Optimise aqua feed production – 7 July 2022

Selko Feed Additives – Global Webinar

Questions and answers

Presenters:
Jan Jonkers, Jan Jonkers Consultancy
Dr. Saravanan Subramanian, Global Programme Manager Aqua

Contact for more information and questions: Selko.marcom@trouwnutrition.com

Question	Answer
Good Afternoon sir. Extruder Moisture how to control 23-26 %	Extruder moisture levels can be controlled by accurate feeding and dosing equipment.
1.How to getting unifomed size ...It"s related with Moisure or not sir.	Uniform feed size is achieved by stable processing conditions. This includes the stable additions of all inputs like the dry material mixture, moisture, steam and oils and fats as well as the sufficient mixing of these.
QUestion for Jan, In case we add water to improve pellet quality is there a higher risk of microbial contamination? How to prevent this?	The risk of microbial growth depends on the water activity (a measure of the amount of free water in the feed). If there is a risk for microbial growth, components that lower the water activity and/or anti-moulding agents can be added to the feed.
What would be the best conditioning and extrusion times (sec)?	Conditioning time should be at least 1 minute, preferably 3 minutes or longer. Extrusion time is less critical
Aqua feed drying: what would be best speed of each dryer layer?	Depends on a lot of parameters like dryer design, dryer efficiency, product size, product density, etc.

What is your suggestion on moisture retention (%) in stored aqua feeds?	Assume moisture level in the final feed is meant with "moisture retention". Possible moisture levels in aqua feeds depend on the application at the customer, formulation, water activity, storage conditions (temperature and humidity), storage time, packaging, used feed additives like anti-moulding agents etc.
Since aqua feed requires a fine / stronger grinding compared to livestock feeds, how much is the moisture loss during aqua feed grinding?	Depends on formulation and grinder type, grinder setup, airflows, etc.
Is it possible to produce extruded aqua feed with final moisture of 12%?	Yes, if appropriate measures are taken to avoid microbial issues.
What is the max. moisture increase possible? Why is moisture increase limited to 1.5 - 2%?	In many countries, as per legistilation the maximum allowed moisture in animal feed, including fish and shrimp feed is 12%. The possibility to increase moisture level (%) varies between the current moisture in final feed and maximum permited/accepted moisture level. Typically, in many casese we see possibility to increase from 1 to 2%.
"examples of surfactants used feed safety issues"	Many different types of surfactants are commercially available and some of which are allowed to use in animal feed. Examples are inorganic salts of lignosulfonates, polyethylene glycol, etc..
Are surfactants added as a liquid or dry product? If a liquid, is it added directly to the conditioner or to the water which is then added to the conditoner?	In the case of our Selko products, these tend to be in liquid form and are added in a hydrated solution with water. This is then applied using acccurate, safe and easy to handle dosing equipment.
What is the ideal moisture for shrimp pellet	Depends on feeding equipment used by the customer, formulation, application etc. Higher feed moisture increases in general the feed durability (less dust and broken pellets).

What is Particle size recommended for grinding for shrimp pellets	Trend in the industry is fine grinding, precise numbers vary from feed supplier to supplier.
How to maintain aw when %M increased?	Water activity, aW, is linked to free water content. Increasing moisture will apparently increase water activity. Using Fylax we have observed 1% increase in moisture and only slight increase in water activity (0.69 vs. 0.64) but the shelf-life extended by >1.8 times compared to control feed without Fylax.
Whats the ideal moisture% in pellet mill	Assume feed pellets are meant with "pellet mill". Depends on feeding equipment used by the customer, formulation, application etc. Higher feed moisture increases in general the feed durability (less dust and broken pellets).
" if raw material is having 15% moisture how we can adjust moisture level in finish product "	Moisture and steam additions during process, moisture losses during process, blending with other ingredients, drying (if dryer available), oil coating.
how we can improve starch gelatinisation	Fine grinding, optimal conditioning (like correct order and location of water and steam additions, using hot water, sufficient amount of water, sufficient time, small droplet size, avoiding or minimizing oil or fat in conditioner, good steam quality, using a surfactant).
whats the ideal starch gelatinization % in 38%CP shrimp feed	This question was not entirely clear. Please get in touch with us to get further support.
What type of Machine used for Feed water stability	A turbidity meter can be used to determine feed water stability, this instrument measures how light is scattered in a water sample against the amount of light scattered in a reference solution.

"What is the ideal Maximum Moisture for Feed Durability? "	Depends on feeding equipment used by the customer, formulation, application etc. Higher feed moisture increases in general the feed durability (less dust and broken pellets)
How moisture may impacted to feed colour and water stability?	Moisture impacts raw material functionality, starch gelatinisation and binding and thus waterstability. Moisture affects flowability and friction of the raw matterial blend during processing as well as expansion in extrusion applications affecting the feed colour.
"Why the extrusion process require 20-30% of moisture? "	A certain amount of moisture is required to obtain sufficient fluidity to push the material mixture through the die openings. Precise amount depends on formulation and processing conditions.
what is the ideal conditioning time for good gelatinization?	Preferably 3 minutes or longer in combination with the other conditions mentioned during the presentation.
"What is the maximum amount of moisture addition I can add safetly? "	Depends on formulation, water activity, and whether or not an anti-mould agent is used.
what is the correlation between moisture content and durability / dust	See slide in presentation. Precise correlation will depend on feed size, formulation and applied processing conditions.
describe surfactant and emulsifier	Both surfactants and emulsifiers are surface active agents. They are amphiphilic molecules contains both polar (hydrophilic) and non-polar (lipophilic) functional group. Surfactants are commonly used term when mainly used to manage the behaviour of water (eg., polyethylene glycol), whereas emulsifiers are commonly used term when mainly used to manage the behaviour of oils and fats (eg., lecithin).

Can the moisture content in aquafeed influence the presence of mycotoxins?	Yes, feed with higher moisture content are likley to higher risk of mycotoxin presence. Feed with high moisture (without anti-mould agents) are prone to mould and fungal growth, which are known to produce several types of secondary metabolities (aka. mycotoxins). These further depend on storage condition (temperature, humidity) and duration.
How can we manage free water? How to achieve the right balance on feed Processing VS microbial control?	Managing free water is critical in aquafeed processing, as it affect quality and safety of feed and also the cost of production. Enhancing the dispersion and penetration of free water into the drymatter matrix in conditioner will increase starch gelatinization and protein hydration resulting in better throughput and feed quality. Use of Fylax Forte HC with 'ActiProp' optimises free water use and offers felxibility with moisture management in aquafeed processing and at sametime minimizes risk of microbial growth, resulting in ehnaced feed quality and extended shelf-life of feed.
Hi. i have a question for the professor. For sinking feed (shrimp), what are the key parameters of the process to improve the final product water stability? And how to mitigate the kibble expansion without sacrificing water stability?	Water stability is a result of many parameters like pellet dimensions, formulation (including possible binders), starch cook, applied processing conditons, expansion (and the resulting pore structure) and oil or fat coating (increasing hydrofobicity). Some of the aforementioned parameters also affect expansion. One (expansion) will influence the other (water stability).