



I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS

Universidade Federal do Agreste de Pernambuco – UFAPE
July 03rd to 05th, 2024, Garanhuns-PE

Work Area: Animal Products Industry and Food Science

Levels of Mycotoxins in Raw Materials for Broiler Chicken Feed

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Mycotoxins are fungal metabolites produced by some species during their growth, capable of occurring at any time, from plant growth to storage, causing diseases or deaths when ingested by humans or animals. Aflatoxins and fumonisins are the main mycotoxins affecting poultry farming, causing decreased body weight gain, increased relative weight of the liver and kidneys, and liver necrosis in broiler chickens, among other factors. The aim of this study was to compare the data from laboratory analyses of raw materials according to mycotoxin parameters for broiler chicken feed from the Micotoxicological Analysis Laboratory at different times of the year. The study was conducted at the laboratory of the company EPE Produtos Agropecuários located in Garanhuns-PE Brazil, during the year 2023, with 453 and 356 samples of raw materials for aflatoxin and fumonisin, respectively. All samples were collected from the state of Pernambuco. The method used for quantification was the ELISA immunoassay, provided by Romer Labs Methods. For aflatoxin analysis, the results were divided into parameters provided by LAMIC, divided into levels one, two, and three, for maximum quantities for each phase of chicken development, where the first should not present aflatoxins for birds in the initial phase, the second with up to 2 parts per billion (ppb) for developing birds, and the third with up to 5 ppb for birds in the final phase. For fumonisin, the parameters are divided into two levels, the first with up to 0.10 parts per million (ppm) for initial birds and the second with up to 0.50 ppm for developing and final birds. Initially, it was analyzed that about 30.46% of the analyses did not present aflatoxins, and only 1.34% of the samples are above the allowed level for consumption, when compared between dry and rainy periods, a difference of 0.65% higher for materials collected in the dry period is observed. In addition, it was found that 51.21% of the analyzed samples can only be used for birds in the developing and final phases. As for fumonisin, 74.15% of the analyses are above the parameter of 0.50 ppm allowed for birds in the developing and final phases. When compared between dry and rainy periods, there is an increase of 1.64% for samples collected in the dry season. It was also found that 7.02% of the analyses did not present fumonisin, furthermore, 10.95% can be made available for birds in the initial phase. Given the results obtained, the importance of analysis and monitoring of mycotoxins, especially aflatoxin and fumonisin, in raw materials destined for broiler chicken feed is evident. The variation observed between dry and rainy seasons demonstrates the influence of climate on the presence of these substances, emphasizing the need for constant attention and adaptation of management and storage practices. Furthermore, the significant proportion of samples that are above the allowed levels for consumption highlights the relevance of implementing effective strategies to mitigate the risks associated with mycotoxins in poultry production.

Keywords: aflatoxin, fumonisin, poultry farming.