

# PILOT SCALE ANIMAL FEED PRODUCTION FOR OPTIMISATION OF PALM-BASED FEED FORMULATION

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**A** contributing factor to the success of livestock rearing is the type of feed given to the livestock. The feed should be prepared based on their nutritional requirements, so that optimum growth can be achieved in a given time. A balanced diet should contain protein, carbohydrate, lipid, vitamins and minerals.

## ANIMAL FEED SPECIFICATIONS

Meeting livestock nutritional requirements is extremely important in maintaining acceptable performance of neonatal, growing, finishing and breeding animals. Livestock rations should meet the requirement of balanced nutrients in order to provide the optimum growth of animals in livestock industry. Each nutrient including protein, amino acids, oil, fibre, energy, minerals and vitamins fulfils specific roles in growth, production or metabolism of the specific livestock. By understanding animal nutritive specifications, it will give a well-balanced proportion in diets for its effective utilisation in animals ration production. Nutritional deficiencies will lead to infertility, reduce feed intake, retarded growth rate, abnormal bone development and in severe cases, mortality.

## PROCESSING

Animal feed processing has developed into an advanced stage, which involved various physical and thermal techniques that led to an improved quality of feed. The processing of feed has contributed to an improvement of quality in the animal feed industry. The processes involved include: (i) reducing particle size of feed ingredients, (ii) heat treatment, (iii) reducing moisture content and (iv) increasing feed density. Feed processing increases dry matter intake and digestion, which in turn enhances animal growth. In term of feed management, feed processing helps to increase the efficiency of handling, transporting and storing.

Production of prototype product will assist in commercial production. Thus, optimum formulation and processing can be achieved by testing the laboratory scale of feed produced in a pilot scale machines. MPOB has a pilot scale plant (*Figure 1*) with a capacity of 100 kg hr<sup>-1</sup> production.

## BENEFITS OF PELLETTED/EXTRUDED ANIMAL FEEDS

- Avoid animals from picking or choosing between ingredients, thus they will receive a well-balanced diet and minimise wastage.
- Easier to handle as compared to mash form feed.
- Reduce feed dustiness.
- Enhance animal performances by improving feed intake and consequently body weight gain.
- Improve starch gelatinisation in feed ingredients, thus avoiding in digestion problem.
- Produce feed that has water stability characteristic (for aqua feed).
- Prevent the formation of molds by removing excessive moisture.

Source: Amerah *et al.* (2007); Mckinney *et al.* (2001); Zhang *et al.* (2009); Singh *et al.* (2014)

## SERVICE OFFERED

MPOB Animal Feed Pilot Plant has a capacity of 100 kg hr<sup>-1</sup> or about 1 t per day. Since 2015, MPOB continues to carry out research and development activities on achieving optimal palm-based feed formula for broiler, layer and freshwater fish. Development of new feed products using palm-based feed ingredients for other livestock such as beef and dairy cattle, goat as well as pets are also being conducted using this facility (*Figure 3*). MPOB also conducts feeding trial using feeds produced at the Animal Feed Pilot Plant.

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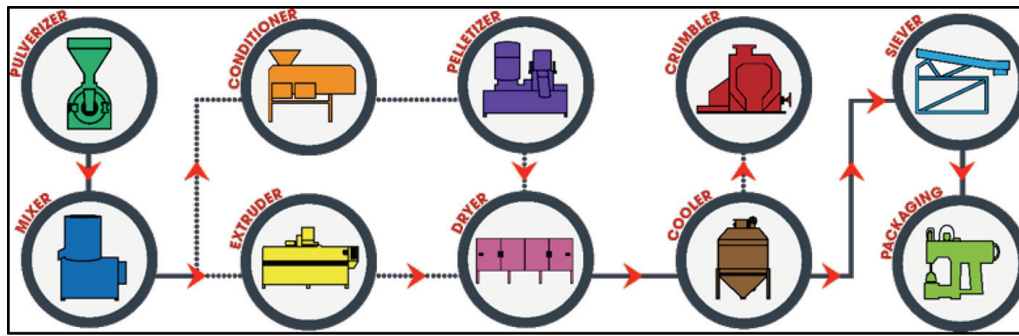


Figure 1. Process flow chart for the production of animal feed pellet.



Figure 2. Different animal feed forms.



Figure 3. A 100 kg hr<sup>-1</sup> MPOB Animal Feed Pilot Plant at MPOB Keratong Research Station, Pahang.

MPOB would like to offer the service for producing pelleted or extruded animal feeds for the purpose of optimising formulations and preparing test samples. The facility is located at MPOB Keratong Research Station, KM 137 Lebuhraya Segamat-Kuantan, Pahang.

## CHARGE

The charge for using the facility is RM 300/100 kg of feed production (subject to change).

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