Befriending Bumble Bees

Bumble bees are formidable pollinators of tomatoes, cranberries, blueberries and squash, and native wildflowers. University of Minnesota Extension has published *Befriending Bumble Bees: A practical guide to raising local bumble bees*, by Elaine Evans, Ian Burns and Marla Spivak.

The 76-page, full-color guide provides the step-by-step information needed to find, capture, house and feed the next generation of bumble bees.

Visit the University of Minnesota Bookstore at z.umn.edu/bumble to order.
From the Dean

Fundraising campaign is helping Extension build a stronger Minnesota.

We live in a fast-paced, complex world. Scientific breakthroughs and advances in technology that once took years now happen in days or even hours. Global economics affect which crops Minnesota farmers plant and how the crops are harvested. Schools, nonprofits and community organizations serve people who observe traditions and speak languages new to Minnesota, as well as those who have lived here for generations.

In a time when change seems to be the only constant, where does University of Minnesota Extension fit?

Right where we always have: At the intersection of scientifically sound research and the needs of Minnesota’s families, organizations and communities. For more than 100 years, Extension has been the link that connects University of Minnesota research with the residents and communities in our state. We’re the front door to the University. That will never change.

In Extension, we envision a Minnesota in which strong partnerships, discovery through science and diverse perspectives combine to find smart, creative ways to address 21st-century challenges.

As an organization, we are committed to achieving that vision. But we need your help. Demand for Extension programming is rising along with the cost of producing that programming, and traditional sources of financial support no longer are sufficient. Your investment helps ensure that no matter how much circumstances may change, Extension will be here to help all Minnesotans adapt and thrive.

Minnesotans have already given $7 million toward our campaign goal of $16 million. Will you join us? Donate online at z.umn.edu/extensiongiving, or contact Jane Johnson at 612-626-3717 or johns350@umn.edu.

Beverly Durgan Dean, University of Minnesota Extension
It’s Wednesday morning and the kids at Crossroads School and Vocational Center in St. Francis are sitting attentively in class, knowing what comes next if they do the work expected of them.


Powell’s students have significant challenges, including some who are living at a nearby residential treatment center. Extension Master Gardeners can get their hands dirty with the kids, teaching while not having to be the authority figure.

“Relationships are tough for these kids, so it’s neat to see the bond as they work side by side in the planters,” says Powell.

The schoolyard garden is a place to advance the quest to learn math, science, healthy living and more in an outdoor living laboratory. Master Gardeners helped design the site in 2015, including multiple raised beds and a deer-proof fence.

“Our garden this year is going to produce a lot of pollen and nectar for the bees and butterflies,” says Dave Berger, the science teacher at Crossroads who is also a Master Gardener in Anoka County. “The kids want to help those pollinators.”

Feeding ready learners

“We come to the school in January or February to start seeds indoors with the kids,” says Rachel Beehler, a Master Gardener. “During summer school and fall we’re harvesting and cooking.”
Lisa Wong, an Extension educator in Supplemental Nutrition Assistance Program Education (SNAP-Ed), finds that the learning that takes place in the garden makes a big difference. “When the kids know where the food is coming from—when they get that familiarity with it—they are more likely to try something new.”

“This strategy increases healthy food access for K-12 students in 198 schools across Minnesota,” says Terri Swartout, who works across state agencies to improve health through the Statewide Health Improvement Partnership. “Master Gardeners make it happen at the ground level with the students.”

In most counties, Master Gardeners are led, trained and supported by a coordinator employed by Extension. In Anoka County, Lynne Hagen leads 100 active volunteers. “Crossroads is a great example,” she says. “There are so many opportunities to include horticulture in school and after-school programs.”

Linked to learning

“Master Gardeners are well aware of the demands on today’s teachers,” says Betsy Massie, Extension Master Gardener volunteer in Hennepin County. “Our goal is to help those teachers extend their classrooms to the garden while providing lessons linked to the Minnesota Academic Standards.”

The principal at Crossroads agrees. “Our staff have embraced the use of the garden across the curriculum,” says Powell. “We all see how the students’ minds have expanded.”

In Berger’s science class, for example, kids compare soil and air temperature and the growth rate of plants. They measure, record and graph the results. Woodworking classes built the raised beds, and art classes added garden sculptures.

A student named Jacob says Master Gardeners helped him learn things he likes. “They taught me about plants and when to pick them. They taught me how to check the rain gauge and water, and how to map out garden grids too.”

Positive outcomes have increased the demand for Master Gardener volunteers. Massie recently helped plan and deliver a schoolyard gardens conference for 300 volunteers, teachers, school administrators and others at the University of Minnesota Landscape Arboretum. Partners through the Minnesota Schoolyard Garden Coalition are working together to develop curriculum kits for volunteers.

Massie says, “Collaboration between Master Gardeners and teachers is growing, and Minnesota children are the beneficiaries.”

Are you interested in becoming a Master Gardener or making a gift to support schoolyard gardens? Visit z.umn.edu/MasterGardener.

Starting small

Not every school or youth program is ready for a big garden. “Volunteers have to think creatively and use whatever resources they have readily available,” says Kelsey Wulf, coordinator for Extension Master Gardener programs in Otter Tail County. “Once people see the positive effects of even a small garden, support for the program will grow.”

Here are a few starter ideas Wulf has seen Master Gardener volunteers try with success:

- Tomatoes and peppers grown in coffee cans for salsa
- Seed-starting lesson providing plants kids can grow in a home or community garden
- Perennial flowers planted along a peaceful schoolyard pathway
- Building bug hotels to learn about beneficial insects

Kids give back

Schoolyard gardens feed families in need. Master Gardeners help Minnesota students grow and donate 13,000 pounds of vegetables to food shelves in a single season.
1. Welcome newcomers

Extension “brain gain” research has demonstrated that adults 30-49 years old are moving into rural areas. Newcomers often bring with them degrees, work experience, business ideas and children.

Extension researchers, including colleagues at the Humphrey School of Public Affairs, are examining the experience of newcomers and their integration into rural communities. The researchers will hear from newcomers across the state, including minority and immigrant newcomers who play a role in keeping small towns vibrant.

The study will inform new Extension programming that teaches communities how they can best attract and retain new residents and workers.

“Communities are genuinely interested in becoming more welcoming, but the research will help them make investments in the right strategies, whether those be in housing, technology and infrastructure, or in education and social initiatives,” says Neil Linscheid, Extension educator in community economics and recipient of a 2017 Bush Fellowship from the Bush Foundation.

WHAT YOU CAN DO
Participate if Extension contacts you about surveys or focus groups. Share ideas on how individuals and organizations can help newcomers feel welcome and contribute to the community.

2. Put new foods on your plate

Emerging crops in Minnesota such as hazelnuts, elderberries and the perennial grain called Kernza have attributes that protect the landscape. These plants help protect water, sequester carbon and hold soil in place.

“Agriculture can be a tool for improving our environment,” says Connie Carlson of Extension Regional Sustainable Development Partnerships (RSDP). “Protecting our water and soil is going to benefit everyone in this state.”

Incorporating these innovative new crops can benefit farmers by diversifying their revenue streams, but farmers need to know there’s a market. “That’s a role consumers can play,” says Carlson. When consumers look for these new crops at their local stores or farmers market, it creates demand that can lower the risk for farmers.

Extension RSDP is working with University researchers like agronomy professor Don Wyse, who helped develop Kernza, and with farmers and retailers across the state, to build the supply chains necessary to get these sustainable new crops from research to consumer.

WHAT YOU CAN DO
Look for emerging locally grown crops at your local retailers. To learn more about RSDP’s supply chain work, contact Connie Carlson www.extension.umn.edu/rsdp/contact
3. Keep agriculture strong

Many farmers find themselves facing difficult circumstances right now. “Financial stress is not as widespread as in the 1980s, but some farmers are seeking help,” says Extension agricultural economist Kevin Klair, who leads Extension’s agricultural business management program. “Extension is working with a variety of agriculture interests, including the banking industry, to help farmers explore their options.”

A new initiative, expected to run for two years, provides direct financial counseling to distressed farmers across Minnesota. “In the family farm businesses, it’s often women who maintain the finances,” says Betty Berning, Extension educator in agricultural business management.

Additionally, a growing segment of farms, 26 percent, are led by women.* Extension’s Women in Ag Network offers workshops on how to balance the books, manage farm labor, work with lenders and handle ownership transitions. The network brings women together to learn and connect, but all are welcome.

**WHAT YOU CAN DO** To set up a confidential appointment with an Extension farm financial analyst, call the Farm Information Line at 1-800-232-9077. To learn more about Women in Ag, visit z.umn.edu/agwomen.

4. Attract tourists to your town

Not every town considers itself a tourist mecca, but every town has visitors. “Offering things to see and do keeps visitors coming back and spending money,” says Cynthia Messer, University of Minnesota Tourism Center director. “Those activities can also keep residents healthy and happy.”

For example, bicycle trails help attract $780 million in annual economic activity, according to Xinyi Qian, Extension tourism specialist who led economic analysis for a study commissioned by the Minnesota Department of Transportation. Public health researchers say the benefits of biking also reduce health care costs.

Minnesota wine is another growing industry that attracts tourists and showcases local vitality. Minnesota’s wine industry is a largely rural phenomenon that took root with the University’s cold-hardy grape introductions. Economic activity increased from $53.6 million in 2011 to $80.3 million in 2015. “That’s a 50-percent increase,” says Brigid Tuck, Extension economic analyst who led the study. “Tasting rooms, events and festivals were big drivers of the gains.”

**WHAT YOU CAN DO** Customized research informs investment decisions. Learn who your visitors are, meet needs with the right products and services, and provide a unique local experience. Visit tourism.umn.edu for information.

5. Grow local leaders

Healthy communities require good leaders. Extension’s leadership training engages individuals and organizations in asking challenging questions and developing innovative solutions together. “There is a growing interest in strengthening local leadership,” says Holli Arp, Extension program leader. “Counties and regions are developing new programs and training cohorts of people who believe that improving personal and professional relationships will enable new partnerships and ideas to sustain the place they call home.”

In 2016, Extension hosted 25 leadership programs, preparing more than 500 emerging leaders to serve in cities, counties, regions, organizations, watersheds and the agricultural industry. Through the years, thousands of participants have learned skills like managing conflict, coping with change, working across generations and leading effective meetings.

“Everyone starts somewhere on their leadership journey,” says Lisa Hinz, Extension leadership educator.

**WHAT YOU CAN DO** Hone in on your interest. Ask yourself: What draws me to leading? Is there an issue I’m passionate about? Visit www.extension.umn.edu/community/leadership for more information.

*Source: USDA
Alise Sjostrom, age 31: From 4-H to CFANS to boutique food leader

After years of effort to get Redhead Creamery up and running, Alise and Lucas Sjostrom were finally ready to make their first cheese. It flopped. A problem with the vat set cheesemaking back a couple of months.

This new destination for cheese lovers only exists today because the owners knew how to press on through challenges.

“Many times in my 4-H dairy project years I had a good animal that just refused to cooperate when it came time for the show,” says CEO Alise Sjostrom. “Those experiences helped me get tougher. My mom taught me that it’s not about the show, but to learn something.”

Alise discovered farmstead cheese at age 17 during a 4-H dairy trip to Wisconsin. Everything after that, from her studies at the University of Minnesota to her spring break destinations, centered on learning how to make the best farmstead and artisan cheeses.

Dairy was also a passion for Lucas. The two met as kids at the Minnesota Junior Holstein Association conference, stayed connected through a variety of 4-H experiences and fell in love when they both attended the University of Minnesota. As students, they toured artisan cheese plants throughout New England. Alise made her first batches of cheese in the U’s dairy labs and graduated from the College of Food, Agricultural and Natural Resource Sciences (CFANS) with a degree in agricultural industries and marketing with a dairy food quality emphasis. Lucas’s bachelor’s and master’s degrees are in animal science, focusing on industry, communications and dairy herd management.

Alise now runs Redhead Creamery in Brooten with Lucas and her parents, Jerry and Linda Jennissen. They give tours of the plant and lease project animals to 4-H youth who might become inspired to start their own creameries. “So many cheesemakers helped me,” she says. “You help people in this business, just like how you help your younger siblings in 4-H. It’s fun to see how it all continues.”

Jim Kemp, age 83: Giving back to 4-H

When Jim Kemp was a child in Colorado, he started a 4-H dog club. “Everyone I knew had a dog, but they didn’t all live on farms like I did,” he says. He wanted everyone to have the chance to participate in 4-H, which was mostly agricultural in his 1940s community.

Now, in his retirement from a life of 4-H and public service, he wants to expose teenagers to leadership opportunities whether they live outside Worthington or in downtown Minneapolis.

His gifts to the Minnesota 4-H State Ambassador program will do just that.

Minnesota 4-H State Ambassadors, often called “Ambies,” serve as spokespeople for 4-H to educate youth and adults about the importance of youth development, leadership, citizenship, service, teamwork and other life skills.
Hoang Murphy, age 26: Discovering a world of educational possibilities

When Hoang Murphy’s parents adopted him and his brother, they immediately enrolled the boys in 4-H in Norman County. “It played an important part in my own growing up,” says his mother, Sheila Capistran. “I wanted to raise my family with those values in mind.”

“I was able to go to D.C. with 4-H and have leadership roles at a young age,” says Murphy. He served as a club and county officer and a Minnesota 4-H State Ambassador from 2008 to 2010.

Although it was challenging at times, these experiences helped him to grow and develop skills in civic responsibility and an understanding of the role of leaders in a system.

After graduating from high school, he earned a degree in policy studies from The Maxwell School of Syracuse University and a master’s in education from Johns Hopkins University. In 2016, Murphy became a public policy fellow at the United States Department of Education in Washington, D.C.

“4-H was a way to further my education outside of the schoolhouse,” says Murphy. “Now I want to teach and extend similar opportunities to other young people.”

Rachel Pichelmann, age 30: Young engineer of the year

Her career as a water resources engineer was inspired by her 4-H earth science project in Nicollet County, but Rachel Pichelmann still thinks about the 4-H communications project too.

“I distinctly remember waiting there in that chair, preparing to speak at the communications contest,” she says. “It was a feeling of pure dread.”

Flash forward to the moment before a presentation in college. “I was waiting in a chair just like before. I didn’t feel that same dread. I thought, I need to call Mom and thank her for signing me up for 4-H.”

Those skills help the engineer at Short Elliott Hendrickson Inc. when she collaborates with agencies, clients and the public on projects throughout the Midwest. She enjoys working on multi-discipline teams, assisting clients with identifying and understanding flood risk, and developing alternatives which may reduce this risk.

Between her junior and senior years in high school, Pichelmann developed a 4-H project with data she collected while volunteering in the Citizen Stream Monitoring Program with the Minnesota Pollution Control Agency. The project sparked her interest in engineering and the environment.

The purple ribbons the project earned her at the Minnesota State Fair were not her last awards. In 2017, she was presented with two Young Engineer of the Year awards, one from the Minnesota Federation of Engineering, Science, and Technology Societies and the other from the Society of American Military Engineers.

“You help people in this business, just like how you help your younger siblings in 4-H. It’s fun to see how it all continues.”

—Alise Sjostrom, CEO, Redhead Creamery

Laura Wyatt, CFANS student at the University of Minnesota, wrote Hoang Murphy’s story.
Cottage to table

Local food producers make it their business to prevent foodborne illness

Under an exemption in Minnesota’s cottage food law, Karen Peterson of Blooming Prairie is able to make and sell baked goods out of her home, including her top-selling cupcakes: salted caramel and white chocolate raspberry.

The 2015 law allows Minnesotans to make and sell certain types of food from their home kitchens (or “cottage”) without a license as long as they register annually and complete food safety training. They produce confections, canned jams and jellies, salsa and sauces, and more.

“It’s beneficial to me to be able to stay home and make some side income for my family,” says Peterson, who calls her business Confections by Karen. Producers like Peterson can earn up to $18,000 annually from cottage food sales.

“University of Minnesota Extension became involved when legislators were first looking at the law to see how food safety education could be included,” says Suzanne Driessen, Extension food safety educator. “Our goal is to help ensure a safe product and prevent foodborne illness.”

Once the law was passed, Extension got to work developing training by talking with cottage food producers about their educational needs. The resulting workshops focus on processes like drying, baking, canning and fermenting.

Students bring in their own products to test pH and moisture content—key hazard markers. Stations set up around the classroom allow learners to choose hands-on, interactive lessons about what’s most relevant to their type of food product.

“Feedback from the course indicates participants plan to make changes based on what they learned,” says Driessen. “For example, they will include sub-ingredients [elements of ingredients] and allergens on their labels.”

The course, which will also be offered online starting in 2018, covers more than just the preparation, but also how to package, label, store and transport a safe food product. Visit z.umn.edu/foodentrepreneurs for information.

Healthy highlight

Healthy fresh food is easier to get in Virginia, Minn., thanks to a new program with grassroots support and an imaginative name. The Rutabaga Project’s goal is to craft community-based solutions to make produce more accessible and affordable.

Much of its success originated with participants, who envisioned how the Rutabaga Project could meet local needs, says Chris Strand, an Extension educator in Supplemental Nutrition Assistance Program Education (SNAP-Ed). They began by choosing a name that paid tribute to the root vegetable that helped sustain families during the Iron Range’s often-hardscrabble history.

“This is very much a community-driven project,” Strand says. Program participants helped identify locations for community gardens, for instance, including a wheelchair-accessible one. Work already undertaken by the Arrowhead Economic Opportunity Agency and Iron Range Partnership for Sustainability helped the project hit the ground running.

The project facilitated use of electronic benefit transfer cards for farmers market purchases in Virginia, mirroring a similar accomplishment in other Minnesota communities. The Rutabaga Project also is helping households get produce distributed via community-supported agriculture projects.

“This has been about finding solutions and eliminating barriers,” says Brian Bluhm, project coordinator for the Arrowhead Economic Opportunity Agency.

Fifteen seed grants were awarded by Extension as part of SNAP-Ed Community Partnerships last year. Through them, more than 23,000 participants have been part of efforts that prioritize:

• Empowering local residents to lead changes in food and nutrition systems
• Improving community gardens and innovative ways to grow vegetables
• Buying and consuming healthier food from stores and farmers markets

Read more at z.umn.edu/SNAPedPartnerships
On the BEET for healthy livestock

When diseases hit Minnesota barns, livestock producers suffer. So do meat lovers everywhere, as well as the state’s bottom line. Minnesota is No. 1 in turkey production and third in pork.

Members of the state’s poultry and pork industry rallied to adopt new measures after the 2015 outbreak of avian influenza and 2013 outbreak of porcine epidemic diarrhea virus led to animal losses in the millions. Work to prevent those diseases focused on biosecurity measures used by producers and workers on farms. That work, and the need for it, continues.

University of Minnesota Extension is hitting the road to teach farmers and farm workers about the proper protocol involved in keeping diseases from spreading. A component of Extension’s mobile effort is the University of Minnesota Biosecure Entry Education Trailer (BEET). BEET was made possible by the state’s Rapid Agricultural Response Fund.

The trailer is used by Extension’s poultry and swine teams, including Sarah Schieck, Extension swine educator, and Abby Neu, Extension poultry educator. They work with producers, state officials, feed haulers and 4-H members to better understand how diseases spread. “It’s everyone’s job in the industry to think about biosecurity,” says Schieck.

Neu says the trailer helps the team explain the principles of Danish Entry, an entry protocol for farms that emphasizes separation between the outside and the inside of the barn housing animals.

Rob Orsten raises turkeys near Willmar. “Biosecurity is probably everything—it’s vital,” he says. “Biosecurity education has to be ongoing and constant.” A key feature of the trailer is a bench—a line of separation—that focuses attention on the importance of changing out of possibly contaminated clothing and footwear, removing personal items and proper hand washing before stepping into areas where birds live. “Having the bench, this physical barrier, makes people slow down and think about their mental checklist,” says Neu.

“Birds are very susceptible to every little thing that enters the barn,” says Orsten. “The greatest biosecurity program is as weak as a barn worker’s next step.”

An explosion in the last several years in the number of breweries across Minnesota has resulted in the expansion of a crop not widely grown in Minnesota: hops, a primary ingredient in beer.

There are about 75 hop yards in Minnesota, according to Angela Orshinky, a University of Minnesota Extension plant pathologist. Orshinky conducts hops research to help Minnesota producers grow the crop in a state where plant diseases affecting the vines spread easily.

“Downy mildew is the real problem for hops growers here, followed by fusarium fungi,” says Orshinky. “Minnesota’s humid climate creates a more difficult environment to grow hops compared to traditional hops-growing regions like the Northwest east of the Rockies.”

Orshinky’s work has focused on the prudent use of fungicides to control diseases. “There is no genetic resistance to disease in hops that’s foolproof,” she says. “Anyone growing hops commercially in Minnesota soon discovers that control of diseases is a major challenge,” says John Brach, who raises hops on Stone Hill Farm near Stillwater. “Having Dr. Orshinsky available through Extension for advice on downy mildew control has been a huge help to growers as the industry develops here.”
Into the woods
Helping forest landowners plan for the future

A University of Minnesota Extension program to help private woodland owners steward their land and legacy is now offered in northeastern Minnesota.

Master Woodland Owners reaches landowners in the Laurentian area stretching from Ely to Grand Rapids and eastward, as well as those living on or near the Lake Superior shore.

“We know they want to preserve the health of their land now and into the future,” says Mike Reichenbach, Extension forestry educator. “From land ownership challenges to climate change, successful woodland management has become more complex.”

Master Woodland Owners was launched in southeastern Minnesota in 2016 and will expand to the Brainerd area in 2018. It takes an in-depth look at topics critical to its participants, such as:

- Harvesting for forest health
- Recreation and wildlife
- The logging industry
- Invasive plants
- Long-range planning
- Multi-generational properties and estate issues

Minnesota woodlands
by the numbers

17.4 million acres

37 percent privately owned.

2.9 million cords of wood harvested (27% by private owners)

Source: Minnesota Forest Resource Council