

# FEEDS AND NUTRITION COURSE 2019

ZAANDAM | THE NETHERLANDS | JUNE 3 - 7, 2019

'The course is specially designed for animal nutrition specialists'

## MODULE 3 | FEED PROCESSING AND MANUFACTURING

**Compound feeds are processed in feed mills using a variety of different treatments in order to increase the feeding value, handling or palatability. Feed mills most often grind, mix and pellet or expand/extrude feeds. This complex process needs to be monitored carefully while the goal is to maximize feed production and minimize energy costs, without sacrificing nutritional quality. In this course the different technological processes and options will be discussed. In addition, background information is provided on the constituents that make up physical pellet quality traits like hardness and durability.**

### Learning objective

- To gain knowledge on the fundamentals of the manufacture of (pelleted) feeds that will assist in troubleshooting bottlenecks and quality problems in a feed manufacturing environment.

### Course design

This is a one day module. Parts of the course will be taught as case studies, some theoretical background is provided. In addition, flowcharts of practical feed manufacturing operations will be discussed to improve general feed mill performance.

### MONDAY JUNE 3

#### 3.1 Welcome and introduction

#### 3.2 Principles on feed particles, grinding and mixing materials

The type and composition of a feedstuff and the level it is incorporated in the feed mix may have a very large effect on the physical pellet quality and the ease with which the feed mix is processed. Here, we will discuss the evaluation of particle size distributions and define the principles of the milling and mixing processes.

#### 3.3 Agglomeration and pelleting

Monitoring the feed mash before pelleting in relation to pellet quality is performed at the conditioning step. Conditioning is the key-ingredient to the production of high quality compound feed. We will review the effect of functional changes in protein, starch and fibre and its subsequent effect on pelleting characteristics. Then the conditioning requirements depending on the feed-type produced and the effects of (absence of) steam-quality on production characteristics will be discussed.

#### 3.4 Monitoring the production process and implementing systems to decrease energy usage

Modern feed mills employ logging systems. The data generated by these systems may serve to obtain information on the pelleting operation which, before the advent of modern computing systems, was not deemed possible. A short introduction is given on possibilities and pitfalls when working with large data-sets from feed factories.



### 3.5 Bottlenecks in the production process (increasing production capacity)

The most prominent bottlenecks with respect to increasing production capacity, whilst maintaining physical feed quality, will be discussed. De-bottlenecking tips will be given and discussed.

There is plenty of opportunity to include practical problems put forward by the attendees of the course. Attendees are asked to submit problem descriptions before 24<sup>th</sup> of May to Menno Thomas ([info@zetadec.com](mailto:info@zetadec.com))

**Trainers:** Menno Thomas and Oriane Guérin (Zetadec)

**Remarks:**

- This module will only discuss the technical part of feed processing. The effect of processing on nutrition will be discussed in the different animal modules (module 9, 11, 15).
- Zetadec is a consultancy and contract R&D organization for the feed, food and biomass industry.

