

Approaches to Minimizing Aflatoxin Contamination in the Field, During Drying, and in Storage in Southern Ghana

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Aflatoxin in peanut (*Arachis hypogaea* L.) and other crops can negatively affect human health, especially in countries where regulatory agencies do not have limits on aflatoxin entering the food supply chain. While considerable research has been conducted addressing aflatoxin contamination in peanut at individual steps in the supply chain, studies that quantify aflatoxin contamination following combinations of interventions to crop management, drying, and storage are limited. Research was conducted during 2016 and 2017 in two villages in southern Ghana to follow aflatoxin contamination along the supply chain and to compare improved practices with traditional farmer practices used by smallholders. The farmer practice of only a single weeding was compared with improved practices during the growing season up to harvest that included applying local soaps to suppress aphids (*Aphis gossypii* Golver) that transmit peanut rosette virus disease (*Umbravirus: Tombusviridae*), one additional weeding, and calcium applied at pegging. The improved practice for drying included placing pods removed from plants onto tarps compared with the traditional practice of drying on the ground. Storing peanut for four months in hermetically-sealed bags was the improved practice compared with storing in traditional poly bags. All improved practices individually resulted in lower aflatoxin contamination as compared to the farmer practices. While aflatoxin levels were very low (<1 µg/kg) at harvest, the levels increased significantly during drying and storage, with the improved methods resulting in lower levels. Greater estimated financial returns were noted when at least one improved practice along the supply chain was implemented through either increased yield or maintenance of quality kernels. Results from this research demonstrate progression of aflatoxin contamination at pre- and especially post-harvest in villages in Ghana. Future research needs to consider the effects of improved practices as components of packages that farmers can consider, and not just as individual interventions.