2019 Spring Webinar Series
2 p.m. CST

EXTENDING KNOWLEDGE  ▸  CHANGING LIVES

NDSU EXTENSION
Upcoming Webinars

• March 6 – Cool Fruits for Cold Climates: Selections from the Northern Hardy Fruit Project
  – Kathy Wiederholt, Fruit Project Manager, NDSU Carrington Research Extension Center

• March 13 – Let’s Not Waste Food: Exploring Food Preservation and Composting
  – Julie Garden-Robinson, Food and Nutrition Specialist
Zoom Controls

Meeting Topic: Field2Fork - Tom Kalb Growing Vegetables
Host: Extension FCW
Invitation URL: https://zoom.us/j/609371435
Participant ID: 22

Join Audio
Share Screen
Invite Others

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.*
Trendy and Healthy Houseplants

Esther E. McGinnis
NDSU Extension Horticulturist
Houseplants

- Enjoying a renewed popularity
  - Beautiful
  - Bring the outdoors inside
  - Interior design
  - Lifts our spirits
Who can be credited with reinvigorating the houseplant trend?
Why NASA?

NASA image
NASA Clean Air Study

• Benzene: plastics, dyes, detergents, glue, cigarette smoke
• Formaldehyde: carpeting, plywood, particle board
• Trichloroethylene: inks, paints, varnishes
• Xylene and Toulene: rubber, leather, paint
• Ammonia: window cleaners, floor waxes
Air-Filtering Plants

- Peace lily (5)
- Florist’s chrysanthemum (5)
- English ivy (4)
- Snake plant (4)
- Red-edged dracaena (4)
- Golden pothos (3)
- Most houseplants remove at least 1 or 2 air contaminants; 1-3 plant per 100 sf
Other Health Benefits
Plants in the Workplace
(Lohr et al. 1996)

- Windowless room
- Houseplants around perimeter
- Timed computer task
- 12% faster reaction times
- Lower blood pressure
- More attentive
Job Satisfaction of Office Workers, (Dravigne et al. 2008)

Table 2. Analysis of variance test comparing mean scores on the Job Satisfaction Survey of the four treatment groups in the study of the influence of live plants and window views of green spaces on employee perceptions of job satisfaction.

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample size (no.)</th>
<th>Mean score</th>
<th>SD</th>
<th>df</th>
<th>F</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Overall job satisfaction score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No plants/no windows</td>
<td>264</td>
<td>106.47</td>
<td>30.91</td>
<td>3</td>
<td>2.768</td>
<td>0.041*</td>
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<tr>
<td>No plants/windows</td>
<td>68</td>
<td>105.56</td>
<td>33.27</td>
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<tr>
<td>Plants/no windows</td>
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<td>112.52</td>
<td>29.59</td>
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<tr>
<td>Plants/windows</td>
<td>95</td>
<td>115.16</td>
<td>22.09</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>


Scores ranged from 36 through 180. Scores greater than 108 indicated more job satisfaction and scores less than 108 indicated less job satisfaction.

*Statistically significant at the 0.05 level.
At School (Han, 2009)

• Junior high classes in Taiwan
• Looked at
  – Classroom perception
  – Sick leave hours
  – Misbehavior
  – Test Scores
Hospital Window Views
(Ulrich, 1984)

• Window overlooking trees vs. brick wall
• Brick wall: more negative notations in record
• Tree view
  – Fewer severe and moderate painkillers
  – Shorter hospital stays
Plants in the Hospital Room

- Surgical patients recovered faster in the presence of plants
- Took fewer pain relievers
- Had lower blood pressure
- Reported less pain, fatigue
- (Park and Mattson, 2008 & 2009)
HOUSEPLANT CARE
Houseplant Care

• Research the plant’s native habitat:
  – Epiphyte or terrestrial
  – Temperature
  – Water and relative humidity
  – Light
  – Heavy or low “feeder”
Watering

- Until drains out the bottom of the pot
- Drain surplus water in saucer
- **Allow soil to dry**
- More when actively growing; less in winter
- Don’t let water touch African violet leaves
- Room temperature water
- Don’t use softened water
Houseplant Care

• Consider humidifying rain forest plants
• Fertilize when actively growing
• Most houseplants struggle when temperature is less than 55 or 60 °F
• Avoid drafty areas
• Don’t trap plants between window and curtains at night
• Very high light plants: greenhouse
• High light plants: near windows with western or southern exposures
• Medium light plants: eastern exposure or within several feet of western or southern windows
• Low light plants: northern exposure or within several feet of eastern exposure
Lighting

Creative Commons: Christian Taube
Wavelengths of light

https://biology.stackexchange.com/questions/58572/are-two-colors-red-blue-necessary-for-led-grow-lights-or-would-either-color
PLANT FAMILIES
**Araceae**  
**Arum Family**

Inflorescence forming a spike of numerous small flowers packed onto a fleshy **spadix** has tightly packed rows of flowers, often staminate flowers above pistillate flowers (but some are perfect). Subtended by a large leaflike to petal-like bract or **spathe**.

Field Clues: Many have heart-shaped, spear-shaped, or arrow-shaped leaves. Juice is acrid, can be poisonous, crystals of **calcium oxalate**.
Arum Family

- *Spathiphyllum*—peace lily
- *Aglaonema*—Chinese evergreen
- *Monstera deliciosa*—Swiss cheese plant
- *Dieffenbachia*—dumbcane
- *Philodendron*—philodendron
- *Epipremnum aureum*—Golden pothos
Peace lily—*Spathiphyllum*

- Native to northern South America
- White spathe (starts out green) held upright
- Removes formaldehyde, benzene, TCE, xylene, and ammonia from the air
Peace Lily Care

- Easy!
- Low to medium light
- Water well spring-autumn
- High humidity
- Fertilize in summer
- Sensitive to salts
How to Leach Salts

• White crust on your potting soil
• Makes it harder for a roots to take up water
• Need to leach every 6 months
  – Put plant in sink/tub
  – Water like normal; allow to drain for 5 minutes
  – Water again; allow to drain
  – Remove salt crust on top of soil
Chinese Evergreen-Aglaonema

• Many varieties
• Allow soil to dry between waterings
• NASA: Benzene, formaldehyde
High Light Situations

- Lace curtain?
- Move back from the window
Other Arums

Dumb cane
Good for medium light
NASA: Xylene/toulene

Swiss cheese plant—Needs support—low light

Golden pothos—low light
NASA: benzene, formaldehyde, xylene/toulene
Bromeliaceae

- Pineapple family
- Two types
  - Terrestrial
  - Epiphytes—well-drained soil
- Many have a cup to catch water
- Rosette foliage
Bromeliads

- Allow potting mix to dry between waterings
- Place water in cup
- Use distilled water if your water is high in sodium
- Replace water in cup from time to time

*Neoregelia compacta*—grown for foliage; not flowers
Bromeliads

Tillandsia cyanea
Bromeliads

- Individual plant that flowered will die within 6-12 months
- Will be replaced before then with 1 to 3 “pups”
Most Famous Bromeliad

Ananas comosus
Ficus Family (Fig)

- Fiddle leaf fig—*Ficus lyrata*
  - NASA—no info
- Rubber plant—*Ficus elastic*
  - NASA--formaldehyde
- Weeping fig—*Ficus benjamina*
  - NASA—formaldehyde, xylene/toluene
- Toxic to cats and dogs
**Ficus lyrata—Fiddle leaf fig**

- Trendy plant ($$$)
- Leaf like a violin
- Benefits from high humidity
- Needs medium light (but not hottest summer sun)
- Water well spring through fall; sparingly in winter
Clean the Leaves  
(Applies to Most Plants)

- Wipe them with a damp cloth
- Better able to photosynthesize
- Helps control insects
- Don’t use commercial products
- Don’t wipe leaves that are hairy (African violets)
Ficus elastic – Rubber Plant

- Large oval, glossy dark leaves
- Medium to high light
- Moist but not wet
- Will lose lower leaves if kept too shady
- Produces latex-like substance (not real rubber)
Rubber Plant in the Wild (CC)
**Ficus benjamina—Weeping Fig**

- Will grow 100 feet tall in the wild
- Grows about 8 feet indoors
- Medium light
- Susceptible to leaf drop if moved
- If loses bright yellow leaves—could be underwatered

*Wikimedia Commons*
Orchidaceae
Orchid Family

24,000+ species in 880 genera!
100,000 registered cultivars
Worldwide – but mostly tropical

Vanilla beans come from orchids;
Only pollinated by *Melipona* bee
found in S. America;
Hand-pollinated
Seeds are some of the tiniest among all plants

No endosperm; rely upon mycorrhizae

Wikimedia commons: TheAlphaWolf
Phalaenopsis—moth orchid

- Native to SE Asia, Philippines, N Australia
- Epiphytic
- Most commonly grown orchid
- Petals (in some species) may turn green when pollinated
- Looks like a moth
Phalaenopsis — Easiest to Grow

- Never in direct sunlight
- Never below 50 deg. F
- Needs temperature drop in fall to initiate flowering
- NASA: xylene/toulene
Orchid Care

• Needs high humidity
  • Gravel tray
  • Don’t let roots sit in water
• Allow roots to dry between waterings
• Ice cubes???
• Fertilize more frequently from late-spring through early fall
Orchid Care

- Never use soil or potting mix
- Use orchid media: 80% fir bark + 20% sphagnum moss
- Transplant when pot is full of roots and when media breaks down
**Dendrobium**

- SE Asia to NZ
- Epiphytic
- Needs bright light
  - 2X as much as *Phalaenopsis*
  - South window with a sheer curtain
- Needs less water than *Phalaenopsis*
- NASA: xylene/toulene
Plants not toxic to dogs/cats

- Orchids
- Boston fern
- Some palms (date, areca, bamboo palms)
- Spider plant
- Some bromeliads
- African violets
- ASPCA.org for more info
Questions?
www.ag.ndsu.edu/fieldtofork