

Metabolite Profiling Facility

Pesticides, Herbicides, Insecticides, Fungicides Analysis

Brief Description:

Pesticides/herbicides/insecticides/fungicides can be detected in extracted plant tissues (leaf, root, shoot), pollen, soil, water, or tissues. Samples are typically prepared using an established QuEChERS protocol which varies depending on the type of material you wish to analyze and the pesticides you wish to evaluate. The prepared samples are separated on an Agilent Zorbax SB-phenyl HPLC column and detected using our Agilent 6460 triple quadrupole mass spectrometer in MRM mode. The run time is approximately 15-30 minutes per sample, depending on the number of pesticides you wish to acquire data for in the assay. We can quantify as little as one pesticide or perform a comprehensive assay in which we acquire data for >65 different pesticides. Data are collected in positive or negative electrospray ionization modes. Data are typically normalized to wet tissue weight or sample volume if liquid.

Normal Weight: Tissue (0.2-5 g); water (10-100 mL); soil (1-5g dry)

Minimal Weight: Tissue (0.1-0.2 g); water (1 mL); soil (0.5g dry)

Special Handling: Samples should remain frozen at -80°C and in darkness prior to analysis if possible

Reference:

1. Payá P, et al. Analysis of pesticide residues using the Quick Easy Cheap Effective Rugged and Safe (QuEChERS) pesticide multiresidue method in combination with gas and liquid chromatography and tandem mass spectrometric detection. 2007. Anal.Bioanal. Chem. 389: 1697-1714
2. Long EY, Krupke CH. Non-cultivated plants present a season-long route of pesticides exposure for honey bees. 2016. Nat Comm. 7: 11629

Table I: Analytes which may be reported. Others on special request:

Compound Group	Compound Name	
carbamate	Carbaryl	analyte
carbamate	Methomyl	analyte
carbamate	Aldicarb	analyte
fungicide	Trifloxystrobin	analyte
fungicide	Difenoconazole	analyte
fungicide	Azoxystrobin	analyte
fungicide	Pyraclostrobin	analyte
fungicide	Propiconazole	analyte
fungicide	Prothioconazole	analyte
fungicide	Febuconazole	analyte
fungicide	Dimoxystrobin	analyte
fungicide	Captan	analyte
fungicide	Metalaxyl	analyte
fungicide	tetrahydrophthalimide	analyte
herbicide	Chlorimuron-ethyl	analyte
herbicide	Flumioxazin	analyte
herbicide	Oryzalin	analyte
herbicide	Metolachlor	analyte
herbicide	Alachlor-d13	internal standard
herbicide	Alachlor	analyte
herbicide	Acetochlor	analyte
herbicide	2,4-D	analyte
herbicide	Atrazine	analyte
insecticide	Spinetoram-major	analyte
insecticide	Spinosad-major	analyte
insecticide	Indoxacarb	analyte
insecticide	Fipronil	analyte
insecticide	Endosulfan sulfate	analyte
insecticide	a-Endosulfan	analyte
insecticide	B-Endosulfan	analyte
insecticide	Methoxyfenozide	analyte
insecticide	Propargite (NH4 adduct)	analyte
insecticide	Terbufos	analyte
insecticide	Deet	analyte

insecticide	N-2,4-D	analyte
neonicotinoid	Thiamethoxam-d3	internal standard
neonicotinoid	Thiamethoxam	analyte
neonicotinoid	Nitenpyram	analyte
neonicotinoid	Imidacloprid-d4	internal standard
neonicotinoid	Imidacloprid	analyte
neonicotinoid	Clothianidin-d3	internal standard
neonicotinoid	Thiacloprid	analyte
neonicotinoid	Clothianidin	analyte
neonicotinoid	Acetamiprid-d3	internal standard
neonicotinoid	Acetamiprid	analyte
neonicotinoid	Dinotefuran	analyte
organophosphate	Coumaphos	analyte
organophosphate	Chlorpyrifos	analyte
organophosphate	Malathion	analyte
organophosphate	Phosmet	analyte
organophosphate	Diazinon	analyte
organophosphate	Methidathion	analyte
organophosphate	Trichloronate	analyte
organophosphate	Phoxim	analyte
organophosphate	Dementon	analyte
organophosphate	Cyanophos	analyte
organophosphate	Dimethoate	analyte
pyrethroid	Deltramethrin	analyte
pyrethroid	T-Fluvalinate	analyte
pyrethroid	Cyhalothrin	analyte
pyrethroid	L-cyhalothrin	analyte
pyrethroid	B-Cyfluthrin	analyte
pyrethroid	Bifenthrin	analyte
pyrethroid	Esfenvalerate	analyte
pyrethroid	Cypermethrin	analyte
pyrethroid	Permethrin	analyte
pyrethroid	Phenothrin	analyte
pyrethroid	Fenpropathrin	analyte
pyrethroid	Tetramethrin	analyte
pyrethroid	Allethrin	analyte
pyrethroid	Prallethrin	analyte