

Feed Ingredients for Quality Mink

The cost of feed is the biggest single expense for intensive livestock production.

Sourcing cheaper and readily available ingredients for making mink feeds can become a significant means to reduce feed costs and overall ranch expenses. However, cheaper feed doesn't always translate to a better bottom line.

Every feed ingredient that gets fed to livestock, whether for food or fibre production, should be checked for nutrient content. A standard proximate analysis on grains and protein meals fed to non-ruminant animals includes dry matter, crude protein, digestible energy, and minerals like calcium, phosphorus, magnesium, and potassium, with some trace minerals. Additional tests of feed ingredients for fur animals should also include crude fat, salt and ash.

Knowledge of the nutrient levels in delivered ingredients allows for ration formulation changes to account for the increases or decreases in nutrient levels from one load to the next. Some ingredients, such as 48% soymeal, have low variability between loads, while others such as byproducts from meat or poultry processing facilities can have extremely high variability, especially in fat and ash content. Changing the ration formulations to account for this variability can save money by reducing excesses which simply get lost in manure. It also ensures animals are not being under or overfed other nutrients which could limit growth, lactation performance or pelt quality.

Some ingredients look like bargains on a per kilogram or tonne price, but when compared on a dry matter basis, the cost per unit of protein or energy, may show they are not much of a deal. Taking an ingredient sample, getting a nutrient analysis and checking the nutrient levels will help you with your ingredient purchasing decisions.

The final rations mixed either by an on-farm or central feed kitchen should be routinely sampled and tested to ensure the mix is consistent. Wet mink feed in the more liquid medium tends to mix well but routine monitoring of wet feeds is important to ensure the end ration contains the formulated levels of nutrients. Feed kitchens require scheduled calibrations to make sure scales and meters measure accurately.

Regular feed testing also helps confirm that the correct inclusion levels of commercial cereal, supplement, premix, and other additives have been met. The most expensive, highest quality ingredients won't improve the ration if not added at appropriate levels in a uniform mix. Likewise the cheapest ingredients won't reduce overall feed costs, if the final unbalanced feed increases feed intake or wastage, or performance suffers.



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Feed safety hazards found in feed ingredients and manufactured mink feeds:

- Biological contamination with pathogenic bacteria, viruses, molds, and mycotoxins.
- Chemical contamination from pharmaceutical cross contamination, pesticide residues, heavy metals, cleaning and disinfection agents, preservatives, petroleum products, etc.
- Physical contamination from any extraneous materials such as bits of glass, metal, plastic, soil, bedding material, and other plant residues and insects.

Feed Quality Challenges

The biggest quality challenge for mink feed is biological contamination. Any ingredient with more than 15% moisture is highly susceptible to microbial growth. By-products from poultry and meat processors and fish plants are excellent sources of quality protein and fat for fur production but have the potential to be a source of Clostridium, E.Coli, Salmonella and Campylobacter which will adversely affect mink.

Garbage In = Garbage Out!

Routine sampling to monitor microbial load is essential. When ingredients are contaminated with pathogenic bacteria, the final ration will not promote good health and productivity. Due to the nature of mink feed ingredients, some amount of microbial contamination is to be expected. However, proper hygiene, transportation, storage, thawing, processing and attention to feeding practices go a long way in reducing the growth of these microbes.

Chemical contamination can also be problematic. Certain species of marine fish contain trimethylamineoxide which interferes with iron utilization, causing cotton fur. Inclusion of these fish usually requires supplementation with a source of chelated iron and Vitamin B₁₂. Other fish species, like herring, contain thiaminase and can lead to a thiamine deficiency if the ration is not supplemented with extra thiamine. Raw egg whites contain avidin which ties up biotin in mink rations. The result is poor quality fur if extra biotin is not included in the diet.

Fats and oils can boost the ration energy content economically. Although fat is a very concentrated source of digestible energy compared to other ingredients, high fat ingredients, especially fish oils, are prone to breakdown and oxidation causing rancidity. Not only are rancid fats unpalatable, but they also can cause Yellow Fat Disease, and negatively affect fur quality. Along with proper storage conditions, antioxidants like Ethoxyquin and Vitamin E can help prevent oxidation from occurring.

Ingredients with high levels of bone, shell or chitin (crab or lobster) have reduced digestibility which affects the digest-

ibility of the whole ration, and in some cases will reduce palatability and intake.

Protein meals can be a blessing when high quality wet ingredients are in short supply or too expensive. Typical protein meals have less nutrient variability and lower microbial contamination than wet ingredients. Transportation costs, on a per nutrient basis are lower too. Meat meal, fishmeal and poultry meal are good sources of quality protein and amino acids and can replace their wet counterparts. It is important though to compare nutrient levels on a dry matter basis, and to take into account the potential for reduced digestibility due to the heating process, and high ash content. Feather meal or a high inclusion of feathers in poultry meal will have a low digestibility, and should be minimized.

Plant protein meals like soy, canola, and corn gluten meal have low variability and the price can be attractive. However plant proteins are usually high in fibre, which mink can't digest well. Soy is reported to cause enteritis as well, so inclusion levels must be low.

Cereal grains are a cost effective source of digestible energy for mink but unlike most livestock, a mink's requirements for carbohydrates is very low. Most cereals are high in fibre which the mink can't utilize, so the best sources are ground and heated corn and wheat, with low fibre and high starch content. Extruded barley is another popular choice, when the price is right. The extrusion process maximizes the starch digestibility in an otherwise lower energy grain.

Attention to the quality of feed ingredients, from ration formulation through feed manufacturing will prevent problems from nutrient imbalances and pathogen load. Good quality ingredients and the resultant feed will support optimal mink performance and pelt quality.

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