Commentary

RoboBees: Better Than The Real Thing?

BY RITA BRHEL
P&D Correspondent

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Ah, humans — we are destructive creatures, aren't we? If our actions destroy something, it seems to be mankind's way not to repair what is broken but instead to create an entirely new gadget to bridge the gap caused by the thing we broke. Let me explain.

We all know by now that the mysterious Colony Collapse Disorder (CCD), the phenomenon where honey bees were suddenly abandoning their hives, as well as equally mysterious bee deaths from other causes, is believed to be the result of various agricultural pesticides. It was long suspected, and despite pesticide manufacturers shaking their heads at accusations that their products were at least partly to blame, the evidence ended up pointing in their direction anyway.

The thing is, we need bees. Even with all of our technology, we still rely on so much of the natural world for survival. Bees provide pollination, which is the root of so many plants' ability to reproduce and, therefore, to grow food for us. The commercial beekeeping industry is built directly upon the importance of honey bee pollination. It's almost mind-blowing to think that honey bees — a small, winged insect that we find buzzing around our gardens — are responsible for pollinating crops worth at least $15 million each year. It really made me think the last time a bee got trapped in the back seat of the car and my children were screaming at me to squish it. I ended up getting it to fly out a window.

But there is a problem. The U.S. agricultural industry is not going to willingly give up on using pesticides. These chemicals make it possible to produce the amount of crops that our nation is producing. These chemicals are very effective at doing their job. I get that.

But I also get that bee pollination is in significant danger. Something somewhere is going to have to give. And I was thinking, either the pesticide and/or agricultural industry has to change or the bees will be gone. But, it turns out, someone had found a door number 3: robotic bees.

The Harvard School of Engineering and Applied Sciences with the Wyss Institute for Biologically Inspired Engineering at Harvard have created the "RoboBee," an electronic device smaller than a quarter, weighing just a tenth of a gram, that can hover and follow a preplanned flight path. The team feels that these prototypes are at least 20 years out from actually being used in pollination, because of all of the refinements to the design that will need to happen as technology advances. The team also feels that RoboBees would only be appropriate as a stop-gap measure while a solution to bee deaths and CCD was being implemented to restore natural pollinators. Hopefully that would actually be how they were used, and RoboBees wouldn't be expected to completely fill the gap left by a decimated honey bee population. A lot can happen in 20 years.

Hopefully a CCD solution is found way before 20 years from now. Sometimes, I think we humans get lulled into a false sense of security that what is happening in our natural world, from global warming to CCD, is either too slow to worry that much about or will fix itself on its own by adapting to the environmental changes that mankind creates. Either way, there doesn't seem to be much urgency when problems like this arise.

Not that CCD should, or could even be, fixed tomorrow even if drastic measures like stopping pesticide application all together happened, but our response should be somewhere in the middle of the two extremes: The pesticide/agricultural industry should take some responsibility, while the environmental sides of things need to realize that there needs to be some give on that part, too. Otherwise, we may be foolish enough to think that robotic bees are the answer to CCD.

PHOTO: RITA BRHEL

A Look At Low-Stress Calf Weaning Methods

BY RITA BRHEL
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As schools come back into session and football season kicks off again, area farmers' minds begin to think about fall activities, such as crop harvest and calf weaning, and what changes they plan to make this year easier than last.

Weaning can be a stressful experience on everything involved, from the calves and cows to the producers and the veterinarians called in to treat illnesses that may arise from a calf's poor adaptability away from its mother. While the stress from weaning is more emotional for the calf, than the physical deprivation of its mother's milk, it is no less hard on the calf's immune system and, without care, can lead to increased disease susceptibility, particularly to respiratory conditions like shipping fever.

"One fact on which cattlemen, veterinarians and animal scientists can agree is that of all the events in most calves' lives, weaning is the most stressful of them all," shared Russ Daly, South Dakota State University Extension veterinarian and South Dakota's State Public Health Veterinarian at Brookings, through iGrow. "If a calf can weather this stress unscathed, they have cleared a major hurdle to a productive future in the feedlot or as a replacement in the breeding herd."

For this reason, weaning is more than simply separating the calves from the cows and being sure the fences are sturdy enough to prevent the two from going through to get to each other. In fact, traditional weaning — where all of the calves are separated from the cows at one time and put in an unfamiliar environment — is among the most stressful methods, according to Heather Smith Thomas, a cattle producer near Salmon, Idaho.

She recommended keeping calves in a pasture when separating them from the cows, rather than removing them to a dry lot during weaning. It's also helpful to wean during good weather and to have a few calves in the group that have already been weaned, to help unweaned calves learn to eat hay if need be. Another idea, Smith Thomas said, is to wean the group of calves a part at a time, leaving the weaned calves in the familiar pasture with the rest of the herd. With either way, it's important that cows and calves are separated by enough distance that they cannot hear one another, she said.

Lower stress still is placing plastic nose weaners into calves four to seven days before removing them from the cows, said Aaron Berger, University of Nebraska-Lincoln Extension educator in Scottsbluff, Neb. The nose weaners allow calves to eat grass and drink from the water tank, but either flip down to prevent the calf from nursing or poke the cow's udder to deter her from standing to allow the calf to nurse. The nose weaners are designed to begin the transition toward separation in a different pen from the cows.

Touted as the lowest-stress weaning method is fenceline weaning, during which the calves are separated from the cows in adjacent pens, allowing the cows and calves can see one another through the fence. Another component of fenceline weaning is the placement of familiar feed and water resources close the fence. Berger suggested leaving the calves in the familiar pasture and moving the cows to the adjacent pasture and to begin supplementing the calves two weeks before the cows are moved to the new pasture.

"A number of studies have shown calves that were fenceline weaned have lower incidents of sickness compared to their contemporaries that were hard weaned and immediately separated from visual and audio contact with their dams," he said.

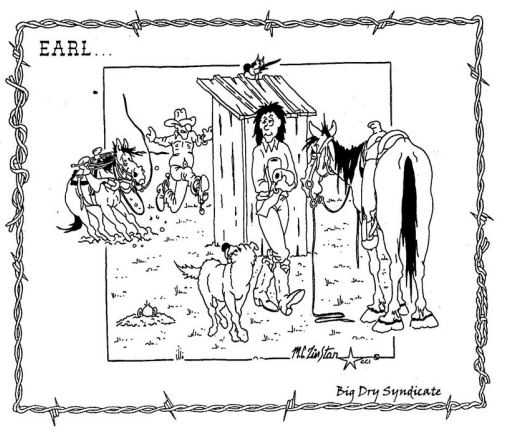
Joseph Stookey, professor at the University of Saskatchewan in Saskatoon, Canada, has conducted studies combining nose weaners and fenceline weaning, a method he refers to as the two-step process. He found that calves that went through the two-step weaning process bawled less, paced less and spent more time eating compared to calves weaned the traditional way and even more so than calves that went through fenceline weaning alone, which is already significantly more than the traditional weaning method.

In addition, Stookey reported on other weaning ideas, such as replacing the mother cows with unrelated cows, which his research found to be just as stressful on the calves as traditional weaning. In another study, he split the cow-calf pairs in half, giving each group of cows the other group's calves, as Smith Thomas had suggested. However, Stookey's study didn't show that this method was any less stressful than traditional weaning. He concluded, based off the two weaning ideas, that calves seek out companionship specifically with their mothers and that the presence of non-mother cows is not comforting to the calf.

Furthermore, Stookey studied the effects of separating calves and cows so they cannot see or hear one another versus fenceline weaning, and found that the "out of sight, out of mind" idea is not as stress-free as producers have traditionally thought. Rather, pacing and bawling was reduced significantly when cows and calves could see and hear one another through fenceline weaning.

Daly also recommended focusing on stress reduction well before the actual weaning event. For example, working calves no later than three to four weeks prior to weaning allows time for them to recover from stressful procedures, such as castration and dehorning. The stress response is much higher when these procedures — or any procedures — are done at that the same time as weaning, he said.

"Even when we do everything in our power to eliminate stress on calves, these animals will still face some stress and immune suppression in the days to come," Daly said. "For those reasons, it's necessary to bolster the immune system through vaccinations."



Open House Set For Monday At New Menno Hog Facility

MENNO — South Dakota Farm Families and Bryan and Melissa Kludt, will be hosting an open house at their new hog barn near Menno on Monday, Aug. 18, from 5:30-7:30 p.m.

The free, family-friendly event will provide guests with an opportunity to see first-hand where the pork products they enjoy get their start. Guests will be served pork loin sandwiches and have the chance to tour the newly built finish barn.

The Kludts recently finished building their 2,400-head finishing barn. Pigs will enter the building and be fed until their final market weight of 280 pounds. This style of building keeps the pigs out of the extreme South Dakota weather, and allows the Kludts to keep a close eye on the pig's health. The building is climate controlled and completely automated, keeping the pigs comfortable and healthy 365 days a year.

The barn is located just a few miles outside of Menno. From Menno, travel 3 1/2 miles South on 431st Ave. The barn will be on the east side of the road.

Visit agunited.org, like South Dakota Farm Families on Facebook, or follow @SDFarmFamilies on Twitter for more information.

Dairy Heat Stress, Energy Use Workshop In Brookings

BROOKINGS — During periods of heat stress, inefficient use of environmental control systems on dairies, such as lights, ventilation, cooling systems, have a negative impact on milk production and energy bills.

To learn how to evaluate their facilities and implement positive changes to their operation, dairy producers are encouraged to attend one of three hands-on workshops cohosted by SDSU Extension and University of Minnesota Extension. These workshops are supported by the North Central Risk Management Center and USDA/NIFA under Award Number 2012-49200-20032.

Registration for this event is $20 for the first person, and $10 for each additional person from the same farm. Lunch is included.

During each workshop, the morning session will cover the costs of heat stress and how to reduce the impacts of heat stress with the ventilation and cooling system. The afternoon session will be an open-house format consisting of hands-on stations around the farm where presenters will share information on specific topics such as lighting, fan capacity and efficiency, air speed through the pens, observing heat stress, energy audits and sprinklers and misting systems.

A workshop will be held Tuesday, Aug. 19, at Cottonwood Ridge Dairy, 25321 488th Ave, Garretson. The operation features the miling of 100 cows with robotic milkers. The slatted floor barn is tunnel-ventilated with light-transmitting wall panels. The workshop runs from 9:30 a.m.-3 p.m.

The workshops are sponsored by Elanco, Midwest Dairy Association, VitaPlus, Centra Sota Cooperative, Farmers Merchants State Bank of Pierz and Sauk Rapids, Munters, CowKühlerZ and Lange Ag Systems; and North Central Risk Management Center.

If you have questions or require special accommodations to attend this workshop, contact Erin Cortus at erin.cortus@sdstate.edu or 605-688-5144, or Jim Salfer, University of Minnesota Dairy Extension Educator at salfe001@umn.edu or 320-203-6093.