AGRONOMY COVERAGE IN FSTA®

Trusted by researchers, scientists, students and government bodies in over 150 countries across the globe, FSTA is the definitive way to search over fifty years of historic and emerging research in the sciences of food and health.

Covering a wide range of interdisciplinary material, FSTA includes a wealth of international agronomy content including:

All post-harvest aspects of edible crops

Pre-harvest factors affecting the edible part of crops with respect to:

- Quality parameters e.g. Composition, colour, size, physicochemical properties, nutritional value, etc.
- Safety e.g. Bioaccumulation of heavy metals, contamination with foodborne pathogens, toxins

Such pre-harvest factors include:

- Climate and environmental factors
- Cultivation approaches, e.g. Hydroponics
- Fertilizers and nutrient application
- Irrigation and water stress
- Light and shading
- Plant growth regulators
- Pre-harvest diseases and pests
- Pesticides and biocontrol
- Rootstocks
- Soil composition and contamination

Plant breeding and genetics:

- Plant breeding studies to improve quality or safety
- Genetic studies of quality factors in crops
- Physiology/biochemistry studies of quality-related factors, e.g. Starch synthesis, pectin structure, pigments, storage proteins, etc.

Tissue culture studies if relevant to quality of edible crops

Ripening and senescence of edible crops and grain development

Studies on the control of insects/pests in stored food products

Medicinal plants if used in foods, e.g. as a functional food ingredient, or as a vegetable/culinary herb

USING FSTA FOR YOUR AGRONOMY RESEARCH

Example search questions:

- What effect does rootstock have on wine grape quality?
- How can toxigenic fusarium ssp. be minimized in maize crops? *(Sample record on following page)*
- What disinfestation methods are effective against rhyzopertha dominica in stored wheat?
- What are the implications for fruit quality when deficit irrigation is used for tomato crops?

SOURCE EXAMPLES

Agronomy content is drawn from a wide variety of sources including journals, patents, books, reports and more. Here are just some of the many agronomy-focused journals included within FSTA, chosen to illustrate the diversity and breadth of content:

- Journal of the Science of Food and Agriculture
- HortScience
- Acta Horticulturae
- Journal of Horticultural Science & Biotechnology
- Agronomy Journal
- American Journal of Enology and Viticulture
- Canadian Journal of Plant Science
- Horticulture Journal
- Scientia Agricultura Sinica
- Plant Physiology

SAMPLE FSTA RECORD FOCUSED ON AGRONOMY

Feasibility of 3D UV-C treatment to reduce fungal growth and mycotoxin loads on maize and wheat kernels.

Author: Popovic, V.; Fairbanks, N.; Pierscianowski, J.; Biancaniello, M.; Ting Zhou; Koutchma, T.

Correspondence Address: Guelph Research and Development Center, Agriculture and Agri-Food Canada, Guelph, Canada.

Source: Mycotoxin Research, Volume: 34, Issue:3, Pages: 211-221

DOI: 10.1007/s12550-018-0316-3

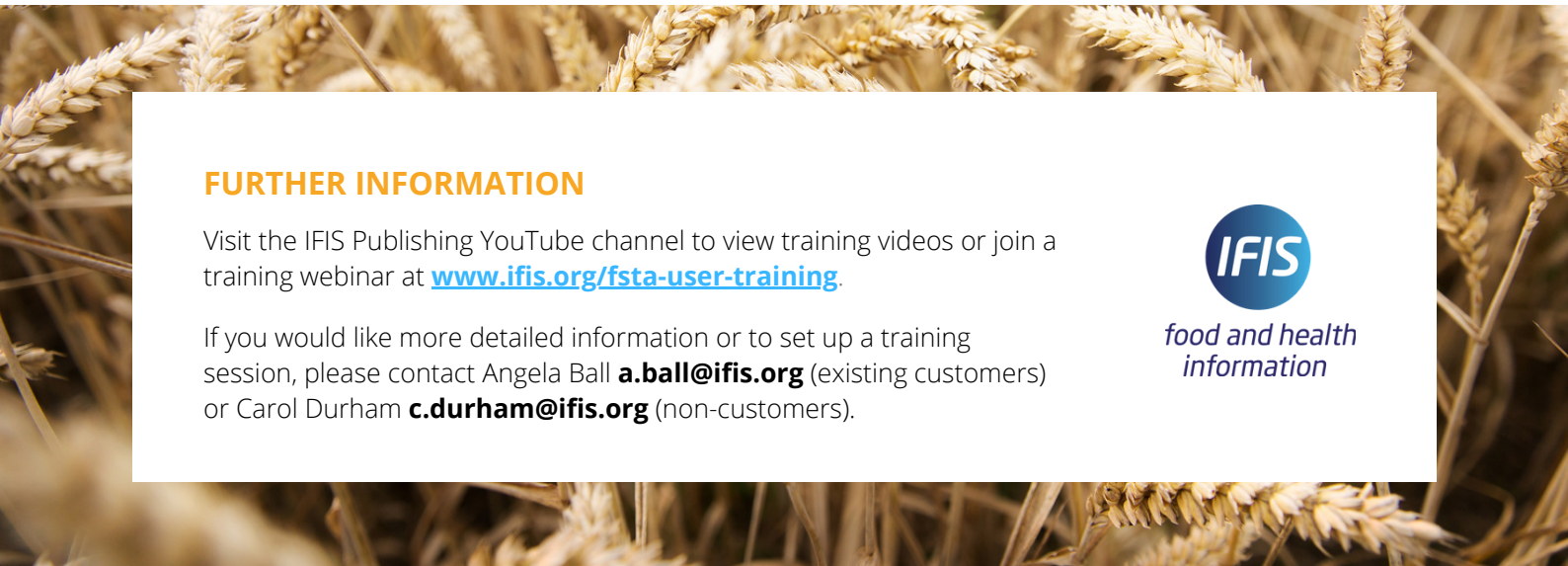
Published: 2018

Document Type: Journal Article

Abstract: Fungal disease of grain crops is a concern for the agricultural industry, resulting in economic losses. Aside from severe yield losses, mycotoxigenic fungi such as Penicillium and Fusarium can produce harmful mycotoxins, including deoxynivalenol (DON), zearalenone (ZEN), and ochratoxin A (OTA). This proof-of-concept study explored the feasibility and effects of ultraviolet (UV) C light at 253.7 nm to reduce fungal and mycotoxin loads on model surfaces as well as on maize and wheat kernels using benchtop 2D and 3D illumination strategies.

Reduction of Penicillium verrucosum (98.6%) and Fusarium graminearum (88.8%) on agar was achieved using a UV-C dose of 100 mJ cm-2. Naturally occurring fungal growth resembling P. verrucosum on maize was reduced by 79% after exposure to 5000 mJ cm-2. Similarly, fungal growth resembling F. graminearum on maize was reduced by 60% with 1000 mJ cm-2. On wheat, significant reduction of fungal growth was not observed. Maximal reduction of DON (97.3%), ZEN (75.4%), and OTA (91.2%) on filter paper was obtained using 15,000 mJ cm-2. The overall reduction of DON (30%; 14%), ZEN (52%; 42%), and OTA (17%; 6%) on maize and wheat, respectively, was lower than on filter paper. Moisture and crude protein content as well as percent germination of maize kernels were not affected by UV-C treatment up to 5000 mJ cm-2. This study has shown that 3D UV-C treatment is a feasible option for reducing Fusarium and Penicillium growth on maize kernels and, at higher doses, decreasing ZEN by ~50%. © Crown 2018.

Keywords: CEREAL PROTEINS; CORN; DEOXYNIVALENOL; FOOD SAFETY PLANT FOODS; FUSARIUM; FUSARIUM GRAMINEARUM; INHIBITION; MOISTURE CONTENT; MYCOTOXINS; OCHRATOXIN A; OCHRATOXINS; PENICILLIUM; PENICILLIUM VERRUCOSUM; PROTEINS CEREAL; ULTRAVIOLET RADIATION; UV; WHEAT; ZEARALENONE



FURTHER INFORMATION

Visit the IFIS Publishing YouTube channel to view training videos or join a training webinar at www.ifis.org/fsta-user-training.

If you would like more detailed information or to set up a training session, please contact Angela Ball **a.ball@ifis.org** (existing customers) or Carol Durham **c.durham@ifis.org** (non-customers).

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