



Tti Testing Laboratories

OVER 30 YEARS OF EXCELLENCE IN QUALITY ASSURANCE



FOOD & AGRICULTURE DIVISION

Food & agriculture testing

Residues, pathogens and labels, tested to your buyer's limits.

From paddy to port. Residue, toxin, pathogen and label testing for Pakistan's food and agriculture exporters, at the limits their buyers set. ISO/IEC 17025 and ISO/IEC 17020 accredited, with a 3-day turnaround.



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111786 001

www.ttilabs.net



EVERY PROVINCE

Tti Labs is approved by all provincial food authorities of Pakistan.

Approved for a wide range of test parameters. Tti Labs is also a World Food Programme partner laboratory.

SINCE 1995 • LAHORE

Every claim on a food export, tested.

A food export is a set of claims: free of residues above the limit, free of pathogens, true to its label. Each claim needs evidence that a buyer and a border official will accept.

Tti Labs serves food and agriculture manufacturers, processors and exporters across the whole production lifecycle. It tests plant-based and animal-based foods, oils, beverages, water, infant formula, feed and soil. Food chemistry and microbiology sit on its PNAC accreditation scope.

600⁺

SAMPLES A DAY

1,500⁺

TESTS A DAY

3DAYS
TURNAROUND**1,500⁺**GLOBAL
BRANDS

- ISO/IEC 17025 accredited testing laboratory, PNAC Lab 022
- ISO/IEC 17020 accredited inspection body, PNAC IB-006 (Tti Inspections Pvt Ltd)
- U.S. IAC certified microbiology and molecular laboratory
- PSQCA approved; Punjab EPA certified
- 25,000 sq ft purpose-built headquarters in Lahore; offices in Karachi, Faisalabad and Sialkot



Testing

Inspection
& auditOn-site
samplingSustainable
agriculture

WHY IT MATTERS

Food is tested twice: once here, and again at the border.

Regulators and standard setters in Brussels, Washington, Riyadh and Rome set the numbers an export lot must meet. A result above the limit can mean a rejected container. EU countries report border rejections through the rapid alert system (RASFF). Serious or repeated breaches can bring closer checks on later shipments.

01

5,250 RASFF notifications in 2024

Food and feed risk notifications shared between EU member states, all products and origins.

EC ACN Annual Report 2024

02

123 rice issues in 2023, mostly pesticides

Pesticide residues above the MRL were the most common issue.

CBI specialty rice brief

03

Pakistan spice mixes: 30% of consignments checked

Listed for aflatoxins under the EU's temporary increase of official controls.

EU 2019/1793 Annex I

04

Tricyclazole in rice: 1 to 0.01 mg/kg

One fungicide limit, cut a hundredfold, applies to basmati from 30 December 2017.

EU 2017/983

05

Default MRL 0.01 mg/kg

The EU holds any pesticide without its own limit to the default.

EC 396/2005 Art. 18

PAKISTAN'S FOOD-GROUP EXPORTS, FY2024-25, US\$ MILLION



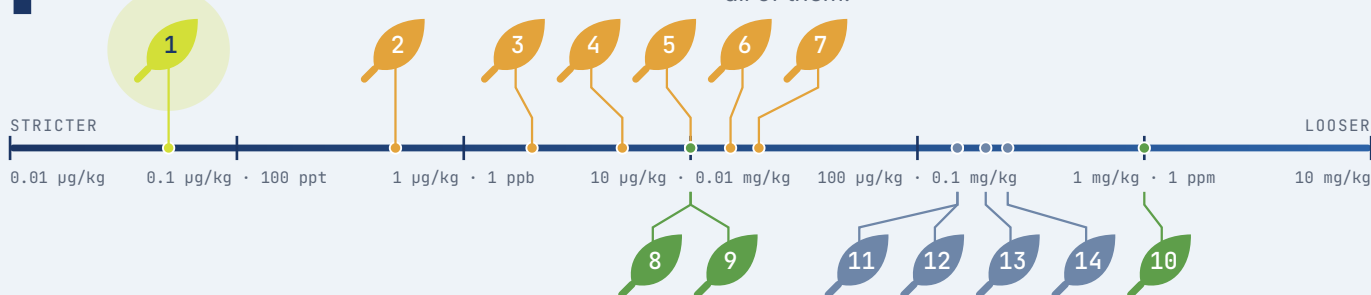
Pakistan Bureau of Statistics via Pakistan Business Council and Profit, 20 Jul 2025. "Other" is the rest of the food group.



14 LIMITS ON ONE AXIS

Limits as low as 50 parts per trillion.

That is the EU limit for aflatoxin M1 in milk: 0.050 µg in a kilogram. Current limits differ by a factor of 5,000, from milk to rice. The laboratory must measure reliably across all of them.



Mycotoxins, above the line

Aflatoxins and ochratoxin A come from moulds in stored grain, nuts, spices and feed. Limits are in µg/kg, parts per billion.

1	Aflatoxin M1 · milk · EU EU 2023/915 · 1.1.16	0.05 µg/kg
2	Aflatoxin M1 · milk · US FDA CPG 527.400	0.5 µg/kg
3	Aflatoxin B1 · cereals EU 2023/915 · 1.1.12	2 µg/kg
4	Aflatoxin B1 · rice to be sorted, dried spices	5 µg/kg
5	Sum of aflatoxins · same products	10 µg/kg
6	Ochratoxin A · dried spices except Capsicum	15 µg/kg
7	Total aflatoxins · US, human food FDA CPG 555.400	20 µg/kg

Pesticide residues, below

Without a specific MRL, the EU default is 0.01 mg/kg. Tricyclazole in rice moved from 1 mg/kg to 0.01 mg/kg.

8	Default MRL · no specific limit	10 µg/kg
9	Tricyclazole · rice, from 2017	10 µg/kg
10	Tricyclazole · rice, before 2017	1 mg/kg

Heavy metals, below

EU limits for lead, cadmium and inorganic arsenic in cereals and rice use mg/kg, parts per million.

11	Cadmium · rice EU 2023/915 · 3.2.12.3	0.15 mg/kg
12	Inorganic arsenic · milled rice	0.15 mg/kg
13	Lead · cereals EU 2023/915 · 3.1.11	0.20 mg/kg
14	Inorganic arsenic · parboiled, husked rice	0.25 mg/kg

1 mg/kg = 1 ppm = 1,000 µg/kg

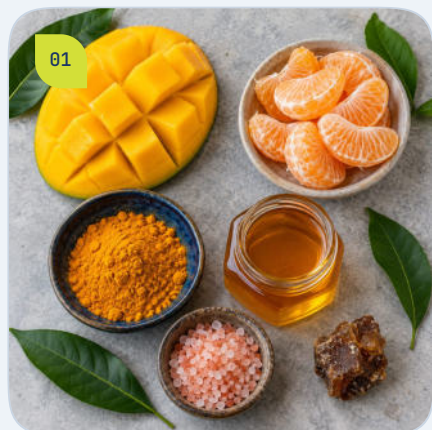
1 µg/kg = 1 ppb

0.05 µg/kg = 50 ppt

EU 2023/915 Annex I (consolidated 19.08.2026) · EC 396/2005 Art. 18 · EU 2017/983 · US FDA CPG 555.400 and 527.400 · CBI specialty rice brief (pre-2017 tricyclazole MRL)

Six matrices, each with its own limits.

Tti Labs tests plant-based and animal-based foods, liquids, infant formula and soil. Each matrix needs its own extraction and meets its own limits. Tti Labs also samples food and agriculture products on site.



Fruits, vegetables & natural products

Processed fruits and vegetables; salt, spices and herbs; honey and shilajit; sugar



Grains, bakery & confectionery

Cereals and legumes, cereal-based items, bakery products and confectionery



Animal-based foods

Seafood, ready to cook or eat items, dairy, meat, eggs and animal feed



Oils, beverages & water

Ghee, oils and fats; fruit juices and nectars; beverages; drinking water



Infant formula

A matrix group of its own



Soil & agriculture products

Soil, rice, wheat, cotton, tobacco, fresh produce and spices



Six test families: microbiology and pathogens · nutrition and label compliance · stability and shelf-life · safety and contaminants · pesticides and agricultural contaminants · food packaging safety. Methods: ASTM, AOAC, ISO and BAM-FDA.

TRICYCLAZOLE IN RICE • EU

100x stricter

The fungicide's EU limit in rice fell from 1 mg/kg to 0.01 mg/kg. It applies to basmati from 30 December 2017.

EU 2017/983 Art. 3 • earlier value: CBI

RICE TESTING • SIX RULEBOOKS

Rice: 47% of Pakistan's food exports.

Rice made up 47% of Pakistan's food-group exports in FY2024-25. Each destination sets its own residue limits. One lot may have to meet several at once.

\$3.35bn

RICE EXPORTS

5.82 Mt

RICE SHIPPED

808,643 t

BASMATI, \$830.6M

5.01Mt
NON-BASMATI,
\$2.52BN

FY2024-25: PBS via PBC and Profit (20 Jul 2025).
FY2023-24: \$3.93bn, 6.03 Mt.

EU limits a rice lot must meet

HAZARD	RICE PRODUCT	EU LIMIT
Pesticide residues 396/2005 Art. 18	Any pesticide with no specific MRL	0.01 mg/kg
Tricyclazole 2017/983	Rice	0.01 mg/kg
Aflatoxin B1 / sum 2023/915 1.1.13	To be sorted before use as food	5.0 / 10.0 µg/kg
Inorganic arsenic 2023/915 3.4.1.1	Milled (white) rice	0.15 mg/kg
Inorganic arsenic 2023/915 3.4.1.2	Parboiled and husked rice	0.25 mg/kg
Cadmium 2023/915 3.2.12.3	Rice	0.15 mg/kg

In 2023, RASFF logged 123 rice issues from all origins, most often pesticide residues above the MRL (CBI).

RICE PACKAGES

- ✦ Pesticide panels against EU, UK, US, SFDA, Codex and Gulf MRLs
- ✦ Packages of up to 5, 10, 20, 250 or 450 active ingredients
- ✦ Special packages for members of the Rice Exporters Association of Pakistan (REAP)
- ✦ Special packages for the tests the Department of Plant Protection (DPP) requires under Codex Alimentarius
- ✦ Demand-based packages with careful sample handling



PNAC SCOPE • EN 15662:2018

264 residues, one method.

Tti Labs' PNAC accreditation scope names 264 pesticide residues. One multi-residue method based on EN 15662:2018 analyses them on LC-MS/MS and GC-MS. Tti Labs reads each result against the destination market's MRL list, or the EU default of 0.01 mg/kg where no specific limit exists.

Carbendazim ■ Tebuconazole ■ Triazophos ■ Chlorpyrifos ■ Acetamiprid ■ Imidacloprid ■ **Tricyclazole** ■ Pendimethalin ■ Metolachlor ■ Profenophos ■ Difenoconazole ■ Abamectin ■ Acephate ■ Alanycarb ■ Aldicarb ■ Aldrin ■ Amidosulfuron ■ Aminocarb ■ Azaconazole ■ Azamethiphos ■ Azinphos-ethyl ■ Azoxystrobin ■ Benalaxyl ■ Benfuracarb ■ Benzoximate ■ Bifenazate ■ Bifenthrin ■ Bispyribac-sodium ■ Bitertanol ■ Boscalid ■ Bromuconazole ■ Bupirimate ■ Buprofezin ■ Butocarboxim ■ Carbaryl ■ Carbofuran ■ Carbosulfan ■ Carboxin ■ Carfentrazone-ethyl ■ Chlorantraniliprole ■ Chlorfenvinphos ■ Chloridazon ■ Chlorotoluron ■ Chloroxuron ■ Chlorpyrifos-methyl ■ Chlorsulfuron ■ Clethodim ■ Clofentezine ■ Clomazone ■ Coumaphos ■ Cyazofamid ■ Cycloate ■ Cycloxydim ■ Cycluron ■ Cymiazole ■ Cymoxanil ■ Cypermethrins ■ Cyproconazole ■ Cyprodinil ■ Deet ■ Desmedipham ■ Diazinon ■ Dichlorvos ■ Dieltrin ■ Diethofencarb ■ Diflubenzuron ■ Diflufenican ■ Dimethachlor ■ Dimethoate ■ Dimethomorph ■ Dimoxystrobin ■ Diniconazole ■ Dinotefuran ■ Dioxacarb ■ Disulfoton ■ Dithiocarbamates ■ Diuron ■ Endosulfan ■ Epoxiconazole ■ Ethidimuron ■ Ethion ■ Ethiprole ■ Ethirimol ■ Ethofumesate ■ Ethoprop ■ Ethoxyquin ■ Etofenprox ■ Famoxadone ■ Fenamidone ■ Fenamiphos ■ Fenarimol ■ Fenazaquin ■ Fenbuconazole ■ Fenhexamid ■ Fenobucarb ■ Fenoxycarb ■ Fenpropidin ■ Fenpyroximate ■ Fenuron ■ Fipronil ■ Flazasulfuron ■ Flonicamid ■ Fluazinam ■ Flubendiamide ■ Fludioxonil ■ Flufenacet ■ Flufenoxuron ■ Flumetsulam ■ Flumioxazin ■ Fluometuron ■ Flupicolide ■ Fluopyram ■ Fluoxastrobin ■ Fluquinconazole ■ Flusilazole ■ Flutriafol ■ Fluxapyroxad ■ Foramsulfuron ■ Fosthiazate ■ Fuberidazole ■ Furalaxyl ■ Furathiocarb ■ Halofenozide ■ Halosulfuron-methyl ■ Heptachlor ■ Hexaconazole ■ Hexaflumuron ■ Hexythiazox ■ Imazalil ■ Imazamox ■ Imazapic ■ Imazethapyr ■ Indoxacarb ■ Ipconazole ■ Iprovalicarb ■ Isocarbofos ■ Isfenphos-methyl ■ Isoprothiolane ■ Isoxaben ■ Isoxaflutole ■ Ivermectin ■ Kresoxim-methyl ■ Lenacil ■ Linuron ■ Lufenuron ■ Malafoxon ■ Malathion ■ Mandipropamid ■ Mecarbam ■ Mefentrifluconazole ■ Mepanipyrim ■ Mesosulfuron-methyl ■ Metaflumizone ■ Metalaxyl ■ Metamitron ■ Metazachlor ■ Metconazole ■ Methabenzthiazuron ■ Methacrifos ■ Methamidophos ■ Methidathion ■ Methiocarb ■ Methomyl ■ Methoxyfenozide ■ Metobromuron ■ Metrafenone ■ Metribuzin ■ Mevinphos ■ Mexacarbate ■ Molinate ■ Monocrotophos ■ Moxidectin ■ Myclobutanil ■ Nicosulfuron ■ Nitenpyram ■ Omethoate ■ Oxadiazon ■ Oxadixyl ■ Oxamyl ■ Oxasulfuron ■ Paclobutrazol ■ Paraquat dichloride ■ Penconazole ■ Pencycuron ■ Permethrin ■ Phenmedipham ■ Phenthoate ■ Phosalone ■ Phosmet ■ Phosphamidon ■ Phoxim ■ Picolinafen ■ Picoxystrobin ■ Pirimicarb ■ Pirimiphos-methyl ■ Prochloraz ■ Procymidone ■ Promecarb ■ Prometon ■ Pronamide ■ Propamocarb ■ Propaquizafop ■ Propargite ■ Propetamphos ■ Prophan ■ Propiconazole ■ Propoxur ■ Proquinazid ■ Prosulfocarb ■ Pymetrozine ■ Pyracarbolid ■ Pyraclostrobin ■ Pyridaben ■ Pyridate ■ Pyrimethanil ■ Pyriproxyfen ■ Quinalphos ■ Quinclorac ■ Quinmerac ■ Quinoclamine ■ Quinoxifen ■ Rimsulfuron ■ Rotenone ■ Silthiofom ■ Spinosad ■ Spirodiclofen ■ Spiromesifen ■ Spirotetramat ■ Spiroxamine ■ Sulfentrazone ■ Sulfoxaflo ■ Tebufenozide ■ Tebufenpyrad ■ Tebuthiuron ■ Teflubenzuron ■ Temephos ■ Tepraloxydim ■ Terbufos ■ Tetraconazole ■ Thiabendazole ■ Thiacloprid ■ Thiamethoxam ■ Thidiazuron ■ Thifensulfuron methyl ■ Thiodicarb ■ Thiofanox ■ Tolclofos-methyl ■ Tolyfluanid ■ Tralkoxydim ■ Triadimefon ■ Triadimenol ■ Triasulfuron ■ Tribenuron-methyl ■ Trichlorfon ■ Trietazine ■ Trifloxystrobin ■ Triflumezopyrim ■ Triflumizole ■ Triflumuron ■ Trinexapac-ethyl ■ Triticonazole ■ Uniconazole ■ Vamidothion ■ Zoxamide

The first eleven, in bold, open the scope list. The lime pill marks tricyclazole, the fungicide behind the EU's 2017 basmati limit.

264

PESTICIDES IN SCOPE

EN 15662

METHOD BASIS, 2018

LC-MS/MS

WITH GC-MS PLATFORMS

0.01 mg/kg

EU DEFAULT MRL

Organic food verification adds GMO testing, pesticide residue analysis and azadirachtin, a botanical pesticide.

**Acetonitrile extraction**

EN 15662

**LC-MS/MS**

Triple quadrupole

**GC-MS**

Pesticide residues

**Fruits & vegetables**

EU default 0.01 mg/kg

AOAC 990.34 • ISO 16050 • ICP-MS

Mycotoxins and heavy metals, measured to EU limits.

Tti Labs screens aflatoxins, ochratoxin A and aflatoxin M1 by ELISA. Its LC-MS/MS platform also covers mycotoxins. ICP-MS, installed for food safety, measures metals at ppb and ppt levels.

Mycotoxins: EU limits

TOXIN	PRODUCT	EU LIMIT
AFB1 / sum	Dried Capsicum, pepper, nutmeg, turmeric	5.0 / 10.0 µg/kg
AFB1 / sum	Groundnuts and oilseeds, to the consumer	2.0 / 4.0 µg/kg
AFB1 / sum	Cereals and cereal products	2.0 / 4.0 µg/kg
OTA	Capsicum: chillies, chilli powder, paprika	20 µg/kg
OTA	Other dried spices	15 µg/kg
OTA	Unprocessed cereal grains	5.0 µg/kg

Metals: EU limits

METAL	PRODUCT	EU LIMIT
Lead	Cereals	0.20 mg/kg
Cadmium	Rice	0.15 mg/kg
Inorganic arsenic	Milled (white) rice	0.15 mg/kg
Inorganic arsenic	Parboiled and husked rice	0.25 mg/kg

30%

Share of spice-mix consignments from Pakistan the EU checks for aflatoxins at entry. EU 2019/1793 Annex I (cons. 30.06.2026)

MYCOTOXINS, BASED ON AOAC 990.34 AND ISO 16050

🌿 Total aflatoxins (B1, B2, G1, G2) • aflatoxin M1 • 🌿 ochratoxin A • zearalenone (ZON) • deoxynivalenol (DON) • fumonisins • T-2 / HT-2 toxins • patulin

ELEMENTS ON THE PNAC SCOPE

🌿 Pb, Cd, As, Hg, Cr, Fe, Cu, Mn, Zn, Co; minerals K, Na, Ca, Mg.



ELISA screening

AOAC 990.34



Immunoaffinity clean-up and HPLC

ISO 16050



ICP-MS

ppb and ppt



AAS

Trace elements

EU 2023/915 Annex I (cons. 19.08.2026) • PNAC Lab 022 Rev. 09 • Leaf: on the PNAC Lab 022 scope

Contaminants from processing, farming and packaging.

Tti Labs identifies chemical contaminants that may pose health risks, including veterinary drug residues. It also checks that food contact materials do not release harmful substances.



Polycyclic aromatic hydrocarbons (PAH)

Toxic chemical contaminants



Acrylamide

Acrylamide testing



Ethylene oxide (ETO)

Toxic chemical contaminants



Veterinary drug residues

Antibiotics in meat, milk and eggs



Primary aromatic amines (PAA)

A contaminant test, and a specific-migration test for packaging



Food packaging safety

Overall migration of heavy metals; specific migration of aromatic amines, formaldehyde and phthalates; extractables and leachables



Stability and shelf-life studies. Tti Labs evaluates product stability, preservation efficiency and microbial growth during storage.

U.S. IAC CERTIFIED · BAM-FDA · ISO

Pathogens grown, counted and identified.

The U.S. International Antimicrobial Council (IAC) certifies Tti Labs' microbiology and molecular laboratory. Tti Labs was the first laboratory in Pakistan to earn it. The laboratory is approved for ISO Class 5 and 7 standards. Methods follow BAM-FDA and ISO, and APHA and EPA for water.

Foodborne pathogens

🌿 *Salmonella* spp. · 🌿 *Listeria monocytogenes* ·
🌿 *Staphylococcus aureus* · 🌿 *Bacillus cereus* · *Clostridium*
perfringens · 🌿 *Campylobacter* spp. · *Vibrio cholerae* ·
Vibrio parahaemolyticus

Hygiene and indicator organisms

🌿 Total plate count (TPC) · 🌿 total coliforms and 🌿 faecal
coliforms · 🌿 *E. coli* · 🌿 yeasts and moulds · faecal
streptococci · *Pseudomonas aeruginosa*

Quality monitoring

Microbial load · spoilage organisms · hygiene monitoring ·
processing water quality, microbiological and chemical

🌿 Leaf: one of the ten tests on the PNAC scope

EU CRITERION ·
SALMONELLA

Not detected in 25 g

For example, ready-to-eat pre-cut fruit and vegetables, and milk and whey powder. EC 2073/2005 Annex I, 1.19 and 1.12.

EU CRITERION · **L. MONOCYTOGENES**

100 cfu/g

Ready-to-eat foods on the market during their shelf-life, under the conditions the regulation sets. EC 2073/2005 Annex I, 1.2 and 1.3.





NUTRITION · ALLERGENS · GMO TESTING

Nutrition labels, verified.

Every figure on a nutrition panel is a measurement someone must stand behind. Tti Labs verifies nutrition labels against FDA, EFSA, Codex and FSSAI requirements.



HONEY · NATURAL PRODUCTS

Panel parameters on the PNAC scope

PARAMETER	SCOPE
Energy	PNAC
Fat (crude) · fatty acid profile	PNAC
Carbohydrates (total / available) · sugar	PNAC
Fibre (crude) · protein (crude)	PNAC
Sodium, potassium, calcium, magnesium	PNAC
Moisture, ash, pH, Brix, acidity	PNAC
Vitamins A, B1, B2, B3, B5, B6, B9, B12, D, E	PNAC
Iron, zinc, copper, manganese	PNAC

The 14 EU allergens

EU 1169/2011 ANNEX II

- | | |
|-------------------------|-------------------------------|
| 01 Cereals with gluten | 09 Celery |
| 02 Crustaceans | 10 Mustard |
| 03 Eggs | 11 Sesame seeds |
| 04 Fish | 12 Sulphur dioxide, sulphites |
| 05 Peanuts | 13 Lupin |
| 06 Soybeans | 14 Molluscs |
| 07 Milk (incl. lactose) | |
| 08 Nuts | |

Tti Labs detects allergens by ELISA and real-time PCR.

0.9%

EU GM LABELLING THRESHOLD

The EU requires no GM label where GM material is no higher than 0.9% of each ingredient and is adventitious or technically unavoidable. EC 1829/2003 Art. 12(2). GMO screening is on the PNAC scope, on real-time PCR.

Also: complete proximate analysis · macro- and micronutrient profiling · food additives (preservatives, emulsifiers, stabilisers, colours, flavours, antioxidants) · salt content, peroxide value and free fatty acids · authenticity and adulteration testing · sensory evaluation

EIGHT MATRICES • PNAC LAB 022 REV. 09

Hazards and limits, food by food.

A spice, an oil and a glass of water fail for different reasons. Here are eight matrices, the tests Tti Labs runs for each, and an example limit.

MATRIX	TESTS	EXAMPLE LIMIT
01 Spices	Aflatoxins, ochratoxin A, pesticides, metals	AFB1 5.0 µg/kg (EU, dried spices)
02 Groundnuts and oilseeds	Aflatoxins, moisture, fat	AFB1 2.0 µg/kg (EU, to consumer)
03 Cereals and grain	Aflatoxins, ochratoxin A, protein, fibre, ash	OTA 5.0 µg/kg (EU, unprocessed grain)
04 Fruits and vegetables	Pesticide residues, EN 15662 multi-residue	0.01 mg/kg (EU default MRL)
05 Dairy	Aflatoxin M1, fat, protein, microbiology	AFM1 0.050 µg/kg (EU, milk)
06 Edible oils and ghee	Free fatty acids, peroxide value, iodine value, saponification, fatty acid profile	—
07 Seafood	Histamine, microbiology, metals	—
08 Drinking water	Total and faecal coliforms, <i>E. coli</i> , plate count (APHA, EPA, ISO)	—



Groundnuts and oilseeds

AFB1 2.0 µg/kg



Edible oils and ghee

Peroxide and iodine value



Seafood

Histamine



Dairy

AFM1 0.050 µg/kg

Tests: PNAC Lab 022 Rev. 09 and [ttilabs.net/food-agri](https://www.ttilabs.net/food-agri). Limits: EU 2023/915 Annex I; default MRL EC 396/2005 Art. 18. A dash means the limit depends on the product and market.

TWELVE INSTRUMENTS • 544 ACCREDITED METHODS

12 instrument types, since 2018.

Tti Labs designs, optimises and validates methods for complex matrices. Its experts cross-check results from one instrument against another.



REAL-TIME PCR • GMO,
ALLERGENS, PATHOGENS

INSTRUMENT	USE	INSTRUMENT	USE
LC-MS/MS Triple and single quadrupole	Pesticide residues, toxicology, mycotoxins, allergens	ICP-OES	Multi-element heavy metals
GC-MS/MS Triple quadrupole, added 2025	Complex matrices	AAS	Trace elements in food and water
GC-MS and HS-GC-MS (EI/CI)	Volatile compounds, residual solvents	ELISA kits	Aflatoxins, ochratoxin A, aflatoxin M1, allergens
GC-FID	Part of the GC suite	Real-time PCR	GMO screening, allergens, pathogen identification
HPLC (UV/Vis, DAD, MS/MS)	Food chemistry, nutrition	FTIR	Material identification
ICP-MS	Ultra-trace metals, ppb and ppt	UV/Vis	Absorbance-based assays

544

ACCREDITED METHODS

378

ACCREDITED PARAMETERS

3 days

TURNAROUND

Built one instrument at a time

2018 LC-MS/MS: pesticide residues in cotton, rice, tobacco and spices	2019 Food testing laboratory: toxicology, chemistry, contaminants, nutrition, adulteration	2021 U.S. IAC certification for the microbiology laboratory	2023–25 ICP-MS installed for food safety; new food testing laboratory	2025 GC-MS/MS triple quadrupole	2026 PNAC scope Rev. 09: 264 pesticides, food microbiology, seafood histamine
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WATER TESTING • WHO • PSQCA • CODEX • PPFR

Tap, spring or bottled: water tested to its **standard**.

Tti Labs tests drinking water against WHO, PSQCA, Codex and PPFR (Punjab Pure Food Regulations, 2018) requirements, and other national or regional standards. Methods follow APHA, EPA and ISO.

Categories

- ✦ Tap water
- ✦ Natural or spring water
- ✦ Mineral or bottled water

Toxicology

- ✦ Heavy metals
- ✦ Pesticides
- ✦ PAHs

Potability & microbes

- ✦ TPC · coliforms · *E. coli*
- ✦ Faecal streptococci · enterococci
- ✦ *Pseudomonas aeruginosa*

Chemistry

- ✦ pH · conductivity · turbidity
- ✦ TDS · TSS · minerals
- ✦ Chemical contaminants



POTABILITY • MICROBIAL TESTING



SAFE WATER CONSULTING

01

Parameter mapping

Based on the industry's risk profile

02

Sampling strategy

Grab, composite or site-specific

03

Regulatory mapping

EPA, WHO, EU directives

04

Corrective action

Treatment optimisation and disinfection strategies



INSPECTION KIT • SAMPLING AND CHECKS

ISO/IEC 17020 • PNAC IB-006

Inspected on the floor, before it **ships**.

Tti Labs' inspectors carry out due diligence on site, on the production floor. Booking within 24 hours. Report within 24 hours after the inspection.

Where our inspectors work

- 🌿 Fresh produce, pre- and post-harvest
- 🌿 Processing and packing facilities
- 🌿 Grains and bulk commodities
- 🌿 Cold chain and storage
- 🌿 Meat and poultry handling
- 🌿 Dairy processing
- 🌿 Edible oil production
- 🌿 Export consignments at loading

Production and quality inspections

- 🌿 SP sample picking
- 🌿 PPI pre-production
- 🌿 IPI initial production
- 🌿 DUPRO during production
- 🌿 PFI pre-final
- 🌿 FRI final random, pre-shipment (AQL)
- 🌿 FC full check, 100%
- 🌿 LS loading supervision: container hygiene and cold-chain integrity

AQL-based sampling and custom QC protocols.

Specialised services

- 🌿 Sample evaluation and product review
- 🌿 Defect analysis and root-cause investigation
- 🌿 Post-delivery inspection support
- 🌿 Product labelling compliance
- 🌿 Visual inspection (VI)
- 🌿 Grain quality analysis (GQA)

Custom inspection checklists and structured support to improve supplier compliance.

Accredited food scope, PNAC IB-006: pre- and post-shipment inspection; visual, weight, quality, quantity, marking, packing and loading inspection (GAFTA 124).



CERTIFICATION SCHEMES

**You get certified.
We supply
the evidence.**

Tti Labs tests and inspects against the schemes your buyers ask for. Our reports support your certification audit. The certificate itself comes from the scheme's certification body.

 BRCGS

 FSSC 22000

 SQF

 IFS

 ISO 22000

 ISO 14001

 FDA

 EU

 HACCP

 GMP

 GLOBALG.A.P.

 Halal

OUR ACCREDITATIONS AND APPROVALS



PNAC Lab 022

ISO/IEC 17025 accredited laboratory



PNAC IB-006

ISO/IEC 17020 accredited inspection body, food shipment inspection



U.S. IAC

Certified microbiology and molecular laboratory, Pakistan's first



ISO Class 5 & 7

Approved for ISO Class 5 and 7 standards



Food authorities

Approved by all provincial food authorities of Pakistan



PSQCA

Approved



Punjab EPA

Certified laboratory



World Food Programme

Partner laboratory



PNAC Lab 022 · Rev. 09. Signed 03-08-2026, valid until 08-08-2027. Three food fields: food, feed and agriculture (chemical testing: composition, nutrition, contaminants, pesticide residues) · food, water and other matrices (microbial testing) · fisheries and seafood (chemical testing: histamine).



MARKETS & REGULATIONS

Rice panels for six markets.

Six markets, six rulebooks: the EU, UK, US, SFDA, Codex and Gulf. Tti Labs' rice packages align pesticide panels to each one's MRL list. The EU rulebook alone runs to six regulations. Each governs a different part of what a food lot must prove.



EU



UK



US



SFDA



Codex



Gulf

European Union: the regulation stack

EUR-LEX CONSOLIDATED TEXTS, 2025-2026

REGULATION	COVERS	KEY NUMBER
EC 396/2005	Pesticide residues: MRLs in food and feed	0.01 mg/kg default (Art. 18)
EU 2023/915	Contaminants: mycotoxins, metals and others	5.0 µg/kg aflatoxin B1, dried spices
EC 2073/2005	Microbiological criteria: food safety and process hygiene	Salmonella not detected in 25 g
EU 1169/2011	Food information: labelling, nutrition, allergens	14 allergen groups (Annex II)
EC 1829/2003	GM food and feed: authorisation and labelling	0.9% threshold (Art. 12)
EU 2019/1793	Controls at entry: higher border-check rates	30% for Pakistan spice mixes (aflatoxins)

UNITED KINGDOM

Assimilated EC 1881/2006

Great Britain keeps its own copy of the earlier EU contaminants regulation. Its aflatoxin limits for cereals, spices and groundnuts match the EU values.

legislation.gov.uk

UNITED STATES

FDA compliance policy guides

Total aflatoxins above 20 µg/kg in human food (CPG 555.400).
Aflatoxin M1 above 0.5 ppb in milk (CPG 527.400).

[fda.gov](https://www.fda.gov)

SFDA • CODEX • GULF

MRL lists

Tti Labs' rice packages align pesticide panels to the Saudi Food and Drug Authority, Codex Alimentarius and Gulf MRL lists.

ttilabs.net/food-agri

AGRICULTURE BEYOND THE PLATE

Cotton and tobacco, tested for residues too.

Tti Labs tests cotton and tobacco for pesticide residues too. It brought in LC-MS/MS in 2018 for residues in cotton, rice, tobacco, spices and other crops. Its agriculture scope covers organic and conventional cotton.

01	Cotton, organic and conventional	Pesticide residues by LC-MS/MS; GM cotton screening
02	Tobacco leaf	Pesticide residues by LC-MS/MS
03	Rice and wheat	Grain quality analysis (GQA)
04	Fruits and vegetables	Pre- and post-harvest inspection

Sustainable agriculture

Verified organic supply chains and soil health build brand integrity. Tti Labs runs tests for traceability, sustainability and regenerative sourcing, in line with EU and other organic regulations.

- 🌱 GMO testing
- 🌱 Soil carbon check
- 🌱 Pesticide residue testing
- 🌱 Microbial soil quality audits



SOIL · CARBON AND MICROBIAL QUALITY

Environmental compliance for food and agriculture sites, under Pakistan EPA regulations: air quality monitoring (ambient, stack, indoor) · occupational health and safety audits · waste and sludge testing · EIA/NOC support.



TOBACCO LEAF · PESTICIDE RESIDUES



WORK WITH US

From field to report in three **days**.

Trusted by 1,500+ global brands. Turnaround time: 3 days.

01

Customer portal

Submit requisitions,
track samples and
retrieve reports online.

etrf.ttilabs.net

02

On-site sampling

Tti Labs samples food
and agriculture
products on site.

Food & agriculture

03

Accredited testing

Chemistry, residues
and microbiology
on Tti Labs'
PNAC scope.

ISO/IEC 17025 · PNAC
Lab 022

04

Turnaround

3 days for testing.
Inspection reports
within 24 hours after
the inspection.

quotations@ttilabs.net

Five questions that scope a food project.

Have the answers ready before you book.

Q1

Which market?

The destination sets the
limit list.

Q2

Which product?

The matrix decides the
method.

Q3

Which hazards?

Residues,
toxins, metals,
pathogens, label.

Q4

Which limit?

A regulation, or your
buyer's own
specification.

Q5

Which stage?

Lab testing, inspection
at loading, or both.

QUOTATIONS

quotations@ttilabs.net

MARKETING

marketing@ttilabs.net

SAMPLE BOOKING

etrf.ttilabs.net

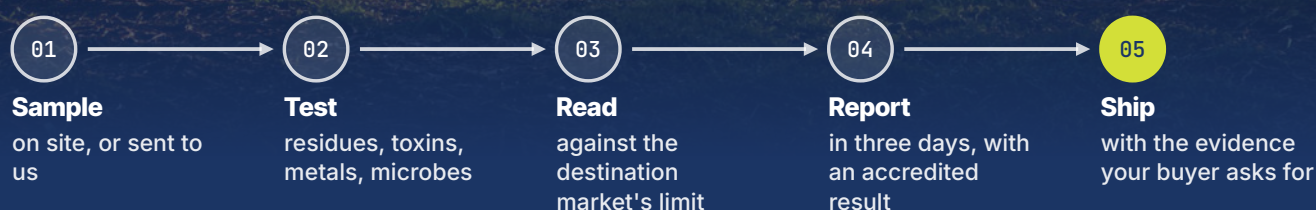
UAN, ALL
OFFICES

111 786 001



Tti Testing Laboratories

Field to border, **one laboratory.**



From farm-level inputs to packaging, Tti Labs delivers defensible data that protects public health and opens access to regulated markets.

ISO/IEC 17025 Accredited

ISO/IEC 17020 Inspection

U.S. IAC certified microbiology

111 786 001



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Images are illustrative and AI-generated; they do not show Tti Labs premises, clients or samples. Regulatory limits are shown in summary; check the current consolidated text.

