COLLEGE OF AGRICULTURE AND LIFE SCIENCES
CONTROLLED ENVIRONMENT AGRICULTURE CENTER

The Covering Environments Seminar

Engineering Functional Food and Feed

Monica A Schmidt, PhD; Assoc Prof, School of Plant Science

August 30, 2019 @ 4:15pm

The Controlled Environment Agriculture Center 1951 E Roger Rd, Tucson AZ 85719

Over the recent past, we have discussed the QB10 issue as it affects food crop production. According to this issue, the world population is expected to rise to ten billion inhabitants by the year 2050 resulting in wide-spread hunger and its political sequalae. We have heard about ongoing and future approaches on how to tackle this existential problem primarily by improving crop viability, increasing land productivity, and by developing more productive crop varieties. These approaches are necessary to mitigate the QB10 problem, but they leave unanswered the issue of food (and feed) security.

This is where Monica Schmidt amd her research team bring a novel approach to this serious problem by manipulating crops, at the gene level, resulting in an almost complete cessation of the production, by various molds (fungi) infesting the crops, of a ubiquitous toxic poison in the affected crops. Aflatoxin, and its derivatives, are nasty compounds which when ingested by humans and animals cause acute and chronic poisonous effects which often become mutagenic, immuno-toxic, hepatotoxic, and even carcinogenic.

So, instead of killing the fungi with environmentally unfriendly fungicides, Schmidt has developed a unique biotechnological approach. She inserts into the genome of the crop (e.g. maize) a specific RNAi which stops the synthesis of the fungal aflatoxin synthesized by the infecting fungus. This turns out to be a highly effective way of almost completely inhibiting the toxin production rendering the crop safe for consumption. Not only is this an effective anti-poison treatment, but it also preserves the crop plants thus continuing food and feed production.

In this seminar, Prof Schmidt will explain how she came to use this biological approach that is likely to have tremendous ramifications to food production world-wide, thus helping to alleviate food security problems likely to be negatively affected by the QB10 problem.

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