



*The following protocol is in a process of continual improvement and will be updated periodically.  
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## Feed Manufacture Considerations

After an ingredient has been incorporated into an experimental feed, that experimental feed needs to be made. The first consideration in planning feed manufacture for experimental trials is to determine the amount of feed that is needed for the experiment. Based on the amount needed, the experimenter needs to find a feed mill that is willing to make a small batch of customized feed for your experiment. The F3 Team has compiled a list of small scale batch feed mills [here](https://f3fin.org/resources/small_batch_testing/):  
[https://f3fin.org/resources/small\\_batch\\_testing/](https://f3fin.org/resources/small_batch_testing/)

### Contracting with a Feed Mill

Large commercial feed mills may be reluctant to produce small batches of customized feeds. However, some feed companies often conduct their own research and therefore have the capability to run small batches. Check out our list of [Small Batch Feed Production Facilities](https://f3fin.org/resources/small_batch_testing/) ([https://f3fin.org/resources/small\\_batch\\_testing/](https://f3fin.org/resources/small_batch_testing/)) for potential resources.

Here are some details to discuss with potential feed mills:

- Minimum batch size for the feed mill and pellet size capabilities given the pellet sizes required based on the length of the experiment and species tested.
- Ingredients in the proposed feed - *Can the feed equipment handle the new ingredient? What are its tolerances for the new ingredient?*
- Sourcing of ingredients: Are nutritional analyses available? What ingredients will the feed mill provide? Will certain ingredients need to be shipped to the feed mill? Be sure to coordinate shipments and mark packages according to feed mill requirements. Make sure that the feed mill uses ingredients of comparable quality across feeds and experiments - i.e., high quality poultry byproduct meal versus high quality fishmeal.
- Storage conditions of ingredients and feeds - Check expiration dates of each component ingredient. Analysis of peroxide values of ingredients or manufactured feeds is a good check for rancidity. What are the storage conditions and how do they affect expiration?
- Understand the feed mill's timeline for production - when is the mill equipment available, when should ingredients arrive in time for manufacture? *Time shipping so that expiration dates are not exceeded.*
- Plan on analyzing the nutritional composition of feed samples by an independent laboratory once feed manufacture is complete. This analysis will provide confidence in the nutritional profile of the feeds. Often feed processing may change nutritional composition of the feed and ingredients.
- If manufacture involves shipping ingredients and feeds internationally, it is important to discuss the importation approvals and permitting process prior to feed manufacture, especially if the feeds will be shipped internationally. Refer to [Incoterms](https://internationalcommercialterms.guru/) (<https://internationalcommercialterms.guru/>) for shipping responsibility terminology.