

**Title** Grain quality in maize, sorghum, and soybean imported for feed in Yucatan, Mexico  
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### **Abstract**

The Yucatán State imports a great volume of grain used to elaborate feeds each year through the Puerto Progreso facilities in the Gulf of Mexico. However, quality of the raw materials is uncertain due to the unknown time since harvesting, the handling and discharge of one transport to another, and imprecise official standards for feed grain; growth and productivity of poultry, livestock, and pigs could have been affected, besides the economic losses to the industries involved which lack timely information and equipment to run adequate analyses. The objective of this study was to determine the physical, chemical, and sanitary characteristics of grain shipped from abroad, before storage and processing at local feed industries. Grain samples from 10 ships were analyzed during one year at the entry port; moisture content, damaged kernels, chemical composition including calcium, phosphorus, and copper in soybean, and tannins in sorghum were determined. Total fatty acids were determined in soybeans, and all samples were tested for aflatoxins. Total damaged grains in sorghum (15.5%), and soybean (13.5%) were higher than either NMX Grade 4 or US No.4 grade requirements, which represented a cost of US \$260,000 in only one shipment of sorghum; broken maize kernels were determined up to 15.1%, which surpassed the Sample grade maximum requirements. There was development of *Aspergillus*, *Helminthosporium*, *Alternaria*, *Mucor*. and presence of aflatoxins in many samples of sorghum (100%), maize (60%), soybean (28.5%), and increase of fatty acids in the latter (3.5%). Protein content of maize (8.84%) was lower than those reported for several cultivars. These results indicate the need to establish and observe feed grain standards which comply with international trade requirements. The presence of aflatoxins, and fungi producers of other potential micotoxins represent a strong warning to take steps for more accurate identification and quantification.