Introduction

An enzyme complex manufactured by solid substrate fermentation, rather than through conventional liquid fermentation, and that also contains phytase, starch and non-starch polysaccharide enzymes is commercially available for use in laying hen diets (Allzyme® SSF, Alltech, Inc.). When included in laying hen feeds at a level of 0.015% (150 g/ton or 0.3 lb/ton), Allzyme® SSF is estimated to release 75 kcal ME/kg (34 kcal ME/lb.), 0.1% calcium and 0.1% available phosphorus, as well as 0.2% crude protein, 0.029% lysine, 0.011% methionine, 0.009% cysteine, 0.004% tryptophan, 0.014% threonine, 0.024% isoleucine and 0.022% arginine.

Objective

To determine how including Allzyme® SSF in layer diets affects production, based on a cross-section of studies conducted worldwide.

Methods

- A meta-analysis was conducted using 16 reports collected worldwide and containing 26 comparisons of how production was affected in negative control (nCON) versus Allzyme® SSF-supplemented (+SSF) laying hen diets; the data was evaluated using paired t-tests.
- Using the average responses, egg producers can calculate the benefit-cost ratios by parameter for the Allzyme® SSF supplement.

Results

Allzyme® SSF numerically improved two parameters (hen-day egg production and feed intake) and significantly improved four other parameters (egg weight, daily egg mass, feed/dozen eggs, and kg feed/kg eggs) (Tables 1 and 2):

- Hen-day egg production was improved (P = 0.136) by 1.09% actual (+1.29% relative) for +SSF compared with nCON diets.
- Egg weight was greater (P = 0.006) from hens fed +SSF rather than nCON diets (+0.89 g or +1.49%).
- Daily egg mass produced was greater (P = 0.014) for +SSF than for nCON hens (+1.74 g/hen/day or +3.47%).
- Feed intake was lowered by 0.50 g/hen daily (-0.44%) by using +SSF diets compared with nCON diets.
- Feed/dozen eggs was reduced (P = 0.028) by 0.027 kg/dozen (1.65%) for +SSF diets compared with nCON.
- Similarly, kg feed/kg eggs was reduced (P = 0.004) by 0.069 (3.04%) for +SSF diets compared with nCON.
The overall results of the meta-analysis revealed that +SSF diets numerically increased hen-day egg production, decreased feed intake, significantly increased egg weight and daily egg mass and reduced feed/dozen eggs and kg feed/kg eggs.

Supplementation with Allzyme® SSF at at 150 g/ton (0.3 lb/ton) of feed is recommended to improve the productive performance of laying hens.