Fermented Feed for Commercial Pastured Poultry

Findings from on-farm research and innovations to make it work

Laying hens on pasture at Foothills Farm.

Nine pasture houses set up for the Foothills Farm Fermented Feed Study.

Does fermenting feed make sense at farm scale?

Fermentation can improve the digestibility of many feeds and increase their nutritional value to poultry. Fermenting feed is popular in small-scale and backyard poultry raising, but is it economical for commercial producers? This question inspired the **Foothills Farm Fermented Feed Study**.

Foothills Farm in Sedro-Woolley, Washington State, keeps a flock of around 1,000 pastured laying hens and has been fermenting feed since 2015. Farmer Matt Steinman wanted to know the net economic impact of fermentation – and whether his hunch that it improved the hens' egg production was accurate.

In 2018, Foothills set up an experiment to compare dry feed to fermented feed (soaked in water for 24-48 hours) and hydrated feed (soaked just before feeding). All feeds were prepared from the same dry mash, a 16%-protein layer mix.

Ninety hens were kept in nine pasture houses and fed with dry, hydrated or fermented feed (three groups of ten hens for each type of feed). The hens' feed consumption and egg production were tracked for eight months, March - October.

Evidence of economic benefits

Results from the Foothills study suggest fermented feed had the economic advantage over dry or hydrated feed, even if labor costs were taken into account.

- Hens fed a fermented diet laid 9% more eggs between March and October than hens on a dry diet.
- Hens on a hydrated diet laid 11% fewer eggs than hens on a dry diet.
- Fermented- and dry-diet birds consumed similar amounts of feed, so the fermented-diet birds required less feed to produce each egg.
- Birds on all three diets consistently produced USDA Extra Large grade eggs.
- The fermented feed system was 11% more profitable owing to greater egg production, despite 18% greater labor costs.

Fermented feed needs to be prepared every day and therefore requires more labor than a feed-on-demand system. But for farmers already using a daily-feed system, the Foothills Farm study suggests fermented feed could improve flock performance and economics.

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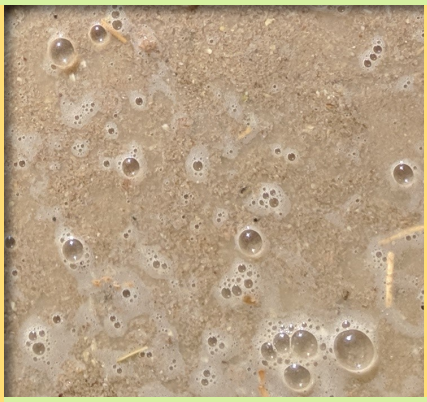
Preparing fermented feed in bulk

Fermenting feed at scale can be straightforward and requires only basic materials. Foothills Farm uses 55-gallon barrels. Two barrels hold one day's ration for the flock of 1,000 birds.

The feed can be any good-quality dry mash or straight grains. Use chlorine-free water because chlorine kills the fermentation microbes. No starter culture is needed because the microbes are abundant on the surface of grains and in the atmosphere. Note that heat-treated feeds – pellets and crumbles – may not have microbes present and might require an adaptation of the method.

If you notice any rotten smells or mould growth on the surface of the feed, the batch should be thrown out. Ensuring that the feed is covered by a layer of water during most of the fermentation should help inhibit mould.

Reducing the pH of the ferment by adding one or two cups of mild vinegar (such as apple cider vinegar) can help prevent growth of harmful microbes and favour the lactic acid bacteria which do the job of fermentation.



A good ratio is one part feed to 1.3 parts water. 100 lb feed plus 130 lb water (16 gal) will fill a 55-gal barrel two-thirds full.

Be sure to put some water in the barrel before the feed, so the mixture is easier to stir. Stir well when you first make the mixture, again every few hours, and just before feeding.

The ferment is ready when it becomes a delicious, bubbling, sour-smelling slurry. This typically takes 24 hours in summer and 48 hours in winter - or 24 hours all year round if you use warm water to make the mixture and if you can keep your feed barrels somewhere warm.

Distributing fermented feed in bulk

Perhaps the most difficult aspect of providing fermented feed to a large flock is moving it out to the flock efficiently. Foothills Farm has come up with a couple of innovations to streamline the process.

- Have a dedicated feed trailer where you can put the feed barrels before filling them. Then all you need to do is hook the trailer up to your ATV and go - no need to move full barrels manually.
- Install a gate valve near the base of the barrel for easy dispensing of the feed mixture.
- Attach a wide hose to the valve on your barrel. Drive along slowly while an assistant directs the hose into the feed troughs.

Foothills' daily feeding routine for 1,000 hens takes one staff member one hour, from picking up that day's ferment to preparing the next.

A full report of the Foothills Farm Fermented Feed Study can be found on the SARE website: https://projects.sare.org/project-reports/fw18-039/

A basic guide to fermenting feed for poultry published by Scratch and Peck Feeds can be found here: https://www.scratchandpeck.com/learning-center/helpful-guides/

The Foothills Farm study was led by Farmer Matt Steinman with Louisa Brouwer as technical adviser.
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