CONTRACTS & SPECIFICATIONS COMMITTEE **ADELAIDE CONGRESS**

Technical Specification Group **APRIL 2024**

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

Report on Independent Laboratory Round Trial 3845 - 3948: January 2023 to December 2023

By

Independent Laboratory Round Trial (ILRT) Group

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SUMMARY

This ILRT Group Report covers 104 trials (3845 - 3948) for the period January 2023 to December 2023. 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.

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 fifteen (15) outliers were due to difference in Wool Base (trials 3846, 3854, 3855, 3860, 3874, 3883, 3893, 3894, 3899, 3900, 3900, 3910, 3919, 3928, and 3937) and nine (9) to difference in VM Base (trials 3854, 3884, 3895,3900, 3900, 3903, 3915, 3922, and 3944).

Two (2) outliers were reported for Airflow Mean Fibre Diameter (trials 3912, and 3948). No outliers were due to differences in LASERSCAN Mean Fibre Diameter.

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

By reporting[1-18] 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 2023 to December 2023.

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	78
New Zealand	12
South Africa	12
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 3845 - 3948)

PARAMETER	MEAN	RANGE
Wool Base (%)	60.36	47.10 to 68.32
Vegetable Matter Base (%)	1.65	0.10 to 8.10
Mean Fibre Diameter (µm) (Based on IWTO-28)	25.23	15.70 to 37.48
Mean Fibre Diameter (µm) (Based on IWTO-12)	25.04	15.38 to 37.68
Standard Deviation of Fibre Diameter (µm) (Based on IWTO-12)	5.61	3.20 to 9.20

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
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
3845 - 3948	60.36	0.42	0.24	1.65	0.21	0.14
OVERALL MEAN	**58.29**	**0.38**	**0.23**	**1.77**	**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
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
3845 - 3948	25.23	0.16	0.16	25.04	0.33	0.08	5.61	0.25	0.05
OVERALL MEAN	**25.08**	**0.16**	**0.17**	**24.94**	**0.31**	**0.07**	**5.65**	**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
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
3845 - 3948	60.36	0.75	1.65	0.40	25.23	0.38	25.04	0.48	5.61	0.27
OVERALL MEAN	**58.29**	**0.70**	**1.77**	**0.42**	**25.08**	**0.40**	**24.94**	**0.45**	**5.65**	**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
3845	61.17	0.24	0.22	0.4	0.10	0.09	33.6	0.20	0.18
3846	63.62	0.32	0.46	0.3	0.07	0.05	31.0	0.18	0.22
3847	54.03	0.27	0.02	0.9	0.12	0.07	21.0	0.14	0.06
3848	50.79	0.68	0.40	6.1	0.40	0.30	20.3	0.10	0.15
3849	55.45	0.38	0.29	0.9	0.16	0.16	21.3	0.20	0.16
3850	56.93	0.66	0.33	4.3	0.48	0.35	20.5	0.07	0.21
3851	66.37	0.35	0.24	0.2	0.05	0.04	37.3	0.47	0.26
3852	55.15	0.32	0.40	1.0	0.10	0.21	22.9	0.15	0.21
3853	65.96	0.91	0.34	0.1	0.05	0.04	36.4	0.21	0.20
3854	64.68	0.22	0.32	0.3	0.06	0.18	25.0	0.32	0.28
3855	61.99	1.03	0.86	0.7	0.12	0.18	16.6	0.17	0.08
3856	49.45	0.77	0.51	7.3	0.81	0.05	19.5	0.12	0.00
3857	62.60	0.29	0.15	1.4	0.18	0.15	26.4	0.16	0.14
3858	61.48	0.40	0.00	2.3	0.27	0.20	27.3	0.17	0.00
3859	62.96	0.33	0.00	0.3	0.10	0.10	30.3	0.23	0.17
3860	64.34	0.46	0.37	1.2	0.30	0.19	28.4	0.13	0.09
3861	65.91	0.26	0.16	0.3	0.06	0.10	29.1	0.20	0.12
3862	58.56	0.52	0.00	3.2	0.44	0.18	22.0	0.10	0.08
3863	64.15	0.20	0.23	0.5	0.08	0.08	25.4	0.14	0.00
3864	66.16	0.28	0.02	0.2	0.06	0.01	33.7	0.16	0.52
3865	61.18	0.41	0.22	2.3	0.31	0.08	17.6	0.15	0.00
3866	55.60	0.80	0.00	7.9	0.80	0.28	20.3	0.10	0.14
3867	58.51	0.32	0.18	0.4	0.05	0.15	22.5	0.07	0.15
3868	65.46	1.03	0.00	1.2	0.25	0.13	24.2	0.20	0.08
3869	66.69	0.19	0.21	0.2	0.06	0.00	32.8	0.13	0.42
3870	63.09	0.33	0.21	1.3	0.17	0.22	25.4	0.19	0.06
3871	59.40	0.25	0.37	0.5	0.08	0.09	18.9	0.12	0.18
3872	63.56	0.34	0.00	0.3	0.06	0.08	31.3	0.20	0.28
3873	61.17	0.51	0.12	0.2	0.06	0.03	22.0	0.14	0.03
3874	55.21	0.69	0.50	6.7	0.66	0.44	22.5	0.17	0.00
3875	57.39	0.33	0.18	1.5	0.19	0.25	20.7	0.10	0.14
3876	59.96	0.53	0.07	0.3	0.08	0.08	32.5	0.20	0.44
3877	59.20	0.44	0.33	0.5	0.11	0.14	20.6	0.13	0.16
3878	64.45	0.43	0.09	0.2	0.11	0.08	32.7	0.27	0.50
3879	59.02	0.25	0.23	0.3	0.10	0.11	20.9	0.18	0.10
3880	64.59	0.23	0.12	0.2	0.06	0.06	30.1	0.19	0.24
3881	62.00	0.15	0.16	0.2	0.05	0.07	30.4	0.18	0.19
3882	63.12	0.31	0.20	0.2	0.05	0.07	35.5	0.21	0.52
3883	57.69	0.47	0.72	4.3	0.35	0.41	22.2	0.12	0.12
3884	55.94	0.31	0.24	1.5	0.21	0.30	22.6	0.11	0.09
3885	61.43	0.37	0.25	0.3	0.11	0.00	23.2	0.17	0.19

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
3886	63.54	0.27	0.15	0.2	0.08	0.03	20.3	0.10	0.18
3887	60.20	0.57	0.25	1.5	0.21	0.20	31.5	0.22	0.27
3888	60.07	0.24	0.09	1.0	0.11	0.09	22.0	0.19	0.00
3889	63.57	0.24	0.44	0.4	0.05	0.07	33.3	0.18	0.46
3890	54.77	0.71	0.15	6.5	0.51	0.30	20.3	0.15	0.13
3891	60.32	0.32	0.29	0.5	0.08	0.10	22.4	0.11	0.12
3892	55.38	0.37	0.28	3.2	0.34	0.26	20.4	0.12	0.00
3893	66.22	0.29	0.36	0.3	0.11	0.03	33.9	0.13	0.36
3894	61.25	0.33	0.52	0.6	0.09	0.08	20.5	0.18	0.00
3895	52.86	0.47	0.13	0.9	0.14	0.22	21.2	0.14	0.00
3896	49.58	0.39	0.02	0.4	0.15	0.12	20.3	0.17	0.00
3897	66.59	0.23	0.00	0.2	0.09	0.00	35.8	0.32	0.22
3898	59.77	0.48	0.20	2.5	0.22	0.25	31.5	0.22	0.04
3899	64.45	0.53	0.44	0.6	0.10	0.13	24.1	0.17	0.00
3900	52.60	0.74	1.03	4.2	0.49	0.83	17.5	0.10	0.12
3901	53.34	0.57	0.00	7.0	0.57	0.00	22.5	0.11	0.19
3902	55.66	0.55	0.17	0.9	0.17	0.16	20.4	0.11	0.10
3903	60.29	0.31	0.16	0.4	0.12	0.06	18.9	0.16	0.15
3904	53.41	0.65	0.42	4.9	0.54	0.55	25.4	0.15	0.07
3905	65.71	0.34	0.00	1.3	0.29	0.16	28.2	0.14	0.30
3906	55.17	0.64	0.36	3.8	0.43	0.27	26.3	0.16	0.18
3907	57.96	0.41	0.51	0.3	0.05	0.07	20.0	0.12	0.08
3908	66.63	0.33	0.13	0.1	0.04	0.04	32.5	0.26	0.14
3909	59.97	0.33	0.00	1.2	0.18	0.14	31.0	0.18	0.06
3910	64.94	0.44	0.37	0.4	0.11	0.00	29.1	0.13	0.10
3911	57.49	0.40	0.23	1.3	0.22	0.00	20.7	0.12	0.27
3912	54.69	0.60	0.41	5.0	0.40	0.24	22.4	0.13	0.51
3913	64.53	0.24	0.33	0.6	0.13	0.02	25.3	0.14	0.11
3914	62.23	0.52	0.12	2.6	0.26	0.00	28.4	0.17	0.11
3915	55.26	0.25	0.09	1.0	0.17	0.24	20.8	0.09	0.19
3916	57.97	0.28	0.24	2.6	0.24	0.30	17.6	0.16	0.00
3917	66.53	0.26	0.17	0.5	0.11	0.04	26.6	0.20	0.00
3918	68.32	0.16	0.15	0.1	0.01	0.03	37.5	0.28	0.27
3919	63.09	0.52	0.32	1.8	0.23	0.10	24.3	0.15	0.09
3920	65.82	0.52	0.00	0.4	0.07	0.05	28.2	0.14	0.18
3921	56.09	0.51	0.26	1.8	0.23	0.02	19.1	0.10	0.10
3922	55.78	0.60	0.20	1.1	0.24	0.21	20.2	0.11	0.10
3923	47.10	0.76	0.98	8.1	0.68	0.64	19.5	0.11	0.04
3924	64.95	0.16	0.26	0.1	0.03	0.04	35.9	0.22	0.57
3925	55.29	0.41	0.00	0.9	0.13	0.11	19.2	0.18	0.00
3926	61.49	0.45	0.37	2.3	0.33	0.37	16.6	0.13	0.10

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
3927	58.26	0.67	0.00	3.7	0.60	0.35	18.5	0.17	0.11
3928	64.84	0.38	0.31	1.1	0.16	0.04	30.0	0.23	0.15
3929	60.56	0.32	0.00	0.9	0.12	0.09	23.2	0.14	0.11
3930	63.71	0.29	0.18	0.6	0.15	0.05	26.2	0.12	0.18
3931	66.64	0.29	0.17	0.1	0.04	0.01	36.6	0.34	0.48
3932	65.33	0.42	0.34	0.4	0.09	0.11	25.3	0.11	0.04
3933	54.34	0.31	0.26	1.6	0.27	0.09	22.2	0.11	0.06
3934	62.59	0.39	0.33	1.4	0.27	0.00	24.0	0.20	0.11
3935	60.33	0.45	0.00	1.4	0.12	0.11	27.2	0.19	0.24
3936	67.43	0.64	0.24	0.4	0.07	0.02	28.2	0.13	0.25
3937	50.81	0.49	0.89	6.4	0.45	0.52	20.5	0.14	0.09
3938	67.58	0.19	0.00	0.5	0.08	0.09	29.4	0.16	0.00
3939	64.88	0.26	0.00	0.6	0.14	0.06	24.1	0.12	0.14
3940	62.68	0.39	0.00	1.2	0.25	0.00	30.1	0.19	0.14
3941	65.08	0.30	0.16	0.1	0.03	0.02	34.1	0.42	0.19
3942	62.81	0.22	0.09	0.2	0.07	0.03	20.1	0.10	0.00
3943	63.77	0.44	0.29	0.6	0.11	0.09	15.7	0.09	0.07
3944	52.83	0.60	0.52	2.9	0.44	0.39	25.3	0.17	0.13
3945	58.44	0.38	0.15	2.7	0.16	0.20	22.3	0.16	0.30
3946	57.60	0.50	0.22	3.5	0.47	0.23	22.3	0.13	0.18
3947	62.93	0.29	0.23	1.2	0.18	0.13	30.3	0.27	0.00
3948	56.94	0.43	0.13	4.1	0.43	0.00	21.1	0.11	0.36
Mean	**60.36**	**0.42**	**0.24**	**1.65**	**0.21**	**0.14**	**25.23**	**0.16**	**0.16**
Min	**47.10**	**0.15**	**0.00**	**0.10**	**0.01**	**0.00**	**15.70**	**0.07**	**0.00**
Max	**68.32**	**1.03**	**1.03**	**8.10**	**0.81**	**0.83**	**37.48**	**0.47**	**0.57**

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
3845	33.7	0.79	0.00	7.9	0.45	0.00
3846	30.9	0.85	0.04	7.0	0.38	0.00
3847	20.6	0.19	0.00	4.2	0.21	0.00
3848	19.9	0.15	0.10	4.1	0.27	0.00
3849	20.9	0.16	0.00	4.4	0.13	0.02
3850	20.1	0.19	0.05	3.7	0.11	0.06
3851	37.6	0.62	0.31	8.8	0.50	0.11
3852	22.4	0.21	0.15	4.8	0.15	0.06
3853	36.8	0.72	0.00	9.0	0.45	0.00
3854	25.0	0.27	0.03	5.8	0.14	0.15
3855	16.3	0.14	0.08	3.3	0.18	0.02
3856	19.2	0.28	0.07	4.2	0.25	0.00
3857	26.1	0.51	0.27	5.9	0.23	0.00
3858	27.0	0.24	0.00	6.3	0.25	0.00
3859	30.0	0.33	0.00	6.9	0.23	0.00
3860	27.9	0.34	0.02	6.0	0.24	0.13
3861	28.9	0.28	0.05	6.5	0.17	0.00
3862	21.8	0.19	0.00	4.1	0.27	0.00
3863	25.2	0.19	0.08	5.9	0.18	0.00
3864	34.1	0.21	0.44	8.4	0.25	0.15
3865	17.3	0.09	0.13	3.5	0.18	0.11
3866	20.0	0.19	0.12	3.8	0.15	0.11
3867	22.3	0.23	0.10	4.6	0.28	0.00
3868	23.9	0.23	0.00	5.7	0.23	0.00
3869	33.2	0.40	0.00	8.2	0.16	0.16
3870	25.3	0.25	0.00	5.6	0.16	0.14
3871	18.5	0.18	0.08	3.9	0.15	0.04
3872	31.0	0.75	0.28	7.3	0.39	0.00
3873	21.7	0.18	0.10	4.2	0.19	0.00
3874	22.1	0.17	0.07	4.3	0.25	0.00
3875	20.3	0.23	0.00	4.3	0.22	0.00
3876	33.0	0.52	0.18	8.8	0.29	0.04
3877	20.1	0.23	0.00	4.2	0.23	0.00
3878	32.8	0.52	0.21	8.2	0.36	0.00
3879	20.6	0.18	0.26	4.6	0.17	0.16
3880	29.9	0.32	0.16	6.6	0.16	0.04
3881	30.1	0.28	0.35	7.1	0.23	0.00
3882	36.0	0.59	0.14	9.0	0.28	0.09
3883	21.9	0.16	0.09	4.2	0.18	0.00
3884	22.0	0.29	0.00	5.4	0.22	0.00
3885	22.8	0.28	0.00	4.9	0.22	0.00

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
3886	19.9	0.20	0.00	3.9	0.10	0.07
3887	31.3	0.30	0.09	7.5	0.22	0.09
3888	21.8	0.17	0.06	4.6	0.22	0.18
3889	33.4	0.36	0.10	7.9	0.30	0.07
3890	20.0	0.17	0.05	3.9	0.25	0.00
3891	22.0	0.18	0.12	4.4	0.17	0.05
3892	20.1	0.20	0.03	4.0	0.26	0.05
3893	33.8	1.54	0.00	8.3	0.58	0.00
3894	20.2	0.15	0.00	4.0	0.25	0.00
3895	20.9	0.28	0.00	4.8	0.36	0.00
3896	20.1	0.25	0.00	4.3	0.24	0.08
3897	36.0	0.35	0.14	8.6	0.24	0.22
3898	31.2	0.59	0.26	7.7	0.38	0.00
3899	24.0	0.23	0.09	5.6	0.23	0.16
3900	17.3	0.19	0.09	3.7	0.27	0.11
3901	22.1	0.29	0.00	4.5	0.14	0.00
3902	20.1	0.25	0.10	4.6	0.25	0.12
3903	18.6	0.21	0.10	3.9	0.19	0.00
3904	25.1	0.40	0.35	6.2	0.32	0.00
3905	28.0	0.25	0.11	6.2	0.28	0.07
3906	26.2	0.12	0.27	6.3	0.23	0.00
3907	19.7	0.22	0.10	3.9	0.21	0.15
3908	33.2	0.38	0.13	8.4	0.22	0.13
3909	31.2	0.37	0.16	7.3	0.24	0.09
3910	29.2	0.38	0.00	6.8	0.28	0.08
3911	20.2	0.18	0.13	4.0	0.23	0.10
3912	22.2	0.25	0.00	4.4	0.22	0.12
3913	25.1	0.35	0.00	5.9	0.30	0.00
3914	28.0	1.73	0.00	6.3	0.30	0.00
3915	20.6	0.19	0.00	4.6	0.23	0.00
3916	17.3	0.20	0.00	3.5	0.33	0.00
3917	26.2	0.34	0.00	6.0	0.31	0.08
3918	37.7	0.46	0.00	8.7	0.42	0.18
3919	24.1	0.39	0.00	5.5	0.23	0.15
3920	28.0	0.25	0.00	6.2	0.30	0.12
3921	18.7	0.22	0.02	3.7	0.20	0.10
3922	19.9	0.25	0.24	4.0	0.15	0.12
3923	19.2	0.24	0.08	4.0	0.21	0.00
3924	36.1	1.19	0.00	9.0	0.59	0.18
3925	18.8	0.23	0.00	3.7	0.23	0.00
3926	16.3	0.14	0.00	3.3	0.20	0.08

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
3927	18.1	0.19	0.09	3.6	0.29	0.00
3928	29.8	0.53	0.00	6.7	0.32	0.00
3929	22.9	0.26	0.18	4.7	0.13	0.00
3930	26.0	0.43	0.00	6.0	0.26	0.16
3931	36.5	0.46	0.15	8.8	0.29	0.03
3932	25.2	0.36	0.00	5.8	0.15	0.10
3933	22.0	0.27	0.01	4.7	0.28	0.00
3934	24.0	0.30	0.00	5.6	0.27	0.00
3935	27.1	0.38	0.14	6.3	0.21	0.07
3936	28.1	0.30	0.00	6.1	0.23	0.00
3937	20.2	0.15	0.14	4.1	0.38	0.00
3938	29.1	0.53	0.00	6.3	0.33	0.00
3939	24.1	0.21	0.20	5.8	0.25	0.24
3940	29.9	0.21	0.07	6.7	0.35	0.04
3941	34.2	0.48	0.00	9.2	0.43	0.24
3942	19.9	0.22	0.00	3.9	0.24	0.14
3943	15.4	0.17	0.00	3.2	0.22	0.06
3944	25.3	0.18	0.16	6.3	0.19	0.00
3945	22.0	0.18	0.00	4.4	0.30	0.06
3946	22.0	0.14	0.10	4.6	0.13	0.00
3947	30.0	0.43	0.00	6.7	0.26	0.00
3948	21.0	0.18	0.12	4.0	0.17	0.00
Mean	**25.04**	**0.33**	**0.08**	**5.61**	**0.25**	**0.05**
Min	**15.38**	**0.09**	**0.00**	**3.20**	**0.10**	**0.00**
Max	**37.68**	**1.73**	**0.44**	**9.20**	**0.59**	**0.24**

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 (%)

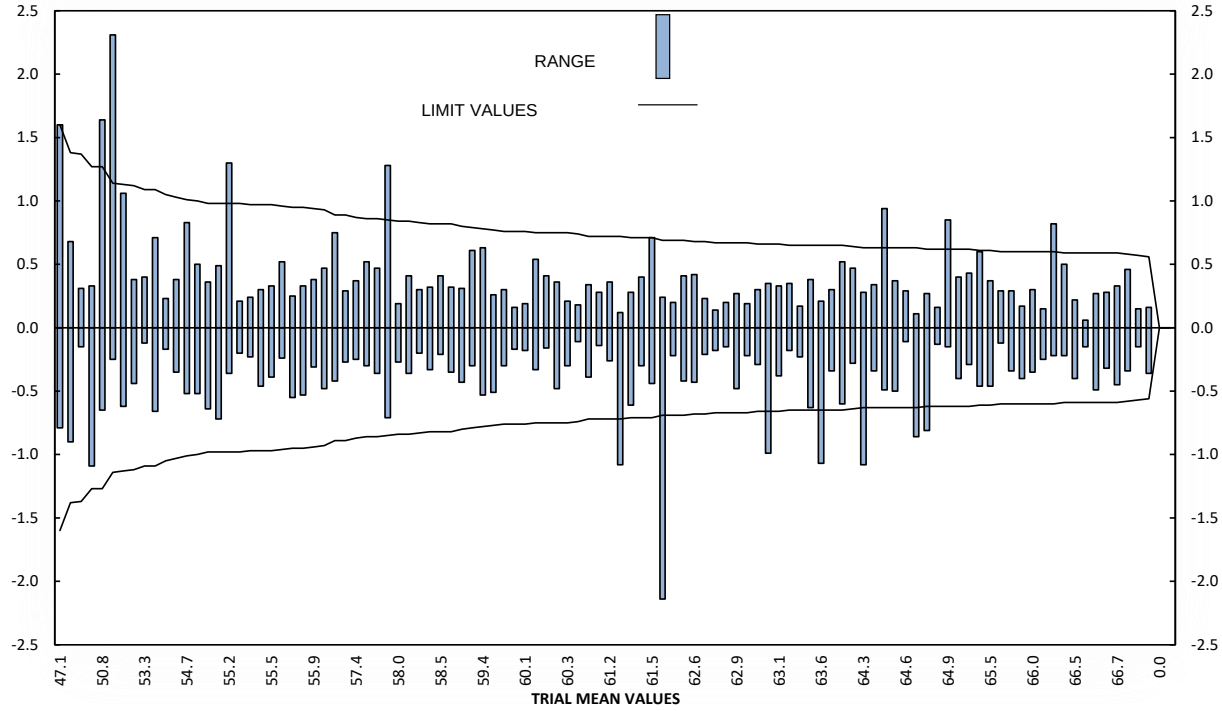


FIGURE 2: DIFFERENCE FROM GRAND MEAN - VEGETABLE MATTER BASE (%)

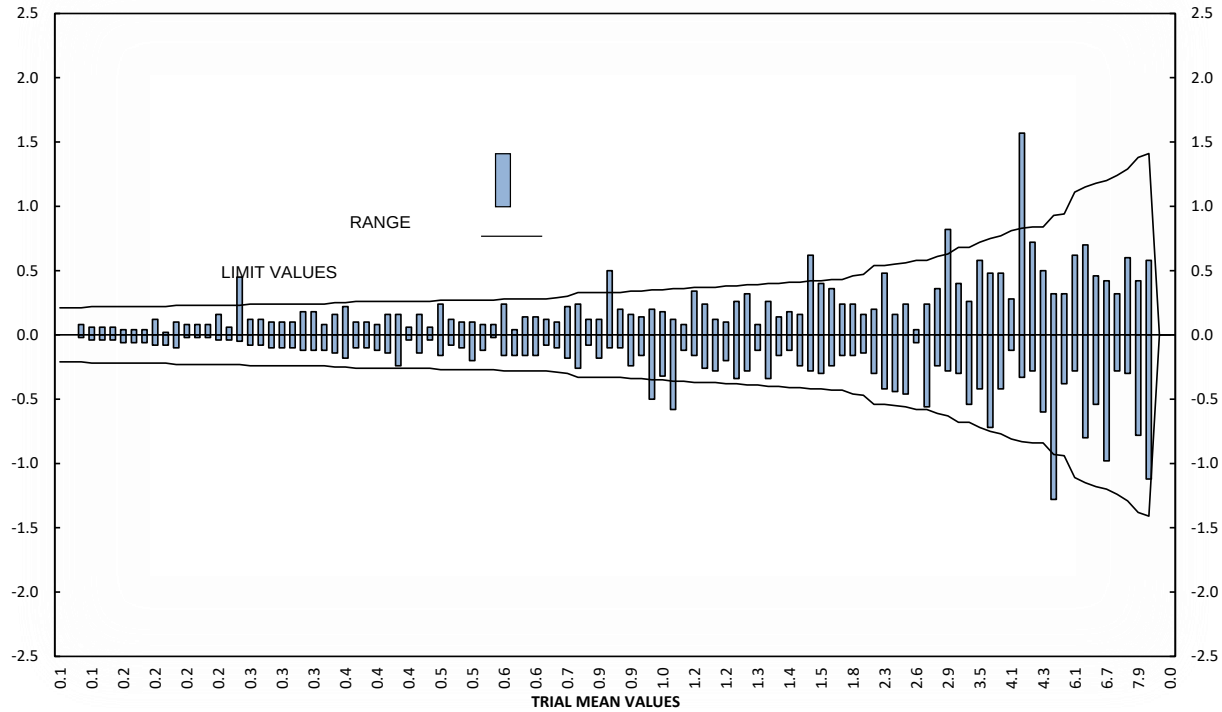


FIGURE 3: DIFFERENCE FROM GRAND MEAN - MEAN FIBRE DIAMETER (µm)
IWTO-28

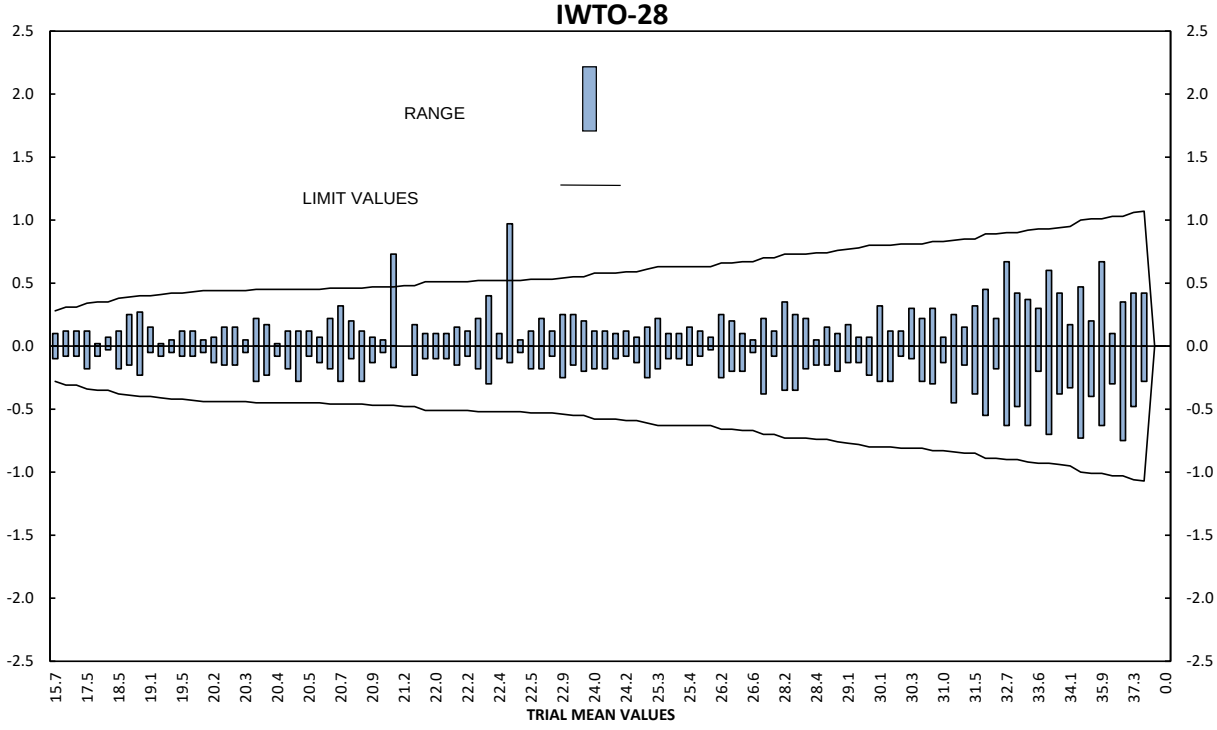
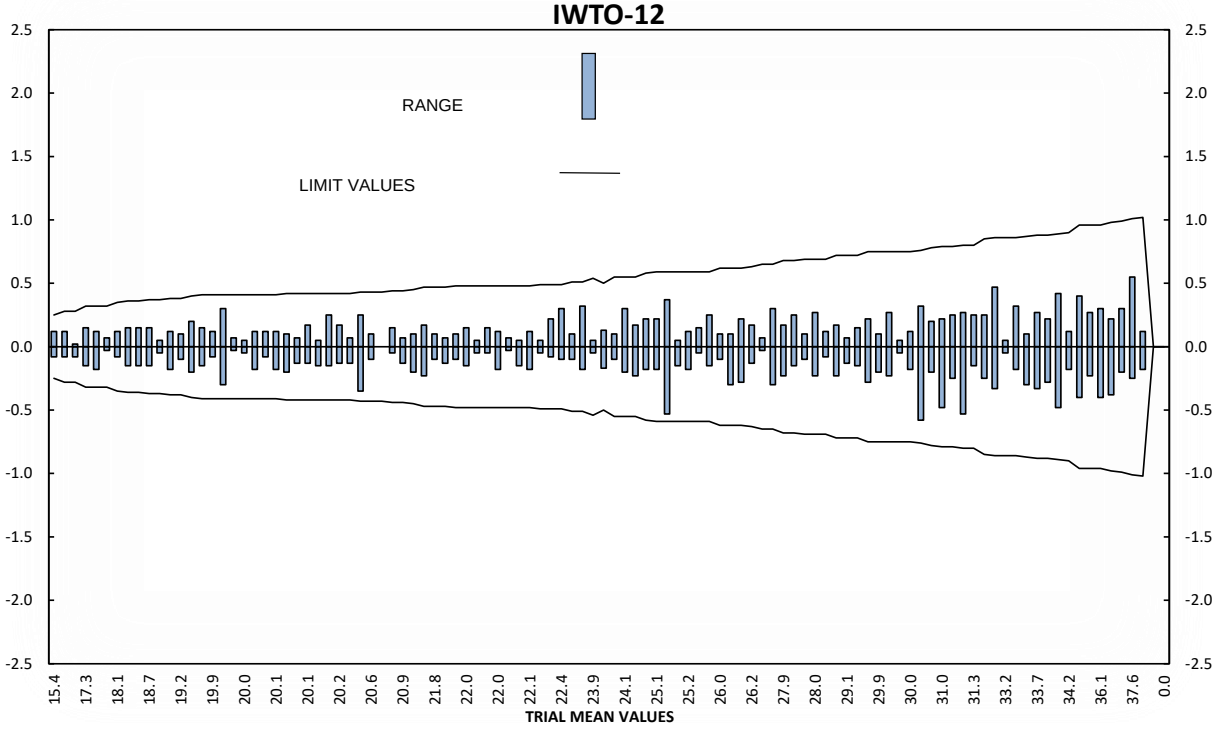


FIGURE 4: DIFFERENCE FROM GRAND MEAN - MEAN FIBRE DIAMETER (µm)
IWTO-12



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 fifteen (15) outliers were due to difference in Wool Base (trials 3846, 3854, 3855, 3860, 3874, 3883, 3893, 3894, 3899, 3900, 3900, 3910, 3919, 3928, and 3937) and nine (9) to difference in VM Base (trials 3854, 3884, 3895,3900, 3900, 3903, 3915, 3922, and 3944).

Two (2) outliers were reported for Airflow Mean Fibre Diameter (trials 3912, and 3948). No outliers were due to differences in LASERSCAN Mean Fibre Diameter.

All laboratories continue to work to reduce the number of outliers. In reviewing the results, it was noted that six (6) of the Wool Base outliers and five (5) of the VM outliers occurred in a 3-month period between trial 3889 and 3912 (24 samples) and have been traced back to a wider than usual range of wool sample keepers used for the preparation of these trial samples.

By reporting[1-18] 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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