Table of results of participating laboratories in the Round-Tests on Stickiness Characterization Methods on cotton fibers organized by Cirad under the auspices of the ITMF-ICCTM

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Table for individual results encoded for their confidentiality

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Agritrop information

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Alternative Title: Table des résultats des laboratoires participants aux Round-Tests organisés par le Cirad dans le cadre de l'ITMF-ICCTM sur les méthodes de caractérisation du collage des fibres de coton – Table des résultats individuels codés pour assurer leur confidentialité – Information Agritrop.

1 - Context of the creation of the database

Along time, Cirad, aside to creating stickiness measuring methods such as SCT and H2SD, has been creating and running periodical inter-laboratories round-tests (RT) for various cotton fiber technological characteristics or characterization methods. The aim has been to harmonize results of measurements between methods and laboratories so that any partner's laboratory could replace any other one without stake on research activities, among which cotton breeding. Note that Cirad has always been participating

to international round-tests when they were existing, even though they were run by other entities (Bremen RT, USDA-Classical RT, USDA-HVI RT, ICAC-CSITC, …).

For stickiness measurement, the minicard was first used, and for this its use was 'standardized' in two main ways: one by Cirad with a scale in 7 levels (1 to 7) and one by ITMF-ICCTM with a scale in 4 levels (0 to 3) with Henry Perkins mainly. This method is quite subjective and Richard Frydrych got the idea to replace it by the creation of the SCT (Sticky Cotton Thermodetector), with reference to the minicard scales; this required all steps to study the sources of variation in results, to find ways to limit them, and then to standardize it (up to CEN standard). Later, H2SD (High Speed Stickiness Detector) was created to speed up the rate of testing, with reference to the minicard and the SCT, again with all required steps to study the sources of variation in results, to find ways to limit them, and then to standardize it (up to CEN standard).

For the purpose of harmonizing stickiness measuring methods results of SCT, and then of H2SD (Cirad customers), Richard Frydrych and Serge Lassus created a round-test (RT) whose results were analyzed and compiled in Excel files to harmonize results between instruments of each method, and then between methods. The capitalization of data remained this way until the creation of a database containing this table of results.

Jean-Paul Gourlot, after being nominated chair or the ITMF-ICCTM-Stickiness working group, started an international harmonization work of stickiness results. For this, a worldwide RT was created in 2017, for which it was important to store, compile results in order to prepare reports. This RT was designed to acknowledge data from any method that claim to measure stickiness.

As stickiness has been considered as a contamination, and therefore as strong negative financial incidences can be applied on the contaminated fibers, a strong confidentiality requirement is demanded for both the laboratories participating to the RT as well as the origins of the cotton that have been used in RTs. This confidentiality then requires that the identifications of both laboratories and cottons is changed for each RT occurrence.

This document describes the specific table of one deposit in Cirad dataverse. **This database contains no confidential information and therefore is fully public.**

2 - Objective of the table

This table was created to compile all available data about cottons in round-tests [2017-1 ; 2022-2] on stickiness characterization methods.

It is important to notice that the compilation of available data started for 'ITMF-ICCTM-RTSticks' mainly, which has been running between 2017 and 2022 at this point.

For each RT occurrence, each participating laboratory receive one or more set(s) of 3 to 5 cottons named A to E. Behind the scene, Cirad has organized the RT so that A to E cottons may be from similar or different materials over the RTs. For instance, Cotton A in one RT may be the same material as Cotton D in another RT, but no one has never known which material was behind Cotton A to E, at any time, but the RT organizing team.

Participating laboratories had to condition their sets of samples into an appropriate testing room, before testing them on any Method they have at disposal. Up to 6

readings could be reported for each individual Cotton per Method in the recording table to be sent back to the Organizers in a due date.

The organizers compile the data as given in this table, taking care that each participating laboratory receive on new LabId for each RT for confidentiality reasons. With the compiled data, results given by LabId are compared per Method for creating a report. Then, each laboratory receives the report together with a unique letter containing his LabID in a confidential manner. Finally, the RT reports are stored on Cirad Agritrop website and on https://www.itmf.org/committees/international-committee-on-cotton-testing-methods , left button named “ICCTM Round trial Stickiness”.

3 - Description of the Excel file

3.1 - Page “Metadata”

Describes the data given in page Data.

3.2 - Page “Data”

Individual lines of data compiled during the given period for the Round-Tests (RT).

3.3 - Page “PT”

Possibility of using a Pivot Table based on the page Data.

4 - Fields of the file “2023_Gourlot_0_RawDataTable_V00.xlsx” in page Data

Column name	Type	Size	Explanation
TCL-T	Short text	255	Key built based on TestNum_Cotton_LabId (temporary identification for each RT)
TypeCor	Short text	255	Describe the type of data for this record: "1-Raw'
PourRefVals	Short text	255	Describe the type of data for this record: "RTRaw", "RTLate" or "RTVariab"
SampleSet	Short text	255	Sample set ID (between 1 to 6)
Method	Short text	255	Stickiness measuring Method used for this record
variable	Short text	255	Measurement ID (R1 to R6)
value	Double real	8	Stickiness result in the original Method scale
xMax	Double real	8	Maximum reading value for this Method
CommonScale	Double real	8	Conversion of value in percent of the xMax scale into the CommonScale value
SticLevVal	Short text	255	Assignation of a class of stickiness based on value and on the Method manufacturer scale (or set by JPG)
SticLevCS	Short text	255	Assignation of a class of stickiness based on CommonScale value and on 100 (theoretical max of CommonScale, set by JPG)
DateAssignationNiveau	Short text	255	Date of the assignation of the classes in SticLevVal and SticLevCS
LabID	Double real	8	LabID within each RT
Cotton	Short text	255	Cotton Id in the RTs (A to E, chronological number along the RTs)

5 - Encoding rules for the fields in this table

In general terms, to respect the requested confidentiality of any information in the database, both the “laboratory” and “cotton” information have been encoded in this table:

- For each RT, each participating laboratory receive an individual LabID per RT occurrence;
- RT occurrences took place two times per year since 2017;
- Each cotton participating to each RT receive a Cotton name A to E.
- For each RT, labs perform their testing and record their results in a typical Excel file and submit their results by email. At the closure of the RT, all participating lab Excel files are grouped by an automated procedure into a ‘grouping file’. This grouping file is then adjusted to the production of reports evaluating the performance of each laboratory for each cotton, and a first encoding is made at this stage with assignation of a random LabID.
- For each RT, produced reports only report results based on these confidential LabID and Cotton identifications (which therefore are anonymous).
- Only the organizers have access to the encoding system that is used.

6 - Potential usages of the database

It is not possible no trace individual laboratory long-term performance with the data of this table, as all data lines are encoded for the LabIds and CottonIds for each RT event.

Results can serve to compare results between instruments of each single Method. These results, already published separately in each RT report, are is grouped in one file.

We do not encourage comparing Method results as it is not quite sure if they all really measure stickiness as defined as a ‘best predictor of the spinning process (productivity and quality) due to a stickiness contamination of raw fibers’ in research studies.

7 - Some details on the file content

RTs are included in [2017-1 : 2022-2];

The following Methods are included {Benedict, Caramelization, Clinitest, Contest-S, GB/T13785-1992, H2SD, KOTITI, Minicard, MinicardC, Qualitative method, Quantitative method, Reactive Spray, SCT, TDM-A};

Cottons par RT are included in {A, B, C, D, E} [1];

There are 10 000 lines of data in this file.

[1] Cottons A to C of RT2017-1 are named A01, B01, C01; cottons A to C of RT2017-2 are named A02, B02 and C02… with an increasing number for each existing RT.

8 - Link to the described dataset deposit in the Cirad Dataverse and to other documents

- Link to the dataset when available: https://doi.org/10.18167/DVN1/FIP6HF
- This table, as well as other information not contained in this table, have been used as raw source of information for preparing the RT reports available at https://www.itmf.org/committees/international-committee-on-cotton-testing-methods , left button named “ICCTM Round trial Stickiness”.
- Global surveys of the accumulated data were periodically discussed at each ITMF-ICCTM meeting (usually every 2 years, see https://www.itmf.org/committees/international-committee-on-cotton-testing-methods website, see ICCTM reports).