Upcoming Webinars

• March 21 – Developing and Selling Food Products That are Safe and Tasty
  – Cliff Hall, Professor, Food Science, NDSU

• March 28 – Weed Management and Soil Fertility for Organic Vegetable Production
  – Greta Gramig, Professor, Plant Sciences, NDSU
FSMA Produce Safety Grower Training Workshop

– April 5, 8 am to 5 pm

– Held at ND Farmers Union in Jamestown, ND

– Trainers: Connie Landis-Fisk; Holly Mawby; Julie Garden-Robinson

– Register online on the NDSU “field to fork” website
  • www.ag.ndsu.edu/fieldtofork
  • $25, including meals and snacks
Zoom Controls

Mute/unmute
Open chat box

Question/Answer Controls
Chat box
Please Complete the Survey

• Please complete the short online survey that will be emailed to you after today’s webinar. It will take just a couple minutes!

• Be sure to sign up for an opportunity to win a prize in the drawing. After submitting the survey, a form to fill out with your name/address will appear.

• Acknowledgement: This project was supported by the U.S. Department of Agriculture’s (USDA) Agricultural Marketing Service through grant 14-SCBGP-ND-0038.
The Health Benefits of Gardening

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NDSU Extension Service
Julie.gardenrobinson@ndsu.edu
Outline

• Mental health
• Physical health
• Social health
MENTAL HEALTH BENEFITS
History

• 18<sup>th</sup> Century - Benjamin Rush
  • First doctor to document how gardening benefitted his mentally ill patients
  • Dubbed “Horticulture Therapy”
History

• Thomas Kirkbride
  • Founder of American Psychiatric Association
  • Working in a garden setting is “one of the best remedies; it is as useful in improving the health of the insane, as in maintaining that of the sane”
Mood-Boosting

• 30 minutes of gardening people reported better mood than after 30 minutes of reading

• Lower levels of the stress hormone *cortisol* in the blood
Mood-Boosting

• Flowers around the home and workplace reduce perceived stress levels
  – Natural aesthetic beauty is soothing
  – Feel more relaxed, secure, and happy
Learning

- Improves focus and concentration
- Enhances absorption and retention of information
- Presence of plants reduces tendency toward distraction
Attention Deficit Disorder

• Learning in a natural environment helps children engage more in the classroom
  – Alter the learning environment to reduce distraction
  – Improves focus and concentration on task at hand
Reduce Depression

- Mycobacterium vaccae
  - Bacteria in soil
  - Linked with increased serotonin production in the brain
    - Serotonin = mood-boosting neurotransmitter
Post-Traumatic Stress Disorder

- Gardening promotes reduction of stress hormones
  - Used frequently for veterans as therapeutic practice at VA Hospitals
    - Horticulture therapy implemented into hospital settings
Concentration and Memory

• Tasks performed better under calming influence of nature
  – Greater accuracy and higher quality result
  – Being outside can improve memory and attention span by 20%
Dementia

• Gardening reduces risk
  – Requirement to think, learn, and use creativity to keep the mind active

  – Serves as a protective measure against degenerative diseases
Dementia

– Study following people in their 60s and 70s for 16 years

• Those who gardened had a 36% lower risk of dementia than non-gardeners with other health factors taken into account
Dementia

• Helps manage symptoms
  – Eases aggression related to dementia
  – Slows progression by keeping the mind active
PHYSICAL HEALTH BENEFITS
Healthy Eating

• Growing fresh produce makes it more likely for you to eat it
  – Gardeners show higher nutrition knowledge
  – More likely to continue healthy eating habits throughout their lives
Healthy Eating

• Increased intake of fruits and vegetables
  • Good sources of fiber, vitamins, minerals
    • Reduces risk of many nutrition-related diseases
  • Boosts immunity
What/how much fruits and vegetables did you eat yesterday?

• You can include dry edible beans as a vegetable.
In general, 1 cup of raw or cooked vegetables or vegetable juice, or 2 cups of raw leafy greens can be considered as 1 cup from the vegetable group.
Nutrition: Take a Cue from Nature!
Raspberries are part of the rose family, and numerous varieties are available. The low-calorie fruits add flavor, color and nutrition to your meals.

Preservation
Raspberries can be frozen, drained canned or dehydrated.

Freezing: Raspberries can be frozen in a variety of ways:
- **Unsweetened juice**: Place berries on a tray and place in the freezer. After freezing, place in freezer-safe containers. Use in recipes: 1% of juice. Freeze for 6-12 months.
- **Juice**: Mix berries with sugar, then pour into containers. Place in freezer for up to 1 year. Use in recipes: 1% of juice. Freeze for 1 year.
- **Cooked raspberries**: Place berries in a saucepan with water, sugar and lemon juice. Simmer until the skins burst, then pour into containers. Place in freezer for up to 1 year. Use in recipes: 1% of juice. Freeze for 1 year.

Storage: Store in the refrigerator at 40°F. To use the berries within two weeks after purchase or picking is best. Raspberries will last up to two weeks after purchase or picking.

Without added sugar, 1 cup of raspberries has 34 calories, 1 gram of fat, 1 gram of protein, 11 grams of carbohydrates, 5 grams of fiber and 8 grams of sugar. Raspberries also contain vitamin C.

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Raspberries

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Leafy Greens!

Leafy greens include lettuce, spinach, Swiss chard, kale and arugula. They are easy to grow and purchase, and provide a wide variety of nutrients.

Preservation
Leafy greens are easy to grow for beginning gardeners. They require more care in the fall, as they become more tender in the summer heat. Leafy greens should be picked regularly to ensure fresh leaves for consumption. Leafy greens should be picked before flowering. Leafy greens should be picked regularly to ensure fresh leaves for consumption.

Freezing: Leafy greens can be frozen in a variety of ways:
- **Unsweetened juice**: Place berries on a tray and place in the freezer. After freezing, place in freezer-safe containers. Use in recipes: 1% of juice. Freeze for 6-12 months.
- **Cooked leafy greens**: Place leafy greens in a saucepan with water, sugar and lemon juice. Simmer until the skins burst, then pour into containers. Place in freezer for up to 1 year. Use in recipes: 1% of juice. Freeze for 1 year.

Storage: Store in the refrigerator at 40°F. To use the berries within two weeks after purchase or picking is best. Raspberries will last up to two weeks after purchase or picking.

Without added sugar, 1 cup of spinach has 34 calories, 1 gram of fat, 1 gram of protein, 11 grams of carbohydrates, 5 grams of fiber and 8 grams of sugar. Raspberries also contain vitamin C.

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Tomatoes!

Biologically, a tomato is classified as a fruit because it has seeds and is derived from flower tissue. Nutritional consider tomatoes to be “vegetables” on the menu. Tomatoes can be enjoyed, cooked or eaten raw, so we can enjoy them every day.

Preservation
Canning: For safety, tomatoes must have an acidic ingredient (such as bottled sauce or lime juice) added, and they must be processed according to current food standards. Canning tomatoes involves heating the tomatoes in a sealed can to 240°F for at least 30 minutes or 15 minutes at a temperature of 200°F for at least 20 minutes. To ensure proper vacuum in the can, place it in a pressure canner. If a pressure canner is not available, use a water bath method, which involves placing the tomatoes in a pot of boiling water for 20 minutes, then placing it in a pot of cold water for 20 minutes, and removing it from the pot. As soon as the tomatoes are cool, store the can in a cool, dark place.

Storage: Store unopened cans in the refrigerator. Opened cans should be stored in the refrigerator or covered and refrigerated.

Without added sugar, 1 cup of tomatoes has 34 calories, 1 gram of fat, 1 gram of protein, 11 grams of carbohydrates, 5 grams of fiber and 8 grams of sugar. Raspberries also contain vitamin C.

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Represent the different food groups needed.

- Orange = Grains
- Green = Vegetables
- Red = Fruits
- Blue = Dairy
- Purple = Protein foods
Recommendations are based on Age and Gender

Recommendations are in cups instead of servings.
# Daily Vegetable Recommendations

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19-30 years old</td>
<td>3 cups</td>
</tr>
<tr>
<td></td>
<td>31-50 years old</td>
<td>31-50 years old</td>
</tr>
<tr>
<td></td>
<td>51 + years old</td>
<td>51 + years old</td>
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<tr>
<td></td>
<td>2 ½ cups</td>
<td>2 ½ cups</td>
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<td></td>
<td>2 ½ cups</td>
<td>2 cups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 ½ cups</td>
</tr>
</tbody>
</table>
## Daily Fruit Recommendations

<table>
<thead>
<tr>
<th></th>
<th>19-30 years old</th>
<th>31-50 years old</th>
<th>51 + years old</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 cups</td>
<td>1 ½ cups</td>
<td>1 ½ cups</td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 cups</td>
<td>2 cups</td>
<td>2 cups</td>
</tr>
</tbody>
</table>
Healthy Eating

• Gardeners eat one more fruit or vegetable serving per day than non-gardeners
  • Study of cancer survivors for one year
    • Half enrolled in a gardening program, half put on the waitlist for the gardening program
Learn to Preserve Food from Extension

Food Preservation
Food preservation guidelines have changed through the years. Recipes passed down from generations or found in old church cookbooks often contain outdated and unsafe procedures. The NDSU Extension Service is your trusted source for accurate and safe food preservation guidelines. Whether you are canning salsa or making smoked sausage, we’ll provide you with everything you need to know.
Immunity

• *Mycobacterium vaccae* (soil bacteria)
  • High exposure for gardeners
  • Stimulates human immune system
Chemical Intake

• Gardening provides personal control over pesticide use
  • Know if/how much used
  • Don’t know with store-bought produce
Improves Healing

• Nature helps bodies to heal better
  • Hospital patients with a view of trees vs. a brick wall
    • Significantly shorter hospital stays
    • Fewer complaints
    • Took less pain medication
Improves Healing

- Horticulture therapy
  - Patients tending to and nurturing plants
- Gardening significantly reduces recovery time after medical procedures
Medicinal Properties

• Natural herbal remedies and holistic treatments
  – Opportunities for additional scientific studies of possible medicinal values of plants
    • Cultivate knowledge of the natural world and its uses in treating disease and infection
Exposure to Sunlight

- Benefits bone and immune health
  - Increases vitamin D synthesis
  - Increases calcium absorption
Physical Activity

- Positive correlation between having a park in the neighborhood and physical activity levels
  - Inexpensive recreational service
  - Reduces health problems and associated medical costs community-wide
Muscular Endurance

• Bending, stretching, load-bearing
  • Improve muscle tone
  • Prevent osteoporosis
Cardiovascular Health

- Aerobic exercise
  - Pulling weeds
  - Reaching for plants and tools
  - Walking around
Weight Management (Gain or Loss)

• After a year
  • Cancer survivors in a gardening program gained an average of 2.3 cm (0.91 in) around their waists
  • Those not in the gardening program gained nearly 8 cm (3.15 in)
## Calories Burned

<table>
<thead>
<tr>
<th>Activity</th>
<th>Calories Burned (15 minutes)</th>
<th>Calories Burned (per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mowing lawn</td>
<td>77</td>
<td>306</td>
</tr>
<tr>
<td>Weeding, cultivating garden</td>
<td>60</td>
<td>238</td>
</tr>
<tr>
<td>Digging or spading</td>
<td>68</td>
<td>272</td>
</tr>
<tr>
<td>Raking</td>
<td>51</td>
<td>204</td>
</tr>
<tr>
<td>Trimming trees or shrubs (manual cutter)</td>
<td>60</td>
<td>238</td>
</tr>
</tbody>
</table>
SOCIAL HEALTH BENEFITS
Environmental Consciousness

- Parks and botanical gardens host educational programs and special events
  - Contributes to the community’s cultural awareness and education
    - Especially helpful for children
Combats Loneliness

- Community gardens
  - Socialization opportunity for members of the community
  - Locate local community gardens with the American Community Gardening Association
Improves Relationships

• Increases levels of compassion
  • People who care for nature are more likely to care for others
    • Increase concern and empathy
  • Further appreciate the environment as a whole
Improved Work Performance

- Increases energy and vitality
  - Increased vigor put into work
  - Performance levels are increased by improved state of mind
Perceived Quality of Life

- Beautifully landscaped areas associated with higher quality of life
  - Attracts businesses and opportunities
  - Enhances the outlook of the whole community
Driver Safety

- Improved aesthetics of roadways
  - Drivers more at ease
  - Think more positively about the community
- Landscaped area between oncoming lanes of traffic
  - Trees create a natural obstruction
  - Drivers much less likely to accidentally drive over median
Reduced Crime Rates

- Neighborhoods with beautiful parks tend to have less crime

  - People with a greater pride of where they live are less likely to detract from it
Community Cohesion

- Helps communities become more tightly knit
  - Come together to clean up and beautify neighborhood
  - Increases political activism
    - Fight to keep greenspace in their communities
Upgrade Effect

• Ripple effect
  – As one part of the community beautifies with gardening, the other sectors will follow suit
  – Adjacent communities see the improvement and will be forced to upgrade due to competition
Questions?
www.ag.ndsu.edu/fieldtofork

Special thanks to Sallie Yakowicz for researching gardening and health and to Stacy Wang for making the PowerPoints for our field-to-fork webinars look nice!