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Questions from the Farm

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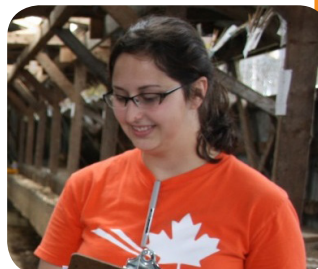
Crowell's Farms Ltd.

The Farm

Sandi Crowell is a recent graduate of the Nova Scotia Agricultural College (now Dalhousie Agricultural campus) where she earned a Bachelor of Science degree, majoring in Animal Science. After graduation, she opted to go home to her family's mink farm on Robert's Island, Yarmouth County, to work with her parents and younger brother Clinton.

In her final year of Studies at NSAC, Sandi studied nursing females and the effects of weaning at

different ages. She was able to do much of her research on the home farm which gave her parents, Ronnie and Sandra, an insider's look at the value of on-farm research. Sandi had the opportunity to attend the IFASA conference in Copenhagen in Aug. 2012, which gave her a chance to see and hear about international mink research, much of which was applicable to Nova Scotia production. She was keen to put her research skills to use at home.



Sandi Crowell re-
turned to her family's
mink farm after
graduation

Is there a therapeutic role for kelp meal on an Aleutian Disease positive mink farm?

The Question

Ascophyllum nodosum (also called Asco or kelp), a species of brown seaweed that grows in abundance along the coast of Nova Scotia, has been harvested and fed to livestock both in North America and Europe for generations. The traditional use of kelp meal was to boost mineral and vitamin intake by livestock, especially trace elements like iodine and chromium. However, in more recent years, marine plant research worldwide has focussed on the immune enhancing benefits of various seaweed species, including Asco. Fed to dairy and beef cattle, pigs, poultry, sheep, aquaculture, horses and dogs, Asco has shown immunological benefits when animals are stressed by disease (including viruses),

heat, transportation/co-mingling, poor nutrition, etc.

For more than 30 years, the Nova Scotia mink industry, supported by veterinarians, the Nova Scotia Department of Agriculture (NSDA), research scientists and other livestock specialists has been attempting to isolate and eradicate the Aleutian Disease (AD) Mink Virus. The test and kill strategy in place for more than 20 years has not prevented the continued spread of the AD virus in the province. During the spring and summer of 2013, several farms which had been AD free, tested positive for AD. The question then became 'Can *Ascophyllum nodosum* fed to mink exposed to the AD virus reduce mortality and/or improve productivity on a commercial mink ranch?'

How the question was approached



Kelp meal

Kelp meal was obtained from Tidal Organics Inc. in Pubnico, Yarmouth County. Crowell's Farms Ltd. provided 288 black peltier mink (144 females, 144 males) from August to pelting time. All mink were implanted and vaccinated for Botulism, Pseudomonas, Mink Viral Enteritis and Distemper prior to the start of the trial. 36 males and 36 females (12 cages, three per cage) were assigned to four blocks within the inner two rows of a four-row mink shed. Each block had 36 mink on a control diet, the standard diet all mink on the farm were receiving. The other 36 mink in each block were given a treatment diet which was the control diet plus 0.75% kelp meal on a dry matter basis, mixed on-farm in a feed cart.

Mink were weighed by Sandi and Clinton and a farm employee on Day 0 and again just prior to pelting. Mortalities and sick mink were recorded, along with any treatments required. At the second weighing, white hairs were also graded subjectively on a 0-4 scale. Perennia staff evaluated the results at the end of the trial.



Setting up the treatments and the controls.



Mink were individually weighed.

Observations and Measurements

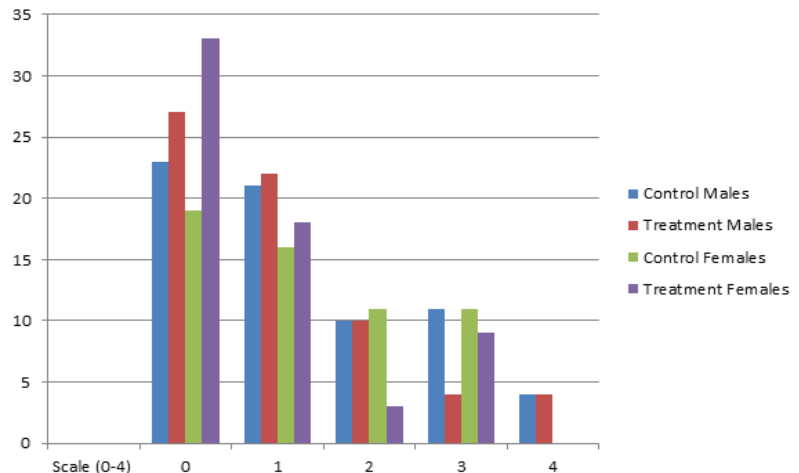
| | Average weight gain /mink (grams) | % Mortality |
|-------------------|-----------------------------------|-------------|
| Control males | 710.2 | 4.2 |
| Treatment males | 731.9 | 6.9 |
| Control females | 299.4 | 20.8 |
| Treatment females | 281.8 | 8.7 |

While there were no significant differences noted between treatment and control groups in average daily gain for males or females, or male mortality, there was a tremendous improvement in survivability in the females receiving the treatment diet.

A second interesting observation was the seemingly reduced presence of white hairs especially in the females of the treatment group.

On the scale of 0 (no or minimal presence of white hairs on the back of the animal) to 4 (highest density

of white hairs) more treatment males and females showed up in the 0 and 1 category than controls, and fewer treatment animals appeared on the 3-4 scale, compared to control animals. White hairs are known to appear in black pelts as a response to stress, suggesting that perhaps the kelp is acting to mitigate the mink's response to the effects of the AD virus.



What does it all mean?

The addition of kelp meal to the diet in this particular feeding trial with growing mink exposed to the Aleutian Disease virus appeared to reduce female mortality and reduce stress. The trial was run from early August to early October. The majority of growth had occurred prior to the initiation of the feeding trial. As with most research, the trends found in this trial beg more questions! Would the results have been different if the feeding period

was longer, or the trials started earlier? Did implanting make a difference? Would a higher or lower inclusion rate of kelp meal change the results? And, what might kelp meal do in the breeding season for males, or for lactating females and their kits?



Collecting and recording mink weight data.

What did it cost?

Perennia staff (Nancy Smith) and Crowell's Farms Ltd. contributed the time to set up the trials, and weigh the mink twice. Sandi mixed the treatment feed daily and ensured farm staff fed each block of mink the appropriate diet. Kelp meal retails for \$1200- \$2500 /tonne, depending on volume and trucking. The suggested dose rate to enhance immune function is 0.5 to 0.75% on a dry matter basis, which amounts to only about 6 pounds lbs of kelpmeal per 2000 pound mix. At that rate, the cost is only \$3.25-\$6.80/batch and if fed through the entire growing season would still cost a matter of cents per mink.

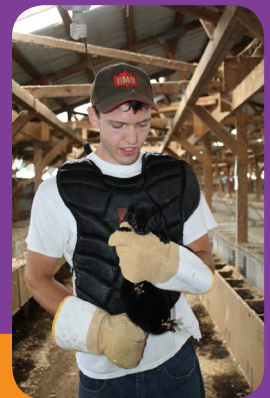
Discussion

Putting a dollar value on the results is difficult. Mortalities with Aleutian Disease positive mink are often late in the growth period and pelts are still salvageable, albeit at a lower price. However, if it only costs cents to feed kelp to a mink, it doesn't take much improvement in pelt quality to easily justify the expense.

Perennia, the Nova Scotia Mink Breeders Association, and Dalhousie Faculty of Agriculture staff currently have a trial underway at the Aleutian Disease Research Centre, looking at specific immune function parameters in a controlled environment. The trial is being funded by Tidal Organics Inc. and the Nova Scotia Department of Agriculture under Growing Forward 2. Stay tuned!

The quick answer to the original question:

There was a tremendous improvement in survivability in the females receiving the treatment diet.



Involving interested employees encourages their input.

About Perennia

Perennia is a fully integrated agri-food and bio-resource company with integrated teams in extension and advisory services, quality and food safety, bioventures, and facilities. Specialists work with producers and processors to address production issues on farms, create internationally recognized quality and food safety programs, provide leased incubation space for new product development, and conduct research to transform underutilized land- and marine-based resources into high-value products.

Perennia combines the resources of AgraPoint, the Atlantic BioVenture Centre and AgriTECH Park.

Benefits of On-farm Research

Why do we stop asking why? Even a toddler can recognize that, “because I said so” is not necessarily the best answer to the question. On-farm research is quite simply about asking questions and finding good answers that are meaningful to **your** farm. It's about real questions in real life situations. It's a process. It's a process that has benefits beyond just the findings. Conducting your own on farm research project will sharpen your observational skills, better enable you to assess the applicability of advice, allow you to get to know your farm even better, and help you make more confident decisions about changes on your farm.

Where do we come in? At Perennia, we can:

- help you design the process to ensure your questions can be answered in a practical, meaningful, and cost effective manner
- provide background information and relay findings to similar questions that have been asked
- serve as a resource throughout the project
- help compile the information collected, and produce a straightforward report that you and your neighbours can refer to
- Help organize and host a workshop to share your findings

Research shouldn't be restricted to the lab or to small field plots. Everyone can ask the question “Why”.



Your question,
your answers, and
a little bit of our
help

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