. 12. Galls on silver maple

Red bumps are caused by mites feeding on leaves earlier this spring. The mites are gone; thus, pesticides are not useful now. These galls cause very little stress to the tree.

LAWNS



Fig. 13. Thin lawns

If you did not fertilize earlier this spring, now is a great time. The turf is actively growing and we want it to be healthy going into summer.



Fig. 14. Artemisia

Also called wormwood, this noxious perennial has silver foliage. Spot spray with 2,4-D, dicamba or glyphosate. Fall applications are most effective.



Fig. 15. Violets

Note the heart-shaped leaves and purple flowers. Spray with triclopyr when blooming or in fall. Spot sprays of glyphosate are also effective. Repeated sprays may be needed.

More problems found in North Dakota yards and gardens:

VEGETABLES



Fig. 16. Damping off

Seeds of melons, cucumber and supersweet corn are very sensitive to cool soil temps. Poor stands may occur and replanting may be needed.



Fig. 17. Herbicide injury

Pesticide drift or contaminated manure may cause extreme curling of foliage. Plants will be stunted and vegetables may be contaminated. If caused by drift, replanting is recommended.



Fig. 18. Cutworms

Young stems chewed near soil surface. Spray carbaryl (Sevin) or cyfluthrin (Tempo) during night at base of plants. Cultivate garden and remove plant debris. Place cardboard or metal collars around plants to protect stems.

FRUITS AND RHUBARB



Fig. 19. Fire blight

Prime infection time is while blooming. Branch tips die back, often showing a "shepherd's crook." Prune out dying tips. Sterilize pruners between cuts. Delay any major pruning until winter.



Fig. 20. Cankers

Fungi disrupt flow of water and cause dieback. No sprays are useful since the disease is inside the wood. Prune infected branches/trunk going at least 6 inches into healthy tissue.



Fig. 21. Frost injury

Rhubarb can tolerate a light frost. The stalks are edible if they are firm and erect. Frost-damaged stalks will be soft or mushy. Injured stalks may be toxic and should be snapped off.

MISCELLANEOUS

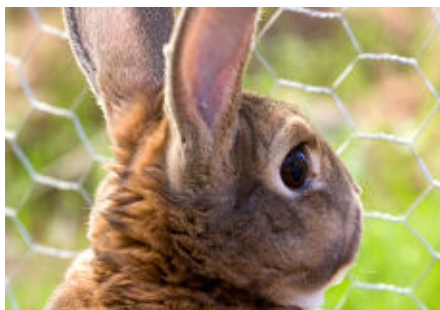
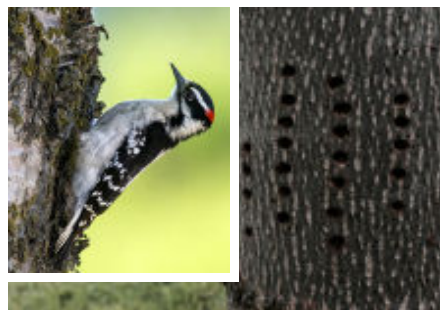


Fig. 22. Rabbits

Fencing is recommended. Make it 3 feet tall (4 feet for jackrabbits) and bury 6 inches deep. Mesh should be 1.5 inches or less. Repellents, guard dog, and live trapping may help.



Figs. 23, 24. Woodpeckers

Note the regularly spaced holes around the trunk. Wrap damaged areas with burlap or hardware cloth to deter them. Pinwheels or pie tins may repel them.



Fig. 25. Mushrooms

Mushrooms are decomposing organic matter (typically tree roots, stump or lumber). It's natural and may continue for years. Leave mushrooms alone or rake. Do not eat. No spray is useful.

Weather Almanac for May 29–June 4, 2015

Site	TEMPERATURE				RAINFALL				GROWING DEGREE DAYS ^{1,2}			
	Week				Week		2015		Week		2015	
	Avg	Norm	Max	Min	Total	Norm	Total	Norm	Total	Norm	Total	Norm
Bottineau	54	59	83	31	0.51	0.72	4.05	5.66	54	66	271	310
Bowman	57	58	85	33	0.40	0.68	3.69	5.99	63	60	231	276
Carrington	55	60	79	31	0.03	0.84	4.99	6.22	56	69	279	329
Crosby	56	57	86	39	2.44	0.60	4.17	4.78	57	61	266	279
Dickinson	56	58	85	36	0.53	0.73	3.28	5.67	57	65	242	299
Fargo	59	62	80	34	0.41	0.78	8.52	7.25	71	77	319	353
Grafton	55	63	76	32	0.89	0.79	7.26	6.27	53	81	284	349
Grand Forks	57	60	77	33	0.58	0.72	4.77	6.13	64	70	313	328
Hazen	55	61	84	32	3.13	0.71	6.29	5.85	57	74	273	361
Hillsboro	58	61	78	33	0.32	0.75	4.83	6.77	65	70	303	329
Jamestown	57	60	80	32	0.04	0.73	6.12	6.04	63	68	296	316
Langdon	53	57	75	26	0.99	0.78	4.78	5.67	46	58	248	255
Mandan	56	60	83	33	0.96	0.70	5.93	5.63	63	66	294	303
Minot	55	59	84	33	0.50	0.74	4.09	6.42	54	61	259	279
Mott	57	59	83	33	0.27	0.57	5.27	6.63	65	65	260	304
Rugby	54	59	81	32	0.34	0.70	3.28	6.51	49	69	265	322
Wahpeton	59	64	80	35	0.14	0.68	6.58	7.30	69	83	318	379
Watford City	57	59	90	38	1.11	0.65	2.98	4.95	58	66	268	307
Williston	58	61	89	41	1.89	0.60	4.06	4.74	58	73	278	356
Wishek	55	58	81	31	0.08	0.74	7.15	7.44	55	60	254	280

DAYLENGTH (June 4, McClusky, center of ND)³

Sunrise: 5:47 AM | Daylength: 15h 45m
 Sunset: 9:33 PM | Change since May 28: +11m

LONG-TERM OUTLOOKS⁴

6–10 Day: Temp: Normal; Precipitation: Normal
 8–14 Day: Temp: Below Normal; Precipitation: Normal

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.

^{2,3,4} Sources: North Dakota Agricultural Weather Network, www.sunrisesunset.com, and National Weather Service, respectively.

Credits

Sources:

- Bessin, R. 2010. BT-corn: What it is and how it works. www2.ca.uky.edu/entomology/entfacts/ef130.asp. Univ. of Kentucky: Lexington.
- Cox, Bonnie. 2011. Training systems and pruning in organic tomato production. Oregon Tilth, Corvallis.
- Hahn, J. and S. Wold-Burkness. 2008. Cutworms in home gardens. Univ. of Minnesota: Twin Cities.
- McKnight, C. 2014. List of vegetables that are genetically modified. www.livestrong.com/article/428500-list-of-vegetables-that-are-genetically-modified/. Accessed 6/6/2015.
- World Health Organization. 2015. Food, Genetically modified. www.who.int/topics/food_genetically_modified/en/. Accessed 6/6/2015.

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