CONTRACTS & SPECIFICATIONS COMMITTEE **KYOTO CONGRESS**

Technical Specifications Group **May 2023**

Chairman: Mr. W. Heath (South Africa) **Report No: TSG 01**

Report on Independent Laboratory Round Trial 3741 - 3844: January 2022 to December 2022

By

Independent Laboratory Round Trial (ILRT) Group

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SUMMARY

This ILRT Group Report covers 104 trials (3741 - 3844) for the period January 2022 to December 2022. The range of wool variables covered by this series is similar to the range covered in the previous series, and the source of sample material was similar. The ILRT Group attempts to ensure that the samples tested in the trials are representative of the wool types produced in the home nations of the participating laboratories and in proportion to the quantity of wool tested.

The data in the report includes Wool Base, VM Base, Airflow Mean Fibre Diameter, LASERSCAN Mean Fibre Diameter and LASERSCAN Standard Deviation of Fibre Diameter.

Overall the mean, within-lab and between lab standard deviation for the parameters reported are similar to the previous 6 trials, indicating continuing consistent performance of the member laboratories. Calculations of the 95% Confidence Limits confirm that the ILRT laboratories are producing results within the Confidence Limits reported in the respective IWTO Test Methods for most parameters.

For the reporting period two (2) outliers were due to difference in Wool Base (trials 3800 and 3827) and ten (10) to difference in VM Base (trials 3751, 3752, 3760, 3766, 3773, 3784, 3801, 3802, 3810, & 3822).

Three (3) outliers were reported for Airflow Mean Fibre Diameter (trials 3790, 3816, & 3839) No outliers were due to differences in LASERSCAN Mean Fibre Diameter.

All laboratories continue to work to reduce the number of outliers.

By reporting[1-17] the results of its round trials the ILRT Group is providing commercial participants in the industry with a basis for confidence in the IWTO Certificates produced by its members. The ILRT Group is unique in reporting its technical performance and the series of trials provides a mechanism for ensuring that the member laboratories are harmonised and when differences are identified they can be addressed by the member laboratories.

INTRODUCTION

This report is prepared on behalf of the Independent Laboratories Round Trials (ILRT) Group. It covers 104 trials tested at a frequency of 2 per week over 52 weeks for the period January 2022 to December 2022.

The 5 laboratories currently participating in the first series ILRT are:

- Australian Wool Testing Authority Ltd - Fremantle Laboratory;
- Australian Wool Testing Authority Ltd - Melbourne Laboratory;
- New Zealand Wool Testing Authority Ltd, (NZWTA Ltd), Napier;
- Wool Testing Bureau S.A., (WTB), Port Elizabeth; and
- Wool Testing Authority Europe Ltd (WTAE Ltd), United Kingdom.

The ILRT Group Members comprise Members from the largest independent wool testing laboratories in the world. The objectives and aims of the Group are:

- to develop co-operation between the Members' laboratories, with a view to ensuring the most correct and uniform application of approved testing and sampling methods as may be set out in the Specifications of the International Wool Textile Organisation (IWTO) and in any associated IWTO Regulations;
- to ensure that the Members' laboratories obtain accurate test results having a high level of precision, in their application of those specific IWTO Test Methods and procedures which are relevant to the Group's agreed annual work programme;
- to collect such precision data, with respect to those IWTO specifications being utilised in the ILRT programme, as is required or desirable, but having regard to the principle ILRT functions of harmonising and monitoring the technical performance of the Members' laboratories;
- to assist Members' laboratories in resolving disputes arising from differences in test results, by ascertaining the causes of any discrepancies; and
- to the extent feasible, allow non-competing commercial laboratories to become Participating Laboratories in the inter-laboratory round trials from time to time.

The ILRT Group report is presented to every IWTO Congress.

SOURCE OF SAMPLE MATERIAL

The ILRT attempts to ensure that the samples tested in the trials are representative of the wool types produced in the home nations of the participating laboratories and in proportion to the quantity of wool tested. Table 1 summarises the countries of origin for the samples used in this series.

TABLE 1

SOURCE OF SAMPLE MATERIAL

COUNTRY OF ORIGIN	NUMBER OF SAMPLES
Australia	79
New Zealand	10
South Africa	13
United Kingdom	2
TOTAL	104

RANGE OF WOOL TESTED

Sample material covers a similar range of Wool Base, Vegetable Matter Base, Mean Fibre Diameter and Standard Deviation of Fibre Diameter to that reported at previous meetings (Table 2).

TABLE 2

RANGES OF PARAMETERS OF WOOLS TESTED

(TRIALS 3741 - 3844)

PARAMETER	MEAN	RANGE
Wool Base (%)	59.45	47.57 to 68.09
Vegetable Matter Base (%)	1.65	0.10 to 8.20
Mean Fibre Diameter (µm) (Based on IWTO-28)	25.18	15.50 to 38.16
Mean Fibre Diameter (µm) (Based on IWTO-12)	25.01	15.15 to 37.83
Standard Deviation of Fibre Diameter (µm) (Based on IWTO-12)	5.60	3.20 to 9.40

OVERALL RESULTS

Means & Standard Deviations

The between sub-samples within-laboratory and between-laboratory variation for Wool Base, Vegetable Matter Base are compared, by calculating the Standard Deviation for each and comparing them with data from previous ILRT Reports. Similarly, for Mean Fibre Diameter the between test specimens within-laboratory and between-laboratory variation is compared. Comparisons of the overall values for each parameter against values obtained in the 6 previous reporting periods are reported in Table 3 for yield and Table 4 for diameter.

TABLE 3

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATIONS FOR YIELD PARAMETERS

TRIAL PERIOD	WOOL BASE			VEGETABLE MATTER BASE		
	MEAN	BETWEEN SUBS WITHIN LABS	BETWEEN LABS	MEAN	BETWEEN SUBS WITHIN LABS	BETWEEN LABS
3217 - 3320	59.11	0.38	0.19	1.94	0.22	0.14
3321 - 3426	58.10	0.37	0.22	1.93	0.22	0.15
3427 - 3530	56.85	0.36	0.26	1.87	0.23	0.18
3531 - 3634	56.66	0.39	0.23	1.77	0.20	0.18
3635 - 3740	58.31	0.38	0.26	1.75	0.20	0.15
3741 - 3844	59.45	0.38	0.17	1.65	0.20	0.12
OVERALL MEAN	**58.08**	**0.38**	**0.22**	**1.82**	**0.21**	**0.15**

TABLE 4

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATIONS FOR DIAMETER PARAMETERS

TRIAL PERIOD	MEAN FIBRE DIAMETER AIRFLOW			MEAN FIBRE DIAMETER LASERSCAN			SD OF FIBRE DIAMETER LASERSCAN		
	TRIAL PERIOD MEAN	BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS	TRIAL PERIOD MEAN	BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS	TRIAL PERIOD MEAN	BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3217 - 3320	25.17	0.16	0.20	24.93	0.29	0.07	5.53	0.22	0.06
3321 - 3426	25.13	0.15	0.15	24.96	0.30	0.06	5.61	0.23	0.06
3427 - 3530	24.97	0.16	0.18	24.83	0.29	0.07	5.77	0.24	0.05
3531 - 3634	24.95	0.15	0.17	24.81	0.32	0.07	5.70	0.24	0.06
3635 - 3740	25.03	0.16	0.17	24.98	0.30	0.07	5.61	0.24	0.04
3741 - 3844	25.18	0.15	0.19	25.01	0.34	0.06	5.60	0.25	0.05
OVERALL MEAN	**25.07**	**0.16**	**0.18**	**24.92**	**0.31**	**0.07**	**5.63**	**0.24**	**0.05**

From the variances reported for each trial in Tables 3 and 4 above, the 95% confidence limits for a normal presale test can be calculated. For the purposes of calculation, in the case of Wool Base and VM Base a 2 sub-sample test is assumed. In the case of Mean Fibre Diameter, a 2 test specimen test (with 2 readings per test specimen) is assumed. For the Laserscan results, a 4 test specimen test is assumed. These assumptions are the minimum requirements that must be met to issue an IWTO Certificate.

The calculated 95% Confidence Limits are presented in Table 5, along with the Confidence Limits for the respective IWTO Test Method (calculated for the overall mean for each parameter). Comparing the Overall Confidence Limit to the Test Method Confidence Limit confirms that the ILRT laboratories are producing results within the limits of the respective IWTO Test Methods.

TABLE 5

95% CONFIDENCE LIMITS

TRIAL PERIOD	WOOL BASE		VM BASE		AIRFLOW Mean Fibre Diameter		LASERSCAN Mean Fibre Diameter		LASERSCAN Fibre Diameter SD	
	Mean	Con. Limit	Mean	Con. Limit	Mean	Con. Limit	Mean	Con. Limit	Mean	Con. Limit
3217 - 3320	59.11	0.64	1.94	0.42	25.17	0.45	24.93	0.42	5.53	0.25
3321 - 3426	58.10	0.67	1.93	0.43	25.13	0.35	24.96	0.42	5.61	0.25
3427 - 3530	56.85	0.72	1.87	0.48	24.97	0.42	24.83	0.42	5.77	0.26
3531 - 3634	56.66	0.70	1.77	0.45	24.95	0.40	24.81	0.47	5.70	0.26
3635 - 3740	58.31	0.73	1.75	0.40	25.03	0.40	24.98	0.43	5.61	0.25
3741 - 3844	59.45	0.62	1.65	0.36	25.18	0.42	25.01	0.49	5.60	0.26
OVERALL MEAN	**58.08**	**0.68**	**1.82**	**0.42**	**25.07**	**0.41**	**24.92**	**0.44**	**5.63**	**0.26**
(TEST METHOD)		**(1.10)**		**(0.41)**		**(0.57)**		**(0.47)**		**(0.25)**

For any given parameter, the consistency of the confidence limits indicates the laboratory performance has been stable over the periods reported in Tables 3 to 5 inclusive.

Data for IWTO-19 and IWTO-28 for each trial and over all trials in the current reporting period are summarised in Table 6. Corresponding data for IWTO-12 is reported in Table 7.

TABLE 6

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO 19 & IWTO 28

TRIAL	WOOL BASE			VEGETABLE MATTER BASE			MEAN FIBRE DIAMETER		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3741	63.46	0.27	0.21	0.2	0.05	0.05	37.2	0.23	0.36
3742	62.53	0.24	0.04	0.4	0.11	0.07	31.5	0.17	0.38
3743	61.14	0.29	0.00	0.5	0.12	0.04	20.2	0.14	0.12
3744	48.69	0.83	0.00	6.7	0.41	0.36	20.3	0.16	0.18
3745	60.87	0.16	0.25	0.3	0.05	0.10	21.1	0.20	0.00
3746	58.04	0.52	0.37	4.8	0.59	0.04	20.3	0.14	0.06
3747	67.59	0.15	0.32	0.2	0.07	0.03	38.2	0.30	0.09
3748	60.24	0.23	0.04	0.3	0.09	0.00	22.2	0.16	0.08
3749	62.84	0.26	0.07	0.2	0.10	0.03	34.1	0.20	0.24
3750	63.51	0.23	0.00	0.5	0.11	0.02	23.8	0.09	0.08
3751	62.85	0.25	0.25	0.8	0.17	0.26	15.7	0.05	0.09
3752	49.93	0.65	0.69	7.2	0.61	0.85	17.5	0.10	0.12
3753	61.65	0.35	0.00	1.4	0.24	0.14	26.1	0.15	0.10
3754	48.34	0.79	0.00	3.7	0.80	0.00	26.8	0.15	0.18
3755	62.70	0.39	0.25	0.3	0.08	0.09	31.4	0.13	0.00
3756	62.37	0.33	0.33	1.4	0.26	0.08	28.2	0.16	0.20
3757	63.52	0.48	0.03	0.3	0.06	0.03	29.4	0.17	0.23
3758	53.25	0.72	0.00	3.4	0.50	0.04	22.0	0.10	0.32
3759	63.24	0.31	0.01	0.4	0.09	0.08	25.1	0.14	0.28
3760	61.23	0.23	0.21	1.4	0.17	0.25	32.5	0.15	0.10
3761	58.99	0.36	0.28	2.4	0.29	0.37	19.2	0.12	0.12
3762	53.31	0.56	0.00	6.2	0.46	0.00	21.2	0.10	0.21
3763	57.39	0.40	0.00	0.7	0.09	0.07	21.9	0.13	0.14
3764	60.90	0.34	0.25	1.6	0.24	0.14	25.1	0.13	0.13
3765	64.00	0.33	0.32	0.2	0.11	0.08	32.9	0.11	0.11
3766	55.05	0.37	0.25	2.5	0.18	0.25	24.1	0.15	0.12
3767	58.24	0.34	0.29	0.8	0.10	0.16	17.5	0.11	0.18
3768	63.11	0.42	0.09	0.3	0.13	0.12	30.0	0.16	0.16
3769	57.57	0.22	0.00	0.3	0.05	0.07	22.1	0.12	0.14
3770	53.71	0.38	0.30	5.3	0.33	0.43	22.2	0.16	0.20
3771	57.38	0.29	0.05	1.5	0.13	0.13	20.5	0.12	0.18
3772	61.52	0.53	0.00	0.3	0.28	0.00	33.4	0.23	0.27
3773	57.80	0.38	0.00	0.6	0.10	0.18	20.8	0.15	0.17
3774	67.10	0.23	0.06	0.1	0.06	0.03	34.8	0.16	0.17
3775	58.18	0.37	0.27	0.5	0.12	0.13	20.6	0.18	0.06
3776	64.74	0.32	0.25	0.5	0.07	0.13	30.3	0.21	0.17
3777	64.65	0.22	0.08	0.5	0.07	0.11	31.0	0.17	0.11
3778	60.77	0.56	0.00	0.1	0.06	0.06	35.8	0.38	0.28
3779	57.46	0.39	0.30	3.4	0.35	0.15	23.3	0.19	0.18
3780	59.60	0.42	0.24	1.7	0.13	0.20	22.1	0.12	0.19
3781	55.81	0.45	0.26	0.5	0.09	0.06	22.8	0.09	0.35

TABLE 6

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO 19 & IWTO 28

TRIAL	WOOL BASE			VEGETABLE MATTER BASE			MEAN FIBRE DIAMETER		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3782	62.30	0.25	0.18	0.2	0.06	0.06	20.9	0.11	0.25
3783	60.69	0.45	0.00	1.7	0.23	0.00	30.1	0.11	0.12
3784	53.77	0.14	0.21	1.1	0.17	0.18	22.2	0.10	0.24
3785	63.50	0.21	0.29	0.4	0.09	0.02	34.2	0.18	0.25
3786	47.72	0.81	0.00	6.4	0.77	0.46	20.4	0.07	0.21
3787	57.72	0.38	0.07	0.5	0.12	0.08	22.2	0.14	0.23
3788	53.34	0.36	0.09	4.3	0.38	0.00	21.3	0.22	0.19
3789	65.13	0.33	0.08	0.2	0.05	0.01	34.7	0.16	0.28
3790	57.97	0.21	0.00	0.2	0.06	0.04	20.4	0.17	0.30
3791	57.47	0.29	0.05	1.1	0.16	0.16	20.2	0.13	0.13
3792	57.58	0.35	0.00	0.5	0.13	0.00	17.2	0.17	0.15
3793	68.09	0.29	0.08	0.2	0.05	0.04	36.4	0.25	0.37
3794	56.45	0.49	0.28	2.8	0.24	0.04	30.4	0.14	0.19
3795	62.75	0.32	0.11	0.4	0.06	0.09	24.6	0.16	0.12
3796	57.61	0.31	0.30	3.7	0.40	0.20	17.4	0.13	0.19
3797	52.52	0.58	0.19	3.4	0.29	0.00	22.1	0.16	0.14
3798	55.58	0.18	0.16	0.3	0.08	0.03	22.0	0.16	0.21
3799	58.20	0.34	0.28	0.8	0.18	0.02	17.5	0.11	0.11
3800	52.45	0.81	0.54	5.3	0.55	0.34	25.3	0.16	0.21
3801	61.66	0.25	0.23	1.6	0.17	0.25	26.2	0.13	0.23
3802	60.37	0.24	0.36	3.4	0.11	0.56	27.2	0.16	0.23
3803	58.02	0.20	0.18	0.3	0.10	0.00	21.0	0.12	0.24
3804	62.70	0.35	0.22	0.2	0.05	0.09	33.0	0.18	0.00
3805	60.78	0.27	0.18	1.4	0.19	0.16	30.1	0.19	0.28
3806	64.19	0.26	0.00	0.3	0.07	0.08	28.4	0.18	0.11
3807	51.29	0.50	0.14	1.7	0.13	0.19	20.6	0.14	0.18
3808	54.96	0.40	0.03	3.9	0.38	0.18	22.4	0.19	0.20
3809	63.27	0.27	0.28	0.5	0.10	0.08	25.2	0.13	0.21
3810	63.45	0.35	0.27	1.3	0.16	0.24	29.3	0.19	0.19
3811	58.85	0.32	0.00	0.9	0.16	0.20	20.4	0.10	0.11
3812	61.30	0.52	0.26	2.3	0.19	0.28	18.4	0.09	0.12
3813	65.33	0.27	0.15	0.5	0.06	0.06	26.3	0.13	0.21
3814	63.95	0.27	0.40	0.1	0.03	0.01	36.2	0.19	0.16
3815	62.72	0.36	0.16	1.4	0.23	0.18	23.9	0.13	0.19
3816	66.50	0.24	0.18	0.4	0.05	0.04	27.2	0.14	0.58
3817	54.86	0.33	0.35	1.8	0.20	0.19	19.3	0.15	0.14
3818	60.62	0.30	0.00	1.2	0.10	0.04	21.2	0.18	0.22
3819	49.81	0.42	0.40	7.8	0.55	0.00	19.2	0.10	0.17
3820	67.75	0.41	0.00	0.2	0.06	0.06	37.3	0.21	0.24
3821	54.02	0.34	0.26	0.9	0.11	0.05	19.3	0.10	0.13
3822	59.37	0.44	0.00	2.5	0.33	0.26	16.6	0.11	0.22

TABLE 6

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO 19 & IWTO 28

TRIAL	WOOL BASE			VEGETABLE MATTER BASE			MEAN FIBRE DIAMETER		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN SUBS WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3823	59.88	0.40	0.31	3.9	0.53	0.12	17.5	0.15	0.17
3824	61.98	0.42	0.27	1.4	0.18	0.09	31.4	0.20	0.34
3825	62.13	0.29	0.00	0.5	0.09	0.07	22.4	0.14	0.21
3826	64.09	0.40	0.00	0.3	0.09	0.02	28.2	0.21	0.14
3827	66.75	0.33	0.39	0.2	0.06	0.06	37.8	0.28	0.44
3828	63.29	0.38	0.00	0.4	0.09	0.06	25.4	0.15	0.30
3829	55.99	0.29	0.00	1.0	0.20	0.00	22.0	0.09	0.15
3830	54.08	0.64	0.52	3.5	0.34	0.33	25.1	0.08	0.26
3831	53.21	0.50	0.00	3.2	0.25	0.13	26.5	0.11	0.18
3832	63.97	0.25	0.32	0.3	0.10	0.10	27.3	0.15	0.21
3833	47.57	0.89	0.33	8.2	0.69	0.42	20.3	0.13	0.11
3834	61.39	0.23	0.04	0.4	0.10	0.06	27.1	0.11	0.00
3835	62.49	0.26	0.00	0.4	0.08	0.06	24.3	0.11	0.16
3836	60.86	0.35	0.12	1.2	0.19	0.08	30.1	0.10	0.16
3837	61.06	1.41	0.28	0.2	0.05	0.07	32.6	0.20	0.34
3838	57.73	0.25	0.24	0.4	0.08	0.06	20.2	0.07	0.12
3839	63.59	0.51	0.00	0.5	0.09	0.16	15.5	0.08	0.21
3840	61.74	0.20	0.12	1.5	0.16	0.08	25.6	0.15	0.19
3841	57.93	0.27	0.36	2.3	0.26	0.00	22.4	0.08	0.09
3842	55.24	0.55	0.34	3.7	0.53	0.14	22.1	0.12	0.13
3843	61.69	0.40	0.08	1.2	0.18	0.11	30.6	0.13	0.33
3844	54.33	0.35	0.32	4.4	0.43	0.16	21.5	0.08	0.22
Mean	**59.45**	**0.38**	**0.17**	**1.65**	**0.20**	**0.12**	**25.18**	**0.15**	**0.19**
Min	**47.57**	**0.14**	**0.00**	**0.10**	**0.03**	**0.00**	**15.50**	**0.05**	**0.00**
Max	**68.09**	**1.41**	**0.69**	**8.20**	**0.80**	**0.85**	**38.16**	**0.38**	**0.58**

TABLE 7

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO-12

TRIAL	LASERSCAN MFD			LASERSCAN SD		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3741	37.3	1.28	0.00	9.1	0.72	0.00
3742	31.7	0.36	0.00	7.6	0.26	0.00
3743	19.9	0.14	0.16	3.9	0.19	0.14
3744	20.0	0.18	0.07	4.3	0.17	0.00
3745	21.0	0.28	0.00	4.0	0.22	0.00
3746	20.1	0.19	0.11	3.9	0.23	0.10
3747	37.8	0.75	0.00	9.0	0.43	0.00
3748	22.1	0.16	0.00	4.6	0.26	0.00
3749	34.4	0.88	0.00	8.0	0.55	0.24
3750	24.2	0.30	0.26	5.5	0.23	0.06
3751	15.4	0.13	0.00	3.2	0.23	0.00
3752	17.3	0.25	0.00	3.8	0.35	0.00
3753	26.2	0.22	0.00	6.0	0.15	0.08
3754	27.0	0.32	0.18	5.9	0.14	0.11
3755	31.6	0.37	0.00	7.2	0.26	0.00
3756	28.3	0.39	0.00	6.3	0.11	0.00
3757	29.1	0.24	0.00	6.6	0.23	0.00
3758	21.9	0.27	0.01	4.4	0.21	0.16
3759	25.1	0.31	0.00	6.3	0.27	0.00
3760	32.6	0.97	0.00	7.6	0.39	0.00
3761	19.0	0.17	0.11	3.8	0.17	0.04
3762	20.9	0.18	0.13	4.2	0.17	0.10
3763	21.7	0.12	0.18	5.0	0.23	0.00
3764	25.0	0.39	0.00	6.0	0.21	0.10
3765	33.1	0.36	0.16	8.1	0.20	0.00
3766	24.0	0.36	0.00	6.2	0.22	0.13
3767	17.2	0.27	0.00	3.7	0.20	0.00
3768	29.8	0.44	0.00	7.1	0.17	0.27
3769	21.9	0.22	0.00	4.7	0.20	0.00
3770	22.0	0.17	0.00	4.4	0.25	0.00
3771	20.2	0.22	0.10	4.0	0.20	0.00
3772	34.0	1.79	0.00	8.8	0.83	0.00
3773	20.4	0.23	0.12	4.3	0.23	0.00
3774	35.0	0.99	0.00	8.4	0.61	0.13
3775	20.2	0.17	0.11	4.1	0.17	0.15
3776	30.1	0.33	0.00	7.0	0.22	0.00
3777	31.2	0.32	0.17	7.5	0.23	0.04
3778	36.2	0.54	0.23	9.4	0.36	0.11
3779	22.9	0.27	0.13	4.4	0.14	0.09
3780	22.0	0.18	0.13	4.5	0.17	0.10
3781	22.6	0.17	0.07	4.9	0.16	0.03

TABLE 7

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO-12

TRIAL	LASERSCAN MFD			LASERSCAN SD		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3782	20.5	0.18	0.03	4.2	0.16	0.00
3783	29.9	0.33	0.06	6.9	0.25	0.00
3784	22.2	0.29	0.06	4.9	0.17	0.03
3785	34.1	0.36	0.00	7.8	0.27	0.00
3786	20.1	0.24	0.12	4.3	0.22	0.14
3787	21.8	0.27	0.12	4.6	0.23	0.00
3788	21.0	0.25	0.06	4.1	0.23	0.00
3789	34.7	0.67	0.00	8.5	0.33	0.00
3790	19.9	0.21	0.12	3.9	0.24	0.10
3791	20.0	0.14	0.14	3.8	0.26	0.00
3792	17.2	0.17	0.00	3.7	0.23	0.11
3793	36.5	0.49	0.17	8.7	0.31	0.18
3794	30.1	0.49	0.00	7.2	0.12	0.12
3795	24.3	0.33	0.09	6.2	0.21	0.00
3796	17.0	0.09	0.15	3.6	0.20	0.15
3797	21.8	0.17	0.00	4.2	0.23	0.10
3798	21.8	0.37	0.00	4.5	0.34	0.08
3799	17.2	0.18	0.12	3.6	0.19	0.10
3800	25.1	0.45	0.15	6.1	0.17	0.17
3801	26.0	0.28	0.00	6.2	0.17	0.09
3802	27.2	0.55	0.11	6.3	0.34	0.00
3803	20.7	0.24	0.00	3.7	0.17	0.04
3804	33.0	1.62	0.00	8.7	0.58	0.00
3805	30.1	0.38	0.00	7.1	0.21	0.00
3806	28.0	0.69	0.00	6.2	0.26	0.00
3807	20.3	0.15	0.00	3.9	0.16	0.09
3808	22.1	0.21	0.12	4.2	0.19	0.00
3809	25.1	0.16	0.12	6.0	0.24	0.07
3810	29.0	0.27	0.05	6.3	0.20	0.00
3811	20.0	0.23	0.09	4.0	0.20	0.11
3812	18.0	0.38	0.10	3.6	0.14	0.09
3813	26.1	0.32	0.29	5.8	0.14	0.09
3814	36.1	0.52	0.00	8.9	0.34	0.00
3815	24.0	0.33	0.20	5.5	0.25	0.00
3816	27.1	0.28	0.03	6.1	0.20	0.00
3817	18.9	0.14	0.06	3.8	0.21	0.05
3818	20.9	0.18	0.03	4.1	0.18	0.07
3819	19.0	0.13	0.10	3.8	0.36	0.00
3820	37.5	0.42	0.00	9.1	0.44	0.07
3821	18.9	0.18	0.00	3.8	0.11	0.04
3822	16.2	0.12	0.09	3.2	0.20	0.11

TABLE 7

WITHIN AND BETWEEN LABORATORY STANDARD DEVIATION DATA FOR IWTO-12

TRIAL	LASERSCAN MFD			LASERSCAN SD		
	GRAND MEAN	STANDARD DEVIATION		GRAND MEAN	STANDARD DEVIATION	
		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS		BETWEEN TEST SPEC WITHIN LABS	BETWEEN LABS
3823	17.2	0.15	0.06	3.4	0.24	0.04
3824	31.0	0.32	0.00	7.5	0.20	0.03
3825	21.9	0.13	0.05	4.4	0.17	0.00
3826	28.0	0.35	0.00	6.2	0.25	0.00
3827	37.7	1.05	0.00	8.7	0.40	0.26
3828	25.1	0.28	0.12	5.8	0.13	0.25
3829	21.8	0.27	0.00	5.0	0.12	0.10
3830	25.0	0.26	0.10	6.3	0.17	0.00
3831	26.3	0.30	0.03	6.1	0.17	0.00
3832	27.0	0.26	0.00	6.2	0.26	0.00
3833	20.0	0.16	0.08	4.1	0.31	0.00
3834	27.0	0.38	0.00	6.0	0.24	0.00
3835	24.1	0.30	0.00	5.8	0.24	0.11
3836	30.0	0.34	0.03	6.5	0.38	0.05
3837	32.4	0.25	0.06	7.8	0.24	0.18
3838	19.9	0.16	0.05	4.2	0.16	0.00
3839	15.2	0.18	0.00	3.2	0.22	0.08
3840	25.5	0.24	0.00	6.0	0.26	0.00
3841	22.1	0.18	0.00	4.3	0.22	0.12
3842	21.9	0.17	0.00	4.3	0.30	0.00
3843	30.2	0.44	0.10	7.0	0.17	0.05
3844	21.2	0.11	0.14	4.3	0.22	0.00
Mean	**25.01**	**0.34**	**0.06**	**5.60**	**0.25**	**0.05**
Min	**15.15**	**0.09**	**0.00**	**3.20**	**0.11**	**0.00**
Max	**37.83**	**1.79**	**0.29**	**9.40**	**0.83**	**0.27**

Ranges of Laboratory Differences

The overall ranges of laboratory differences from the Grand Mean for five parameters are reported in Figures 1-5 together with the statistical limit values of these differences. In the case of Figure 4, which presents the ranges for LASERSCAN, the Airflow statistical limit values have been employed to enable easy comparison with the Airflow. The data are arranged in ascending order of Grand Mean for ease of interpretation, rather than on a trial-by-trial basis. Note also that to ensure easy reading of the graphs the Trial Mean Values for every third value only are printed on the horizontal axes.

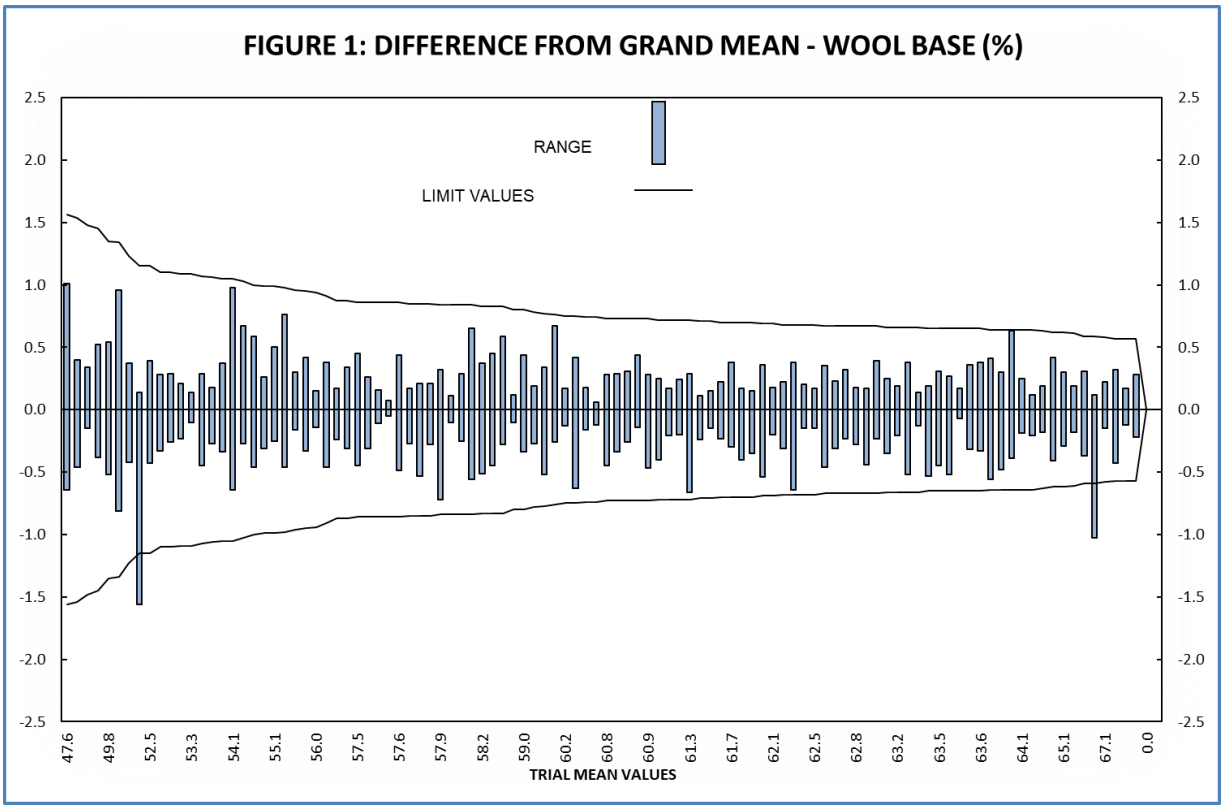
FIGURE 1: DIFFERENCE FROM GRAND MEAN - WOOL BASE (%)
RANGE
LIMIT VALUES
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
47.6 49.8 52.5 53.3 54.1 55.1 56.0 57.5 57.6 57.9 58.2 59.0 60.2 60.8 60.9 61.3 61.7 62.1 62.5 62.8 63.2 63.5 63.6 64.1 65.1 67.1 0.0
TRIAL MEAN VALUES

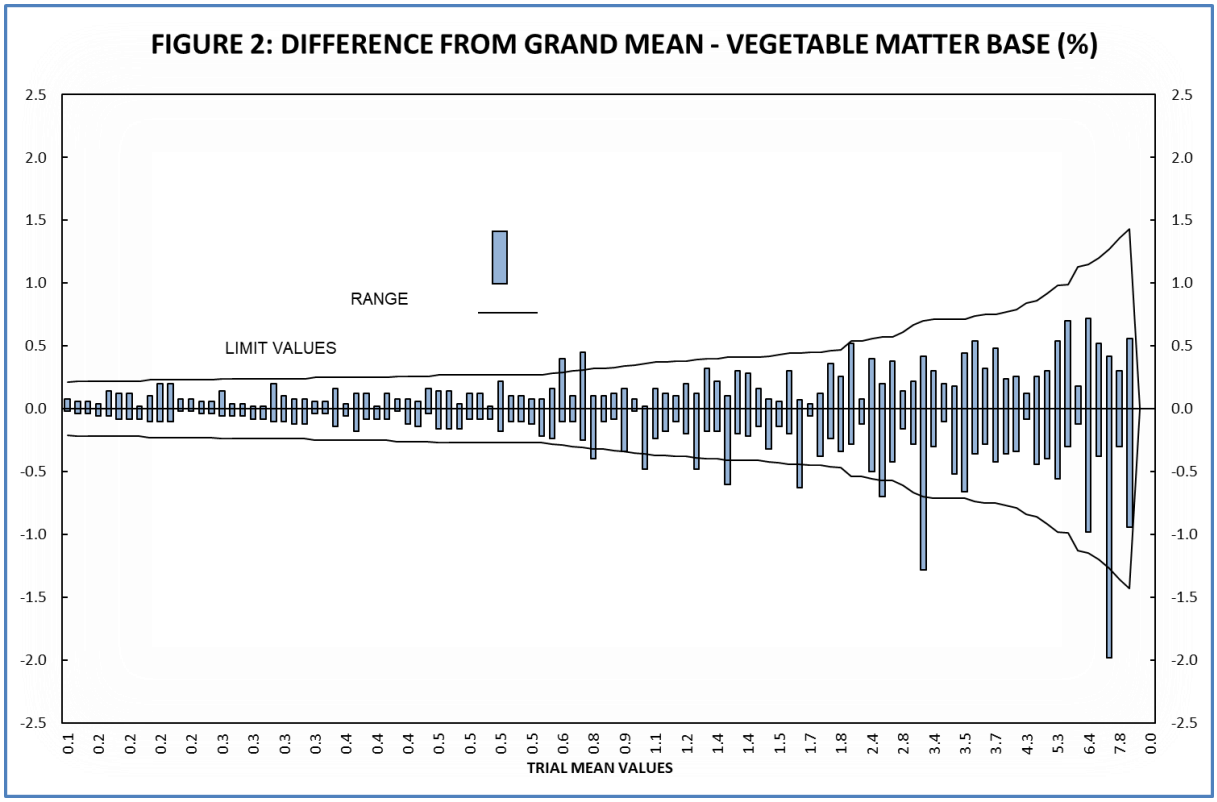
FIGURE 2: DIFFERENCE FROM GRAND MEAN - VEGETABLE MATTER BASE (%)
RANGE
LIMIT VALUES
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
0.1 0.2 0.2 0.2 0.2 0.3 0.3 0.3 0.3 0.4 0.4 0.4 0.5 0.5 0.5 0.5 0.6 0.8 0.9 1.1 1.2 1.4 1.4 1.5 1.7 1.8 2.4 2.8 3.4 3.5 3.7 4.3 5.3 6.4 7.8 0.0
TRIAL MEAN VALUES

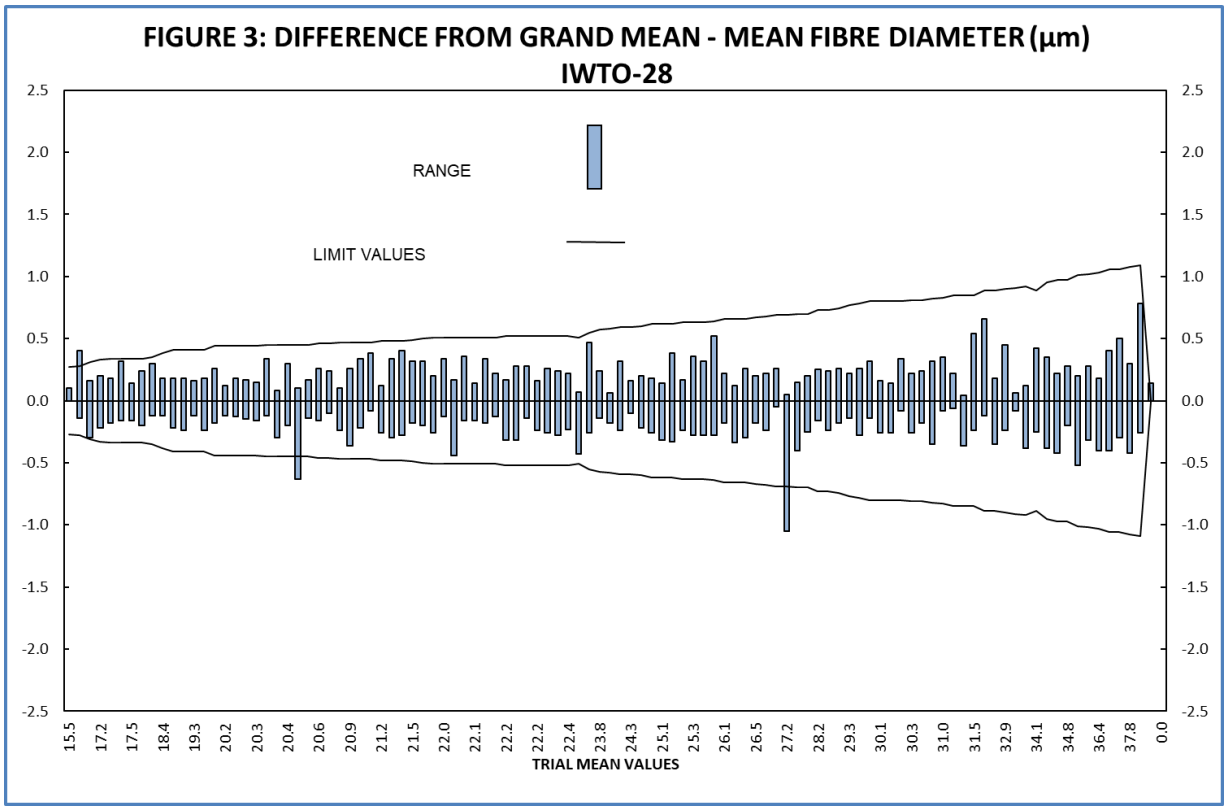
FIGURE 3: DIFFERENCE FROM GRAND MEAN - MEAN FIBRE DIAMETER (µm)
IWTO-28
RANGE
LIMIT VALUES
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
15.5 17.2 17.5 18.4 19.3 20.2 20.3 20.4 20.6 20.9 21.2 21.5 22.0 22.1 22.2 22.2 22.4 23.8 24.3 25.1 25.3 26.1 26.5 27.2 28.2 29.3 30.1 30.3 31.0 31.5 32.9 34.1 34.8 36.4 37.8 0.0
TRIAL MEAN VALUES

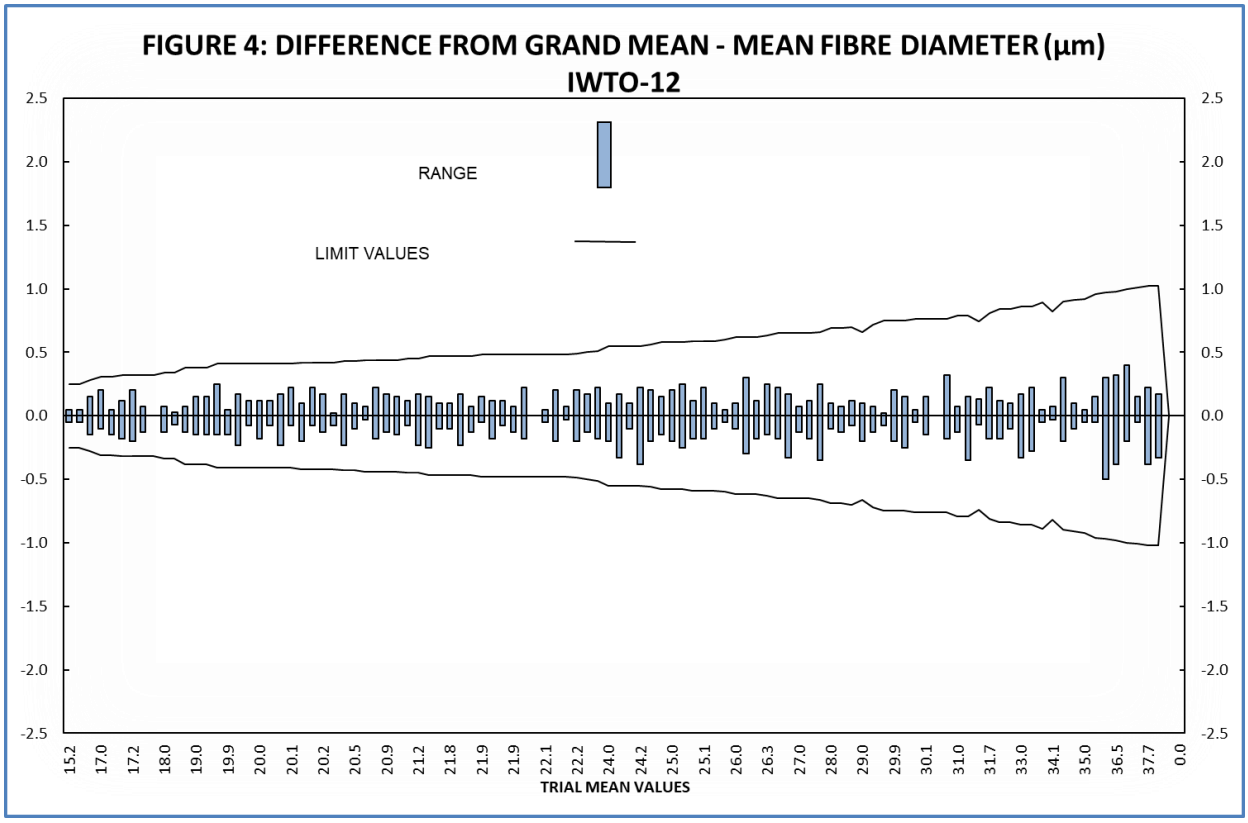
FIGURE 4: DIFFERENCE FROM GRAND MEAN - MEAN FIBRE DIAMETER (µm)
IWTO-12
RANGE
LIMIT VALUES
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
15.2 17.0 17.2 18.0 19.0 19.9 20.0 20.1 20.2 20.5 20.9 21.2 21.8 21.9 21.9 22.1 22.2 24.0 24.2 25.0 25.1 26.0 26.3 27.0 28.0 29.0 29.9 30.1 31.0 31.7 33.0 34.1 35.0 36.5 37.7 0.0
TRIAL MEAN VALUES

Overall the mean, within-lab and between lab standard deviation for the parameters reported are similar to the previous 6 trials, indicating continuing consistent performance of the member laboratories. Calculations of the 95% Confidence Limits confirm that the ILRT laboratories are producing results within the Confidence Limits reported in the respective IWTO Test Methods for most parameters.

Overall the mean, within-lab and between lab standard deviation for the parameters reported are similar to the previous 6 trials, indicating continuing consistent performance of the member laboratories. Calculations of the 95% Confidence Limits confirm that the ILRT laboratories are producing results within the Confidence Limits reported in the respective IWTO Test Methods for most parameters.

For the reporting period two (2) outliers were due to difference in Wool Base (trials 3800 and 3827) and ten (10) to difference in VM Base (trials 3751, 3752, 3760, 3766, 3773, 3784, 3801, 3802, 3810, & 3822).

Three (3) outliers were reported for Airflow Mean Fibre Diameter (trials 3790, 3816, & 3839) No outliers were due to differences in LASERSCAN Mean Fibre Diameter.

All laboratories continue to work to reduce the number of outliers.

By reporting[1-17] the results of its round trials the ILRT Group is providing commercial participants in the industry with a basis for confidence in the IWTO Certificates produced by its members. The ILRT Group is unique in reporting its technical performance and the series of trials provides a mechanism for ensuring that the member laboratories are harmonised and when differences are identified they can be addressed by the member laboratories.

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