

## **ABSTRACT**

Corn is one of the most important cultivated crops all over the world and in Egypt; so this study aims to treat one of the most important obstacles that faces yellow corn storage, it is the aflatoxin contamination. This research includes the study of the effect of environmental condition on aflatoxin contamination in imported yellow corn grains. Results revealed that the storage period of corn grains at normal environmental condition should not exceed 30 days, since extending storage period for more than 30 days leads to infested grains, which in turn affects the broken kernel and foreign materials and then increase in total damage percent and increase in temperature the matter that leads to infection by fungi that may produce aflatoxin at high rate.

The study recommended that in case of the need to increase the storage period for more than 30 days, controlled storage places should be used in addition to take samples on two weeks basis in order to ensure preserving the quality level of the imported yellow corn.

### **Key words:**

Aflatoxins, storage, mycotoxin, grading, aspergilla's, temperature, humidity.

## نبذة

تعد الذرة الصفراء أحد أهم المحاصيل الزراعية في العالم بوجه عام وفي مصر بوجه خاص. وتهدف هذه الدراسة إلى التعامل مع أحد أهم العقبات التي تواجه تخزين الذرة الصفراء وهي التلوث بالأفلاتوكسين، حيث أن هذه الدراسة شملت دراسة تأثير الظروف البيئية على التلوث بالسموم الفطرية الأفلاتوكسين في حبوب الذرة الصفراء المستوردة ، وخلصت الدراسة إلى أن المدة المثلى للتخزين في الظروف العادية غير المتحكم فيها هي ٣٠ يوما وذلك لأن خلال هذه الفترة تكون العوامل المؤثرة على تكوين الأفلاتوكسين في أدنى مستوياتها مما يجعل نسبة الأفلاتوكسين عند الحدود الدنيا المسموح بها دولياً، وقد أوصت الدراسة انه في حالة زيادة فترة التخزين عن ثلاثين يوما فإنه لابد من استخدام صوامع متحكم فيها من ناحية الظروف البيئية ، إضافة إلى ضرورة اخذ عينات كل أسبوعين للتأكد من جودة الذرة المخزنة.

### الكلمات الدالة :

أفلاتوكسين ، فترة التخزين ، ميكوتوكسين، التدرج ، اسبراجلاس ، درجة الحرارة، الرطوبة .

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## LIST OF ABBREVIATIONS

<b>AFG1</b>	Aflatoxin G1 .
<b>AFG2</b>	Aflatoxin G2 .
<b>AFM1</b>	Aflatoxin M1 .
<b>AFP1</b>	Aflatoxin B1.
<b>AFP2</b>	Aflatoxin B2.
<b>AOAC</b>	Official Methods Of Analysis.
<b>APSIM</b>	Agriculture Production Systems Simulators.
<b>ARI</b>	Aflatoxin Risk Index
<b>BCFM</b>	Broken kernel and foreign materials.
<b>Bu</b>	Bushels (11200 lbs).
<b>CFU/g</b>	Colony-Forming Units per Gram.
<b>DON</b>	Deoxynivalenol.
<b>DNA</b>	Deoxyribonucleic Acid.
<b>ELISA</b>	Enzyme Linked Immunosorbent Assay.
<b>ECB</b>	European corn borer.
<b>FGIS</b>	Federal Grain Inspection Service.
<b>FGIS</b>	Federal Grains Inspection Service.
<b>FAO</b>	Food and Agriculture Organization.
<b>GASC</b>	General Authority for Supply Commodities.
<b>GOE</b>	Government of Egypt.
<b>HD</b>	Heat damage.
<b>HA</b>	Hectare.
<b>HPLC</b>	High performance liquid chromatography.
<b>HIV</b>	Human immunodeficiency virus.
<b>lbs/Bu</b>	Pound per bushels.
<b>IRAC</b>	International Agency for Research on Cancer.

<b>Ug/kg</b>	Micrograms per kilogram.
<b>MMT</b>	Million Metric Ton.
<b>M.C.</b>	Moisture content.
<b>NRRL</b>	Northern Regional Research Laboratory.
<b>OA</b>	Over Acting.
<b>OMA</b>	Official methods of Analysis.
<b>OTA</b>	Ochratoxins.
<b>ppb</b>	Part per Billion.
<b>ppm</b>	Part per million.
<b>TD%</b>	Percentage of total damage.
<b>P.D.A</b>	Potato Dextrose Agar.
<b>lbs/Bu</b>	Pound per bushels.
<b>Pf</b>	precipitation factor.
<b>RCFF</b>	Regional Center of Food and Feed.
<b>SPP</b>	Species (plural).
<b>SP</b>	Species.
<b>TW</b>	Test weight.
<b>TLC</b>	Tasty Little Crackers.
<b>TD</b>	Total damage.
<b>UV</b>	Ultraviolet.
<b>YC</b>	Yellow Corn.
<b>USDA</b>	United State Department of Agriculture.
<b>ZEA</b>	Zearalenone.