Envirologix Rapid Tests for mycotoxins and GMO quantification
Founded in 1996, EnviroLogix is committed to providing the most innovative and user-focused diagnostic solutions available. From the beginning, EnviroLogix motivation has been to create breakthrough diagnostic technologies, seeking out new ways to help our customers protect their investments. The drive to pioneer advancements continues today, continually focusing attention on your daily challenges and develop smart, simple solutions.

This focus has made EnviroLogix a leader in the development of immunoassay test kits in the rapidly emerging field of genetically modified organisms (GMOs) in the food production chain. The introduction of QuickStix™ strip testing format paved the way for innovative industry firsts, such as the QuickTox™ test strips for quantitative mycotoxins detection.

EnviroLogix designs, develops and manufactures every solution closely monitoring quality from initial development in the lab right through to shipping. A state-of-the-art facility is equipped for optimal manufacturing conditions and the management team has years of experience in adherence to both federal and international Quality Management System (QMS) standards and procedures.

EnviroLogix commitment is reflected in its reputation for superior products that deliver consistently accurate results. Rigorous quality assurance practices and systematic inspections are the keys to ensuring your satisfaction.
Generon is a young, expanding company specialized in the production and distribution of test solutions for the food and feed industries. Generon biotechnology labs stand in Modena, in the heart of Italian Food Valley, once known as "the breadbasket" of the Roman Empire and where enogastronomy is a national art.

As food safety specialist Generon creates and select sharp, cost effective and efficient test kits to provide an ever increasingly demanding market with accurate and ready-to-use solutions and meet customers’ needs.

Years of experience in the agri-food quality control along with a R&D team equipped with state-of-art instrumentation and strong interactions with scientific partners allow Generon to provide customers with a unmatched pre- and post-sales support.

Generon distributes and supports in Europe Envirologix products The collaboration between Generon and Envirologix aims to the common mission of offering reliable, efficient, modern while affordable tests to drive customers decisions and protect their investments.
Lateral Flow (LFD)

Lateral flow tests are a simple device intended to detect the presence (or absence) of a target analyte in a sample (matrix). Most commonly these tests are used for medical diagnostics (e.g. pregnancy test) but recently they started to be widely used in food testing and water for contaminants.

Often produced in a dipstick format, Lateral flow tests are a form of immunoassay in which the test sample flows along a solid substrate via capillary action. Most tests are intended to operate on a purely qualitative basis, however it is possible to measure the intensity of the test lines to determine the quantity of analyte in the sample.

Time to result is the first key advantage for these products. Tests can take as little as a few minutes to develop. The other key advantage of LFDs, when compared to other tests, is the ease of use thus allowing field use also by non-specialized operators.
LFD – How does it work?

- **Extraction**
  - Matrix preparation (grinding)
  - Analyte Extraction (water or ethanol 50%)
- **Strips Wetting**
- **Running**
- **Detection**
- **Analysis**
  - Qualitative
  - Quantitative
LFD – Applications

• Envirologix applications portfolio includes

• **Micotoxins e contaminants**
  - Aflatoxins, Fumonisine, DON, Toxin T-2/HT-2, Ochratoxin A and ZON

• **GMOs**
  - Corn
  - Soybean
  - Rice
  - Cotton
  - Alfa-Alfa
  - Rapeseeds/canola
Certifications

• Envirologix certifies its products at USDA/GIPSA and AOAC
• These certifications are provided only after thorough inter-laboratory studies demonstrating the equivalence of results obtained using these tests to those obtained with the reference method
• AOAC certifications, according to Reg.EU/2073 on microbiological hygiene of food and feed, allows for using these products as alternative methods also in laboratories accredited ISO-17025.
• Italian Reference Lab for Mycotoxins at the Ministry of Health validated the DON and Fumonisin kits declaring them «fitting the purpose» for official controls.
QuickTox AFLAFree

- QuickTox for QuickScan – AFLAfree is the fastest kit in the market to detect and quantify Aflatoxins in corn using water only;
- The kit was optimized to reduce as much as possible the time to results. This in turn facilitate a strict monitoring of the crops during the harvest when slow testing procedure may create long truck lines.
- Using different extrarction protocols the kit provides validated quantitative results in many matrices: Barley; Brown Rice; Copra coconut meal; Corn; Corn flour; Corn germ; Corn germ meal; Corn gluten feed; Corn gluten meal; Corn Silage; Cotton seed delinted; Cotton seed meal; DDGS; Hominy Feed; Oats; Peanut hull; Peanut seeds; Rice Bran; Rice Hulls; Rice, Black Glutinous; Rice, White; Rice, White Glutinous; Rough rice; Sorghum; Soybean Meal; Wheat; Whole Peanut; Whole Rye
- Detects Aflatoxin B1 with 100% recovery
- Analytical Range: 1.5 - 100 ppb;
- Approved by USDA/GIPSA and certified AOAC.
QuickTox DON3

- QuickTox for QuickScan – DON3 is the fastest kit in the market for the detection and quantification of DON/Vomitoxin;
- Extraction is performed with water only
- **Quantitative results validated on:** Barley; Corn; Corn Flour; Corn Germ; Corn Gluten Feed; Corn Gluten Meal; DDGS; Malted Barley; Milled rice; Oats; Rough rice; Sorghum; Soybean meal; Wheat; Wheat bran; Wheat Flour; Wheat gluten; Wheat midds; Wheat Red Dog; White wheat flour
- **Analytical Range:** 0 - 12 ppm without dilutions;
- Results 3 minutes;
- Possible testing of Fumonisin and T2 on the same corn sample extract;
- Approved by USDA/GIPSA and certified AOAC.
QuickTox FumonisinsFLEX

- Detects total Fumonisins (B1+B2+B3)
- Validated for Corn, Corn Flour, Corn Germ, Corn Germ Meal, DDGS, Sorghum
- Quantitative results in 5 minutes
- Extraction with water (no Methanol required!!)
- Possible co-testing with DON and T-2 Toxin in the same extract
- **Analytical Range**: 0.2 - 18 ppm
- Approved by USDA/GIPSA and **certified AOAC**.
QuickTox Ochratoxin A

- Detects Ochratoxin A
- Validated on wheat and corn
- Quantitative results in less than 10 minutes
- Extraction in water based buffer ready to use in concentrated solution in the kit (no Methanol required!!)
- **Analytical Range**: 1.5 - 100 ppb
- Approved by USDA/GIPSA and certified AOAC.
QuickTox Zearalenone

- Detects Zearalenone
- Validated on corn, wheat, wheat bran and sorghum
- Quantitative results in less than 10 minutes
- Extraction in Ethanol 50% (no Methanol required!!)
- Possible co-testing with Aflatoxin and Zearalenone in the same extract
- Analytical Range: 50 - 520 ppb using Quickscan.
QuickTox T-2/HT-2 Flex

- Detects T-2 e HT-2;
- **Extraction in water**: it’s possible to detect fumonisin and DON on the same corn sample extract;
- **Quantitative results** on corn (wheat and other matrices in validation);
- **Analytical range**: 25-2500 ppb using Quickscan;
- Results in less than 10 minutes.
QuickScan overview

- QuickScan is the reader measuring the concentration of mycotoxins reacting with the QuickTox strips; a modern quantification and traceability system for IP and grain quality
- The latest in digital imaging technology with advanced mathematical processing
- A standard PC platform with a simple MS-Windows interface
- Rapid, objective, quantitative results for a variety of EnviroLogix test kits
QuickScan overview

- QuickScan analyzes the quantity of toxin that reacted with the antibodies forming two red bands.
- In competitive tests the highest the contamination the faintest the test band.
- Quantification is based on the normalized ratio of intensity between test and control bands thus allowing high inter- and intra-assay reproducibility.
System Performances

- All quantitative methods hold a precision factor – CVs typically used
- QuickScan produces CVs of 20% or better
- 95% of results fall within 2 s.d. of the “true” mean
- These CVs are equal to PCR – the gold standard for GMOs
QuickScan – Advantages

• **Speed**
  - Read combs and strips in few seconds
  - Fastest test in the market

• **Flexibility**
  - Simultaneous detection of different toxins and GMOs
  - Possibility to work on the same extracts

• **Ease of use**
  - The barcode embedded on the strip containing the calibration curve is automatically read by the Quickscan thus preventing and excluding mistakes in the reading of test results.
QuickScan – Advantages

• Precision
  ▪ Automatic image processing and embedded barcodes ensure accurate, consistent results

• Traceability
  ▪ PC connectivity allows instantaneous data storage for e-mailing, printing or analysis at any time
  ▪ Kit’s lot number and expiration embedded in the barcodes
  ▪ Possibility to bundle the software to LIMS and other management softwares
QuickScan – Software

Possibility to trace operators name and company and report it in the certificate of analysis
QuickScan – Test Report

- Automatic calculation of total quantity upon dilution
- Tracing downstream actions
- Quantitative results in ppb or ppm
- Tracing kit Lot# and type
- Strip image and bands zooming
- 4 fields to introduce samples relevant data
QuickScan – .pdf report

- Creation of .pdf certificate (including your company logo) of analysis easily printable and transferrable via email
- All important data are included in the report
- Strips captures and miniatures of bands are included
- Possibility to customize information fields headers in local language
QuickScan – DataLog

- Each test executed is registered in an excel-like table that can be sorted per each field
- Possibility to bundle transfer the datalog to LIMS and other management softwares
- Maximum traceability of tests performed
- Possibility to customize information fields headers in local language
QuickScan – GMO tests

• Envirologix is the market leader for qualitative GMO tests in multiple matrices
• Envirologix developed specific sticks for the QUANTITATIVE analysis of GMOs in corn, canola and soybean using the Quickscan system
• Detectable Soybean events are:
  ▪ CP4 EPSPS Roundup Ready
  ▪ PAT/pat LibertyLink
  ▪ Cry1Ac
• Detectable Corn events are:
  ▪ Cry1Ab YieldGard
  ▪ Cry1F Herculex
  ▪ Cry2A in Genuity and VT Triple PRO
  ▪ mCry3A Agrisure RW
  ▪ Cry3Bb YieldGard Rootworm
  ▪ Cry34Ab1 Herculex RW
  ▪ CP4 EPSPS Roundup Ready
  ▪ PAT/pat LibertyLink
  ▪ Vip3A Agrisure Viptera
• Detectable Canola event is:
  ▪ CP4 EPSPS Roundup Ready
QuickScan GMO Tests

- QuickScan analyzes the quantity of GMO that reacted with the antibodies forming two red bands.
- In direct tests the highest the contamination the darkest the test band.
- Quantification is based on the normalized ratio of intensity between test and control bands thus allowing high inter- and intra-assay reproducibility.
OGM Soy/Corn QuickComb

- Convenient Quickcomb are available to further ease the screening for soybean and corn GMOs using the QuickScan
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QuickComb – GM Soy Tests

- LOQ for soybean contamination
  - CP4 EPSPS Roundup Ready® 0.25%
  - PAT/pat LibertyLink® 0.50%
- Contamination >LOQ are quantified using the quickscan
GM detection in leaves

Visual analysis +/-
...summarizing...

- Envirologix LFDs along with QuickScan offer:
  - Ease of use (see also Quickguides)
  - Flexibility (Mycotoxins and GMOs)
  - Precision, accuracy e sensitivity
  - Traceability
  - Speed
  - No toxic reagents necessary for the analysis
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