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Effective ingredient specifications yield quality feeds

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Vendor validation programs ensure good manufacturing practices



High-quality feed ingredients have an even consistency with no foreign materials. Specifications for such ingredients should include desired physical characteristics, proximal analysis, packaging and handling requirements, and other data.

Quality in aquafeeds translates into feeds that meet the requirements for nutrition of the target species as well as feed palatability, water stability, and, importantly, food safety. A focus on quality must be conveyed from the top of feed operations to every organizational level. Every person involved in quality control, purchasing, nutrition, and regulatory affairs must adhere to the quality commitment.

Ingredients first

The production of quality aquaculture feeds starts with quality ingredients. Most ingredients used in aqua-feeds are byproducts of the food processing of poultry, beef, lamb, and fisheries. Most do not meet human food standards for a variety of reasons. However, there are standards for acceptance and use of these byproducts for aquafeed manufacturing.

Purchasing ingredients that meet the quality expectations of customers is essential for feed producers' success in the marketplace. Companies that buy ingredients with a "bargain" mentality also spend more money handling product complaints, more time reprocessing product and fines, and more time and energy in the manufacturing process. In contrast, companies that buy with both quality and price in mind produce consistent products that quickly build a good reputation and translate into company growth and success.

Feed mill quality assurance

Aquaculture producers should take a close look at their feed manufacturers, requesting information on the plants' quality assurance programs to more fully understand their commitment to purchasing quality raw materials and producing quality feeds.

The feed manufacturer's primary objective with a quality assurance program should be to source ingredients of consistent nutrient quality and quantity while meeting specified standards. A large range of variation in the ingredients' nutritional values can significantly affect the nutritional value of the finished feeds. These variations in ingredient quality have a direct effect on processing parameters, as well.

It is common to hear from feed manufacturers that their pelleting processes vary greatly from day to day. Such process variations can be diminished by controlling the ingredients used in the formulas. Ingredients that meet specific standards – not the lowest price – must be the basis for all raw materials purchases.

Ingredient specifications

The best way feed manufacturers can ensure the purchase of quality ingredients is by using written ingredient standards. These standards or specifications must adhere to the formulation standards that will result in a finished product of consistent nutritional and physical quality.

Ingredient specifications should include elements such as the following:

- A description of the ingredient.
- Proximal analysis that reports target minimums and maximums for acceptable moisture, protein, fat, fiber, ash, pH, and other contents.
- The methods of analysis used to determine each nutrient listed. Such methods could reference the standard methods used by AOAC International.
- Physical characteristics of the ingredient: color, particle size, odor, bulk density, and test weight standards.
- Packaging, handling, and storage requirements.

- Guaranteed analysis requirements that provide date, lot, and nutrient profile. Some ingredient manufacturers include the universal product code in order to allow traceability back to the source.
- Maximum acceptable levels of foreign material in the ingredient.
- Labeling requirements that include date of manufacture, tag color, guaranteed analysis, company name and address, and net weight.
- Include the material safety data sheet every time the ingredient is purchased.
- Product safety concerns and directions for handling hazardous materials.
- Rejection criteria.

If an incoming ingredient shipment does not meet the specified standards, it should not be unloaded and must be rejected. This can be a problem if the ingredient analysis takes a long time to complete. Some companies rely on new technologies such as near-infrared analysis to get information within minutes. The best assurance of quality the plant has is to develop a vendor validation program.

Vendor validation

Supplier or vendor validation programs are basically qualification processes in which the vendors' or suppliers' facilities are audited by the quality assurance technician of the feed-manufacturing company. The purpose of the validation audit is to ensure that the suppliers adhere to good manufacturing practices and the raw materials and processing methods used provide ingredients that meet the standards used in the plants' formulations.

A facility that qualifies as a vendor of choice must likely adhere to the following practices: good record keeping, standard operating procedures, HACCP guidelines, pest control, raw material traceability, sample retention, good communication with the client, and proper handling procedures for nonconforming products. Supplier visits should be conducted on a regular basis, and the frequency of the audits will depend on the suppliers' history of compliance.

Feed supplier audits

Any aquaculture producer should have the right to audit a feed supplier in the same way feed manufacturers audit ingredient suppliers. As a client, you should understand how the feed is made and if the plant meets the criteria to produce "safe feeds for safe foods." Ensuring that the aquafeed purchased is of the highest quality is an investment for optimum results at the farm and the rest of the way to consumers.

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