Grain-fed veal fact sheet: Mycotoxins

Introduction

The goal of a of a grain-fed veal farmer is to achieve the desired finish at the right weight and age when marketing veal cattle. Ideally market-ready grain-fed veal cattle should weigh between 295 to 320 kg (650 to 705 lb.) at 28 to 32 weeks (seven to eight months) of age. To achieve this goal, it is critical to have the right feed rations and ratios.

Veal is defined as cattle of any dairy breed or dairy crossbreed dressing no more than 190 kg (419 lb.). This converts to a live weight of roughly 349 kg (769 lb.), which is reached at approximately eight months of age. Producers are strongly encouraged to target a dress weight of 180 kg (397 lb.) to maintain some flexibility within the system to manage veal carcass weights.

- Average daily gain (ADG) should be 1.2 kg (2.6 lb.) or better. Targeting daily gains above 1.5 kg (3.3 lb.) may require additional nutrient requirements.

Grain-fed veal cattle are fed a balanced ration based of grain (usually clean, whole-shelled corn) and pellets made of protein, vitamins, and minerals. A small amount of fibre should be offered daily to maintain rumen health. Cattle should also have continuous access to their feed, to encourage slower eating and stimulate chewing. Ensure there is adequate bunk space for each animal.

Mycotoxins

Mycotoxins are toxic compounds produced by certain types of fungi that can contaminate crops like corn. Common mycotoxins include aflatoxin, deoxynivalenol (DON or vomitoxin), and fumonisin. These toxins can have serious health effects on livestock, including reduced feed intake, poor growth, and immune suppression.

Mycotoxin research in veal production

In the late 2000's, the legacy association the Ontario Veal Association (OVA) commissioned a study on the effects of DON on veal cattle growth, health, and carcass quality at levels of nine ppm (mg/kg) DON. The study found that veal cattle can handle diets with up to 10.27 ppm (mg/kg) DON without adverse effects. In fact, those on DON-contaminated diets showed similar dry matter intake (DMI) and even tended to have better ADG and improved feed efficiency compared to those on uncontaminated diets. Final body weights and total weight gain were comparable between the two groups, and no differences were observed in carcass traits.

This study suggests that veal cattle can tolerate moderate amounts of DON in their diet. However, the authors emphasized the need for further research to confirm these results, examine potential meat residues, and explore the effects of varying DON levels.

It's important to note that there are limited studies on this topic, particularly in grain-fed veal production. The concentrations and combinations of mycotoxins in real-world scenarios may differ from those tested in research settings. Therefore, it's challenging to predict with certainty how contaminated corn might impact your veal cattle, and caution is always warranted.

Signs of a problem

- Off-feed behavior: The first sign of a problem will be cattle going off-feed. If this happens, work with both your herd veterinarian and your nutritionist, and consider DON levels as a potential cause
- Quick action: Identifying the problem and quickly adjusting the diet is key to minimizing lost growth

Expert insights

James Byrne, Beef Cattle Specialist, Ontario Ministry of Agriculture, Food and Agribusiness (OMAFA):

- Resistance to DON: Beef cattle are very resistant to DON, unlike other species such as pigs
- CFIA guidelines: The Canadian Food Inspection Agency (CFIA) sets a maximum DON level in the total diet of five ppm for beef cattle four months and older, and DON-infected grains should not exceed 50 per cent of the diet
- FDA guidelines: The United States Food and Drug Administration (FDA) sets this level at 10 ppm of the total diet
- Forage feeding: Feeding forages significantly reduces the concentration of DON in the total diet

Research findings

Beef Cattle Research Council (BCRC) report:

- **Tolerance levels**: Growing-finishing cattle can tolerate much higher levels of DON in their diet without going off-feed
- **University of Minnesota trial**: Steers were fed rations containing up to 18 ppm DON of the total diet through the finishing phase with no effect on gain, feed intake, or feed efficiency
- **North Dakota State University trial**: Cattle were fed up to nine ppm DON during the growing phase and up to 12 ppm during the finishing phase with no effects on performance

Practical advice for veal producers

Monitoring:

- **Close monitoring**: Pay close attention to veal cattle being fed questionable corn as there is always a risk
- **Backup plan**: Have a backup plan in place in case the cattle cannot handle corn with high levels of DON and experience a setback
- **Nutritionist consultation**: Work closely with a nutritionist to ensure diets are designed with DON levels in mind

Mitigation strategies:

- **Blending grains**: Blend contaminated grains with clean grains to dilute the mycotoxin concentration to within acceptable limits
- **Toxin binders**: Add approved ingredients, such as anti-caking agents or yeast products, to bind toxins

Calves under four months:

- **Low risk**: Calves less than four months are unlikely to be affected by DON as their grain intake as a percentage of total diet is typically small

Are there human health effects?

Handling mouldy feed:

- **Respiratory risks**: Mouldy feed can have negative human health effects (respiratory disease) when spores are inhaled during harvesting, handling, feeding, or working around mouldy feed
- **Symptoms**: Symptoms of exposure can include burning eyes, throat, and chest, as well as an irritating cough and fever
- **Health monitoring**: Be aware of changes in health of yourself and others in your operation and seek medical advice if needed. Inform your doctor that you have worked with potentially contaminated feed

Conclusion

By following these guidelines, veal producers can effectively manage the risks associated with feeding corn contaminated with mycotoxins, ensuring the health and well-being of their cattle and themselves.

Further reading

- Corn mycotoxin research trial completed
- Effects of feeding corn naturally contaminated with mycotoxins to grain-fed veal
- Sampling feed to test for mycotoxins
- Mycotoxin levels and interpretation
- Alleviating mould and mycotoxin problems
- Effects of mouldy feed and mycotoxins on cattle
- Feeding mould and mycotoxin contaminated wheat to ruminants
- Laboratories offering mould and mycotoxin analysis

For more information:

As part of your research into starting a grain-fed veal farm, you are encouraged to talk to experienced veal producers, visit their farms (while following strict biosecurity protocols), and attend industry events and meetings. No two veal farms are the same and a lot of valuable information will be learned from each visit and event.

Find VFO producer resources here: https://vealfarmers.ca/producer-information/resources/

Find the *Code of Practice for the Care and Handling of Veal Cattle* here: https://www.nfacc.ca/codes-of-practice/veal-cattle

Find Ontario Ministry of Agriculture, Food & Agribusiness veal resources here: https://www.ontario.ca/page/veal-farming

References available upon request.

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