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# **Mycotoxin Proficiency Testing Scheme Description**

**PT118 – Mycotoxins and pesticides in Macadamias**

**PT112 – Aflatoxins in peanut slurry**

**PT113 – Aflatoxin M1 in milk powder**

**PT114 – Mycotoxins in Wheat**

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## 1 FOREWORD

This is the call for participation in, and description of the NMISA proficiency testing (PT) schemes for the determination of mycotoxins in various matrices. Participants will be required to report on the mycotoxins which form part of their routine laboratory services. A confidential report will be issued to all participants after completion of each PT. Information on the mycotoxins including, dates for distribution and reporting are listed in Table 1.

This forms part of a range of ISO 17043 accredited PT services offered by NMISA. Please consult our website [www.nmisa.org](http://www.nmisa.org) for information on PT schemes on offer. NMISA can also assist with the preparation of traceable gravimetrically prepared spike solutions for benchmarking *ad-hoc* analyses for which commercial PT schemes are not available.

## 2 SCHEME AIMS

This scheme will assist laboratories that routinely analyse mycotoxins, to monitor their laboratory performance. The PT Scheme allows laboratories to evaluate their accuracy and comparability of measurement results produced; the continued competency of analytical staff; and the maintenance and effectiveness of the current quality assurance systems within the laboratory. In addition, this information may also be used to provide accreditation bodies or clients with objective evidence of laboratory performance.

## 3 PARTICIPATION FEES AND ADDITIONAL CHARGES

The cost of participation in each PT is captured in Table 1. These rates exclude costs associated with delivery (0% VAT, please note that we are not a VAT registered company). This fee includes the material and a confidential report upon completion. Upon registration for participation an official quotation will be provided. Participation is confirmed following receipt of a purchase order and/ or proof of payment.

Since many of the South African participants are located within close proximity to NMISA, the option of collecting the PT scheme samples from NMISA premises is permitted. *International laboratories will have test samples sent by courier and appropriately packaged to maintain sample integrity. International participants must provide NMISA with any import or quarantine permits that might be required to complete sample delivery well in advance of the shipment date and are liable for any customs or import duties charged. Please note that it remains the participants responsibility to ensure custom documents and requests are seen to expediently to ensure the sample is not held in customs.*

## 4 PT SCHEME DESCRIPTION

The timeline for the PTs is presented in Table 1. Laboratories are requested to report results for as many of the parameters specified as possible, to allow for maximum benefit from the participation. This study is designed to support laboratories routinely performing mycotoxin analysis. The levels of the analytes should be easily achievable using analytical methods typically applied, however care should be taken to ensure maximum mycotoxin recovery and monitor potential matrix effects. Instructions for proper handling and storage of the samples prior to sample preparation will accompany the PT scheme samples. Participants should adhere to these instructions to ensure sample integrity and comparability of the results.

**Table 1: PT details for the Mycotoxins Proficiency Testing Schemes to be conducted in 2024-25.**

Mycotoxin PT schemes		Sample format*	Distribution/ Dispatch	Result reporting	Cost ZAR
Mycotoxins	<b>PT-118 – Mycotoxins and pesticides in Macadamias</b> Aflatoxins B1 (0.5 - 25 µg/kg) Aflatoxins B2 (0.5 - 25 µg/kg) Aflatoxins G1 (0.5 - 25 µg/kg) Aflatoxins G2 (0.5 - 25 µg/kg) Total Aflatoxins (1 - 50 µg/kg) Ochratoxin A (0.5 - 20 µg/kg)	5 x 50 g slurry and 2 x 50 g blank slurry (will include pesticides)	Jun 2024	Jul 2024	R 5 250
	<b>PT-112 – Aflatoxins in Peanut Slurry</b> Aflatoxins B1 (0.5 - 40 µg/kg) Aflatoxins B2 (0.5 - 40 µg/kg) Aflatoxins G1 (0.5 - 40 µg/kg) Aflatoxins G2 (0.5 - 40 µg/kg) Total Aflatoxins (1 - 80 µg/kg)	100 g Peanut slurry	Jun 2024	Jul 2024	R 3 400
	<b>PT-113 – Aflatoxin M1 in Milk powder</b> Aflatoxin M1 (0.025 - 5 µg/kg in the dried milk powder)	2 x 20 g milk powder (10 g made up with water to a volume of 100 mL)	Sept 2024	Oct 2024	R 3 400
	<b>PT-114 – Mycotoxins in Wheat</b> Deoxynivalenol (100 – 2 000 µg/kg) Zearalenone (50 - 100 µg/kg) Ochratoxin A (0.5 – 10 µg/kg)	100 g Wheat	Dec 2024	Feb 2024	R 4 900
Result Reporting	<p>Participants will be required to perform the analysis using their normal laboratory procedures and are required to report <b>two results for each parameter measured in the sample provided.</b></p> <p>Participants are encouraged to include an uncertainty estimate for each result obtained. The result reporting form will be distributed to participants and will request additional information on the measurement technique and parameters, any recovery correction application, calibration standards used etc.</p>				
PT conduct	<p><b>Assigned value.</b></p> <ul style="list-style-type: none"> <li>The assigned value for the mycotoxins will be the values obtained through LC-MS/MS and IAC LC-FLD analysis at the NMISA Organic Analysis Laboratory, ISO 17025 accredited methods.</li> <li>The robust H15 mean of participant results may be considered depending on the number of participants.</li> </ul> <p>Outsourcing of PT activities is usually limited to couriers, for some of the mycotoxin parameters, the robust H15 mean of results obtained from, and/or outsourced to, expert laboratories may be considered.</p> <p><b>Laboratory performance</b></p> <ul style="list-style-type: none"> <li>Laboratory performance will be evaluated using the z-score.</li> </ul> <p><b>Standard deviation of proficiency assessment</b></p> <ul style="list-style-type: none"> <li>The modified Horwitz model will be used to estimate a standard deviation of proficiency assessment. The standard deviation of participant results will also be included in the final PT report for reference and comparison to the Horwitz prediction.</li> </ul> <p><b>PT report</b></p> <ul style="list-style-type: none"> <li>The PTS report will be distributed within 2 weeks following the result submission deadline. Reports will be provided in electronic format only (Adobe Acrobat- pdf) files.</li> <li>The scheme is fully confidential. Each participant will be issued with a unique identification number. For multiple participants within the same laboratory the participating laboratory is required to identify its analysts by a code known only to the laboratory.</li> </ul>				

\* NMISA strives to obtain locally sourced, naturally contaminated material, however, NMISA will likely spike the material to ensure maximum benefit to participants. Any changes to the analytes and/or matrix will be communicated to participants prior to distribution.