North Dakota State University

NDSU EXTENSION SERVICE

YARD & GARDEN REPORT

July 29, 2016 Vol. 4, No. 5

Grow Your Own Smoothie!

Do you want to live a long and healthy life? Of course, we all do.

Then eat more vegetables and fruits.

The Harvard School of Public Health reports "a diet rich in vegetables and fruits can lower blood pressure, reduce risk of heart disease and stroke, prevent some types of cancer, lower risk of eye and digestive problems, and have a positive effect upon blood sugar which can help keep appetite in check."

Vegetables and fruits are **essential**—not optional—parts of a healthy diet.

And yet, the Centers for Disease Control report 75 percent of adults and 92 percent of adolescents in ND fail to eat recommended levels of vegetables and fruits.

One way to increase our vegetable and fruit consumption is to drink them. Why not grow your own smoothie? Make it a family project this fall! Smoothies are trendy now. Even teens will drink them!

Now is a great time of year to grow one of the most popular vegetables for smoothies: spinach.

How about a Green Monster Smoothie? It's a mixture of spinach, strawberries and orange concentrate. There are Lime Smoothies and Pineapple Mango Smoothies that use spinach, too. Kids will love them!

All of these recipes are available at www.ag.ndsu.edu/food/recipes. Type in "spinach" and you'll find lots of recipes. You can print the recipes onto 4" x 6" index cards.

Figs. 1–3. Now is a great time to sow spinach for making delicious smoothies. Cool temps in fall will create mild and crispy turnips and radishes.

Now is a good time to sow spinach, turnips and other greens. In a few weeks we can sow radish.

It's time to sow a smoothie! In a few weeks, we can all raise our glasses together and wish each other a healthy and wonderful life! Cheers!

INSIDE THIS ISSUE

Safe and Natural Insecticides

What do bugs and gardeners share in common? We both love to eat vegetables. The harvest has begun and pests are threatening our crops.

When we see bugs in the garden, our first inclination is to apply an insecticide. This makes sense, but nobody enjoys eating veggies treated with *poisonous chemicals.*

It's good to know that insecticides are now available that are effective, natural and practically non-toxic.

Organic growers have used *Bacillus thuringiensis* var. *kurstaki* for decades (tradenames include Dipel and Thuricide). It kills harmful caterpillars including earworms and cabbage worms but does not harm other types of insects. For example, it will not harm honey bees and lady beetles. That's great!

Neem oil, derived from a tree in Asia, has been used to control insect pests for thousands of years. Neem oil controls almost all insect pests in the garden (*Table 1*). Its chemical azadirachtin repels insects and reduces their ability to feed. It disrupts the hormones of insects, preventing them from reproducing.

Spinosad was discovered from soil in a Caribbean rum distillery. It is widely used today to control Colorado potato beetle (*Fig. 4*). Spinosad can kill on contact but works best when it is eaten by an insect pest.

If you are looking for a quick kill, pyrethrin is an option. Derived from chrysanthemums, it acts as a nerve poison. Pyrethrin is effective against many insect pests (*Table 1*).

All of these natural products have **low toxicities** to humans (*Table 1*).

These products have **very short lives in the environment**. On the plus side, this reduces the likelihood of killing beneficial insects and allows applications the day before harvest in some cases. On the negative side, they may require repeated applications to kill emerging pests.

Fig. 4. Colorado potato beetle larvae and other pests are gorging themselves on our crops. Safe and natural insecticides can protect our harvest.

Most natural products act slowly and are most effective when pests are young. This requires more skill and attention on our part. We need to identify pests and spray plants promptly.

The bottom line is we have natural choices to fight insect pests in our garden. Read pesticide labels carefully and follow directions. Used properly, we can protect our crops and enjoy a safe, abundant harvest.

Table 1. Effectiveness and toxicity of natural pesticides and synthetic carbaryl in home vegetable production.

Ingredient[1]	Aphids	Caterpillars[2]	Colo. potato beetle	Cucumber beetle	Cutworm	Flea beetle	Leafhoppers	Thrips	Whitefly	Oral LD_{50}[3]	Acute oral toxicity[4]	Days from use to harvest
B. thuringiensis		●			●					>5000	Very low	<1
Azadirachtin	●	●	●	●	●	●	●	●	●	>5000	Very low	<1
Spinosad		●	●			●		●		>5000	Very low	1–3
Pyrethrin	●	●	●	●		●	●	●	●	>2000	Slightly	<1
Carbaryl		●	●	●	●	●	●	●		590	Slightly	2–14

[1] Data from specimen labels and Material Safety Data Sheets for Dipel Dust, Azaguard, Entrust, PyGanic and Sevin, respectively.

[2] Armyworm, various cabbage worms, corn earworm, and leafroller.

[3] Amount of pesticide (mg) per body weight (kg) required to kill 50 percent of rats. Lower values indicate higher toxicities.

[4] Based on US EPA Acute Toxicity Ratings system: Highly (<50), Moderately (50–500), Slightly (500–5000), Very low to almost nontoxic (>5000).

Portions of this article were originally published in 2014.

Survey of problems found in North Dakota yards and gardens:

TREES AND SHRUBS

Wetwood

Bacteria feed inside cottonwood, elm, willow and other trees. The slime damages bark and may attract insects. Wood is slightly weakened and growth is slowed. No treatment. Reduce other stresses and trees may adapt to it.

Chlorosis on silver maple

Leaves yellow, often with green veins. Related to high pH and unavailability of iron. Foliar sprays, trunk implants and injections, and soil applications of iron chelates are used. Get soil tested to assess pH and long-term strategy.

Heat scorch

Sweltering temps can cause leaves to scorch along edges. Newly planted trees are especially sensitive. Irrigate deeply. Rock mulches generate heat and should be avoided; wood mulches are superior for plant health.

Ash flower gall

“Tumors” develop after mites bite into male flowers in spring. These galls may turn brown and persist through winter. These galls are harmless; no treatments are needed.

Herbicide injury

Leaves become elongated, curled or cupped (basswood is shown). Most woody plants survive from indirect exposure to drift or leaching. Severe exposure may cause death.

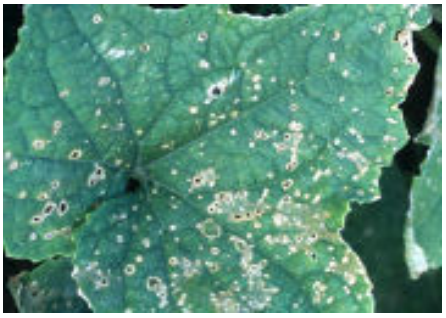
Cottonwood leaf beetle

Beetles and larvae skeletonize leaves of cottonwood, poplars and willows. Established trees tolerate feeding and no treatment is needed. New trees can be sprayed with acephate or carbaryl.

VEGETABLES

Blossom end rot

Caused by a deficiency of calcium. Keep soil evenly moist and do not damage roots when cultivating. Mulch vines. As root system develops it finds calcium ions. Future fruits are fine.



Anthracnose on cukes

Tan lesions develop and may drop out, creating holes in leaves. Avoid overhead sprinkling. Spray fungicides (chlorothalonil, mancozeb or copper). Sow disease-resistant hybrids.

Potato blooms and berries

It is natural for potato vines to produce flowers and seedpods. These seedpods are toxic. Remove or ignore.

Survey of problems found in North Dakota yards and gardens:

FRUITS

Spotted wing drosophila

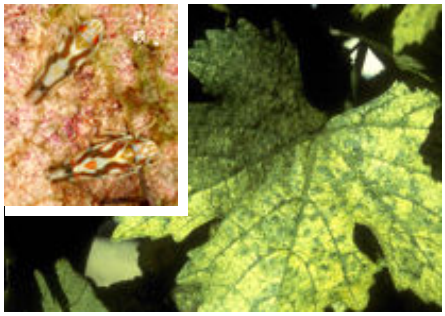
Tiny white maggots appear in fruits; often detected when refrigerated. Set out traps with apple vinegar to monitor. Spray if needed. Harvest regularly. Keep orchard clean of weeds.

Rust on Juneberry

Berries develop “spikes” that emit spores. Disease comes from juniper. Prune to reduce shade and humidity in canopy. Avoid planting near junipers. Use fungicides when shrubs set fruits.

Chokecherry gall midge

Tiny fly lays eggs in flowers, which hatch into larvae feeding inside fruit. Infested fruits become swollen and hollow. Pick off damaged fruit in early summer. No pesticides recommended.



Leafhoppers on grape

Small (1/8-inch) wedge-shaped pests pierce and suck juices, creating yellow spots. Leaves may turn brown; in such cases, control pests with carbaryl or pyrethrin. Keep vineyard floor clean.

Powdery mildew on grape

Gray powder develops on fruits and foliage. ‘Valiant’, a leading variety, is susceptible. Remove infested clusters. Sprays of sulfur will prevent spread. Prune vines in winter to increase air circulation.

Spur blight on raspberry

Purplish cankers develop on lower area of raspberry canes. Prune and remove infected canes in dry weather. Spray lime sulfur when leaf bud tips appear in early spring. Prune regularly.

FLOWERS

Aster yellows

Leaves turn yellow, small and narrow. Flowers are distorted. Transmitted by leafhoppers. Affects marigold, petunia, coneflower and many more flowers. Remove plants. Cultivate weeds to reduce leafhoppers.

Red spot (measles) on peony

Red spots and blotches appear in late summer. Avoid overhead sprinkling. Remove all aboveground foliage this fall. Mancozeb or other fungicide may be sprayed when plants are 4–6 inches tall next spring.

Rust on hollyhock

Orange, powdery pustules develop on underside of leaves. Remove infected leaves/stalks. Avoid getting foliage wet. Clean debris in fall. Scout for rust in spring. If found, apply fungicides (chlorothalonil, sulfur) every 10 days.

Weather Almanac for July 13–27, 2016

	TEMPERATURE July 13–July 27				RAINFALL July 13–27		RAINFALL 2016		GROWING DEGREE DAYS[1,2] July 13–27		GROWING DEGREE DAYS[1,2] 2016	
Site	Avg	Norm	Max	Min	Total	Norm	Total	Norm	Total	Norm	Total	Norm
Bottineau	67	69	89	52	1.08	1.18	12.28	11.52	245	262	1195	1166
Bowman	73	71	103	45	0.97	1.03	7.82	10.61	286	292	1362	1159
Carrington	70	70	93	50	1.56	1.55	10.16	12.56	282	291	1272	1271
Crosby	68	67	88	50	0.69	1.29	11.21	9.98	251	247	1191	1063
Dickinson	72	70	100	48	0.65	1.18	8.06	11.18	289	278	1368	1158
Fargo	73	71	92	53	1.01	1.24	11.51	13.21	312	308	1498	1372
Grafton	70	68	87	54	3.91	1.18	20.52	12.06	285	259	1320	1188
Grand Forks	70	69	88	53	3.04	1.42	13.38	12.03	287	271	1358	1222
Hazen	71	72	98	46	2.10	1.13	11.69	11.15	276	294	1345	1301
Hillsboro	71	71	89	52	1.01	1.53	9.99	12.91	294	290	1394	1285
Jamestown	70	71	91	51	1.70	1.52	13.70	12.07	281	293	1328	1260
Langdon	67	66	87	54	3.54	1.49	16.24	11.99	251	231	1134	1002
Mandan	72	71	97	51	0.55	1.55	12.93	11.44	298	295	1364	1240
Minot	69	69	93	52	2.31	1.13	10.68	11.77	264	266	1249	1137
Mott	71	71	100	46	1.36	0.92	9.80	11.18	278	293	1308	1218
Rugby	69	68	93	52	1.33	1.62	10.81	12.64	263	256	1273	1172
Wahpeton	72	72	91	50	0.80	1.46	10.84	13.10	298	310	1458	1428
Watford City	72	70	98	47	0.89	1.13	7.18	9.96	288	285	1351	1183
Williston	71	72	93	50	1.01	1.08	8.39	9.39	284	308	1343	1340
Wishek	70	69	92	50	1.16	1.45	14.66	13.38	279	266	1247	1129

DAYLENGTH (July 28, McClusky, center of ND)[3]

Sunrise: 6:15 AM | *Daylength:* 15h 7m

Sunset: 9:22 PM | *Change since July 12:* –33m

LONG-TERM OUTLOOKS[4]

Aug 03–07: Temp.: Normal; *Precip.:* Below Normal

Aug 05–11: Temp.: Above Normal; *Precip.:* 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

Centers for Disease Control. 2012. North Dakota: State nutrition, physical activity, and obesity profile.

Harvard T.H. Chan School of Public Health. 2016. The nutrition source: Vegetables and fruits. Harvard Univ.: Boston.

Johnny's Selected Seeds. 2016 Catalog. Albion, Maine.

Photos were made available under Creative Commons licenses specified by the photographers: 1. Tetiana Vetsenko; 2. Neil Hall, www.flickr.com/photos/byneilhall/8735120272/; 3. Mo, www.flickr.com/photos/april-mo/12972526844/; 4. imarsman, www.flickr.com/photos/imarsman/20135174/; **TREES and SHRUBS:** Joseph O'Brien, USDA Forest Service, Bugwood.org; Tom Kalb, NDSU; Karla Ryan, NDSU; Tom Kalb, NDSU; Anitha Chirumamilla, NDSU; Sean McCann, www.flickr.com/photos/deadmike/185013208; **VEGETABLES:** Mark, www.flickr.com/photos/35387910@N04/6011378943/; Gerald Holmes, California Poly. St. Univ. at San Luis Obispo, Bugwood.org; Irene Graves, NDSU; Andreas, www.flickr.com/photos/124330160/771727580/; **FRUITS:** Hannah Burrack, North Carolina St. Univ., Bugwood.org; Jim Ochterski, www.flickr.com/photos/43200296@N08/12506980834/; Whitney Cranshaw, Colorado St. Univ.; Lynette, www.flickr.com/photos/25980517@N03/5430688357; Eugene E. Nelson, Bugwood.org.; Julie Beale, Univ. of Kentucky, Bugwood.org; Scott Knoke, NDSU; **FLOWERS:** Whitney Cranshaw, Colorado St. Univ., Bugwood.org; Michigan State University Diagnostic Services. Molly Giesbrecht, Texas A&M AgrilLife Extension Service, Bugwood.org.

Written by Tom Kalb, who expresses gratitude to the NDSU educators who contributed to this report: Lindy Berg, Anitha Chirumamilla, Kelsie Egeland, Sheldon Gerhardt, Megan Griggs, Randy Grueneich, Alicia Harstad, Angie Johnson, Breana Kiser, Scott Knoke, Esther McGinnis, Penny Nester, Karla Ryan, Steve Sagaser, Rick Schmidt, Kelsey Sheldon, Nicole Wardner, Todd Weinmann and Joe Zeleznik.