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Rapid analysis of aflatoxin levels found in corn

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South Carolina grows and exports products such as peanuts and corn, to various countries around the world. However, these products may contain the mold Aspergillus flavus or Aspergillus parasiticus, species of fungi which produce aflatoxin. Aflatoxins can cause damage to the lungs, kidneys, brain, and heart. Because of the harm these toxins pose, a food safety survey was administered to SC farmers to ascertain their level familiarity with aflatoxins. The results indicated that of the 190 farmers surveyed, 58% reported they never heard of it, 26% revealed they somewhat knew about it, while only 16% definitely knew about. To determine the presence of aflatoxin levels in corn, the Vicam Afla-V test reader was used. This device accurately detects the presence of aflatoxins B1, B2, G1 and G2 levels ranging from 2 ppb to 100 ppb. To analyze the corn samples, they were blended finely and weighed to 5 g. The ground samples were then inserted into an extraction tube containing 25 ml of 70% MeOH and vortexed for 2 minutes. The samples were filtered and 100 µl were placed on the Afla-V test strips. The test strips were placed into the reader and aflatoxin levels were obtained within 5 minutes. The results indicated that 3 of the 11 corn farms tested, had higher levels than the 25 ppb recommended by the USDA. Informing and educating the farmers about the seriousness of aflatoxins is paramount. Furthermore, farmers who produce crops with lower levels of aflatoxins, have a greater chance of exporting their crops in an increasingly competitive global market. Future experiments will involve testing various treatments to decrease the levels of aflatoxin associated with corn.

Biography

James B Stukes is an Associate Professor of Biology/Biology Program Coordinator in Department of Biological and Physical Sciences at S C State University. He completed his PhD in Microbiology at Atlanta University. He has served as Principal Investigator for several grants, written various publications, and presented his work at numerous conferences. He was named as University Teacher of the Year, Outstanding Young Man of America, served as a member of the Governor's Mathematics and Science Advisory Board, and Who's Who among America's Teachers. He currently serves as Co-Principal Investigator of the Evans-Allen 1890 Food Safety Research Grant funded by the USDA.

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