

---

---

**Agroprocessing machine — Test methods**

**Part 1: Rice thresher**

ICS 65.060.01

---

---

Reference number

DRS 269-1:2020

© RSB 2020

In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

© RSB2020

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without prior written permission from RSB.

Requests for permission to reproduce this document should be addressed to:

Rwanda Standards Board

P.O Box 7099 Kigali-Rwanda

KK 15 Rd, 49

Tel. +250 788303492

Toll Free: 3250

E-mail: [info@rsb.gov.rw](mailto:info@rsb.gov.rw)

Website: [www.rsb.gov.rw](http://www.rsb.gov.rw)

ePortal: [www.portal.rsb.gov.rw](http://www.portal.rsb.gov.rw)

## Contents

Page

Foreword .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 General conditions for test and inspection .....	2
4.1 Role of manufacturer/dealer .....	2
4.2 Test site conditions .....	2
5 Suspension of test .....	2
6 Test preparation .....	3
6.1 Running-in and preliminary adjustment .....	3
6.2 Test materials .....	3
7 Pre-test observation .....	3
8 Performance test .....	3
8.1 Operation of the thresher .....	3
8.2 Sampling .....	3
8.3 Data collection .....	3
8.3.1 Noise level .....	4
8.3.2 Speed of components .....	4
8.3.3 Air velocity .....	<a href="#">Error! Bookmark not defined.</a> 4
8.3.4 Fuel consumption .....	4
8.3.5 Data recording and observations .....	4
9 Laboratory analysis .....	4
10 Data analysis .....	4
10.1 Calculation .....	4
10.2 Presentation of results .....	4
11 Test report .....	<u>45</u>
Annex A (normative) Test materials for mechanical rice thresher .....	6
A.1 Sample characteristics .....	6
A.2 Quantity to be supplied .....	6
A.3 Sample preparation .....	6
Annex B (normative) Specification for mechanical rice .....	7
Annex C (normative) Sampling and measurements for test material .....	13
C.1 Sampling from different outlets .....	13
C.2 Collection of scattered grains .....	14
C.3 Handling of samples .....	14
C.4 Other measurements required during the test run .....	14
C.5 Measurement of fuel consumption .....	15
Annex D (normative) Field performance test data sheet .....	16

Annex E (normative) Laboratory work..... 20

E.1 Measurement of straw length ..... 20

E.2 Measurement of grain content ..... 20

E.3 Purity determination ..... 20

E.4 Determination of losses ..... 20

E.4.1 Blower loss ..... 20

E.4.2 Separation loss ..... 21

E.4.3 Unthreshed loss ..... 21

E.4.4 Scattering loss ..... 21

E.5 Determination of net percent cracked grains ..... 21

E.6 Determination of percent mechanically-damaged grains..... 21

Annex F (normative) Laboratory grain analysis data sheet ..... 22

F.1 Crop conditions ..... 22

F.2 Kernel analysis ..... 23

Annex G (normative) Formula used during calculations and testing ..... 25

Copy for public review

## Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 265-1 was prepared by Technical Committee RSB/TC 47, Steel, aluminium and related products.

In the preparation of this standard, reference was made to the following standard (s):

- 1) XYZ: Title
- 2) XYZ: Title

The assistance derived from the above source is hereby acknowledged with thanks.

This second edition cancels and replaces the first edition (RS 269-1:2015) of which has been technically revised.

DRS 269 consists of the following parts, under the general title *Agroprocessing machinery— Test methods*:

- *Part 1: Price thresher*
- *Part 2: Power operated maize sheller*
- *Part 3: Rice mill*
- *Part 4: Heated air mechanical grain dryer*
- *Part 5: Maize mill*

### Committee membership

The following organizations were represented on the Technical Committee on *Steel, aluminium and related products*(RSB/TC 47) in the preparation of this standard.

University of Rwanda/college of science and technology

University of Rwanda/College of agriculture animal science and veterinary medicine

**DRS 269-1:2020**

Kabizu business group

Rwanda Polytechnic/IPRC Kigali

Rwanda Polytechnic/IPRC Ngoma

Rwanda Polytechnic/IPRC Musanze

RWANTECH Boilers

Rwanda Inspectorate and competition authority

Rwanda Institute for Conservation Agriculture

ACER Ltd

Rwanda Standards Board(RSB) – Secretariat

Copy for public review

Copy for public review





# Agroprocessing machinery — Test methods — Part 1: Rice thresher

## 1 Scope

This draft Rwanda Standard specifies the methods of sampling, testing and inspection for rice thresher.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

DRS 268-1, *Agroprocessing machines — Specification — Part 1: Rice thresher*

RS 241, *Agricultural machinery — Methods of sampling.*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in RS 268-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **actual capacity**

weight of the threshed grain collected from the main grain outlet per unit time

### 3.2

#### **clean threshed grain**

threshed grain with 100% purity exclusive of the empty grains and other impurities

### 3.3

#### **concave clearance**

clearance between cylinder threshing elements and concave component

### 3.4

#### **concave component**

iron grill frame partly surrounding the cylinder on which the threshing elements rubs, shear and/or impact the cut plants

### 3.5

#### **corrected capacity**

corrected capacity of the thresher at 20 % grain moisture content (wet basis), grain-straw ratio of 0.55 % and 100 % purity

### 3.6

#### **cylinder peripheral speed**

equivalent linear speed of the cylinder tip when running at normal operating speed, expressed in m/s

### 3.7

#### **threshing output**

weight of the threshed grains collected at the grain outlet

### 3.8

#### **total grain input**

sum of the weights of collected threshed grains and all threshing losses.

## **4 General conditions for test and inspection**

### **4.1 Role of manufacturer/dealer**

The manufacturer/dealer shall comply with the test procedures of national testing authority.

### **4.2 Test site conditions**

The thresher shall be installed on a stable level ground on a site with sufficient working space, and shall be positioned in such a way that the wind will not blow the straws and other impurities into the clean grain.

## **5 Suspension of test**

**5.1** If during the test run, the machine stops due to major component breakdown or malfunction so as to affect the machine's performance, the test may be suspended.

5.2 The decision to suspend or to continue the test is at the discretion of the test engineer and concurred by the manufacturer's representative.

## 6 Test preparation

### 6.1 Running-in and preliminary adjustment

6.1.1 Before the start of the test, the thresher should have undergone a break-in period.

5.1.2 During the running-in period, the various adjustments of the thresher shall be made according to the manufacturer's recommendations.

### 6.2 Test materials

The harvested crop to be used in the test shall be prepared in sufficient quantity using the procedure given in Annex A.

## 7 Pre-test observation

The specifications claimed by the manufacturer and the physical details given in Annex B shall be verified by the recognized testing authority.

## 8 Performance test

### 8.1 Operation of the thresher

8.1.1 The thresher shall be operated at the recommended speed and feed rate of the manufacturer.

8.1.2 The same feeding rate recommended by the manufacturer shall be maintained during the test run.

8.1.3 After the test run, the threshing area shall be cleaned and then prepared for the next trial.

8.1.4 This procedure shall be repeated for at least three test trials with duration of at least 15 min per trial, shall be adopted

### 8.2 Sampling

Sampling procedure is given in Annex C.

### 8.3 Data collection

#### 8.3.1 Duration of test

The duration of each test trial shall start with the feeding of the first harvested crop and ends after the feeding of the last batch. All discharge from the different outlets shall be included after the time cut off.

### **8.3.1 Noise level**

**8.3.2.1** The noise emitted by the machine, with or without load, shall be measured using a noise level meter both at the location of the operators and baggers.

**8.3.2.2** The noise limit, expressed in db (A), shall be taken according to RS 236

### **8.3.2 Speed of components**

The speed of the threshing cylinder, blower, and other driven components, with and without load, shall be measured using a tachometer, expressed in rpm.

### **8.3.3 Fuel consumption**

Before the start of each test trial, fuel tank shall be filled to its capacity and after each test; the fuel consumed in L/h shall be measured by refilling the tank to the same level.

### **8.3.4 Data recording and observations**

Record sheet for all data, information during the test, and other observations is given in Annex D.

## **9 Laboratory analysis**

The laboratory procedures to be followed in the analysis are given in Annex E while the data sheet is given in Annex F.

## **10 Data analysis**

### **10.1 Calculation**

**10.1.1** For uniform result of output capacity due to variation in grain moisture content and grain ratio, the output capacity shall be corrected at 100 % purity, 14 % moisture content, and 0.55 grain-straw ratio.

**10.1.2** The formula to be used in the calculation of different test parameters are given in Annex G.

### **10.2 Presentation of results**

Machine specifications and the results of the test shall be presented in tabular form using the data from Annexes B and D.

## **11 Test report**

The test report shall include the following information:

a) title;

- b) summary of results;
- c) purpose and scope of Test;
- d) methods of Test;
- e) conditions of the machine;
- f) results of test;
- g) observations (include pictures); and
- h) names and signatures of test engineers

Copy for public review

## **Annex A (normative)**

### **Test materials for mechanical rice thresher**

#### **A.1 Sample characteristics**

Test materials to be used shall have the following characteristics:

- a) variety : commonly grown locally;
- b) grain moisture content : 14 % maximum, wet basis;
- c) straw length : 45 cm - 50 cm; and
- d) grain-straw ratio : 0.50 – 0.65

#### **A.2 Quantity to be supplied**

The amount of test material to be supplied shall be sufficient for three hours of continuous threshing operation in order to provide samples to be used for running-in prior to the actual conduct of test trials. Approximately: 1 hour x threshing capacity (kg/h)

#### **A.3 Sample preparation**

Prepare the sample in such a way that test sample to be used for the running-in and in each test trial shall have identical characteristics in terms of moisture content, variety and date of harvest and cultural management, fertilizer input.

## Annex B (normative)

### Specification for mechanical rice

Name of Applicant: \_\_\_\_\_

Address: \_\_\_\_\_

Tel No: \_\_\_\_\_

Distributor: \_\_\_\_\_

Address: \_\_\_\_\_

#### GENERAL INFORMATION

Make: \_\_\_\_\_ Brand/Model: \_\_\_\_\_

Serial No: \_\_\_\_\_ Classification: \_\_\_\_\_

Production date of thresher to be tested: \_\_\_\_\_ (or Date of manufacture)

**Table 1 — Items to be inspected**

ITEMS Manufacturer's	Manufacturer's Specifications	Verification by the Testing Agency
C.1 Dimension and weight of thresher		
C.1.1 Overall length (mm)		
C.1.2 Overall width (mm)		
C.1.3 Overall height (mm)		
C.1.4 Overall weight, without engine (kg)		
C.2 Rated capacity (kg/h) range		
C.3 Component speeds (without load)		

C.3.1 Cylinder		
C.3.1.1 Shaft speed (rpm)		
C.3.1.2 Peripheral speed (m/s)		
C.3.2 Fan or blower shaft (rpm)		
C.3.3 Oscillating screen shaft (rpm)		
C.3.4 Auger shaft (rpm)		
C.4 Engine		
C.4.1 Brand		
C.4.2 Model		
C.4.3 Serial Number		
C.4.4 Make		
C.4.5 Type (cycle and ignition)		
C.4.6 Rated speed (rpm)		
C.4.7 Rated power (kW)		
C.4.8 Weight (kg)		
C.4.9 Starting system		
C.5 Type of power transmission system		
C.5.1 _____ to _____		
C.5.2 _____ to _____		
C.5.3 _____ to _____		
C.5.4 _____ to _____		
C.5.5 Others (specify)		



C.6 Type of clutch system		
C.7 Threshing chamber		
C.7.1 Cylinder		
C.7.1.1 Type		
C.7.1.2 Size, LxD (mm)		
C.7.1.3 Straw-thrower paddles		
C.7.1.3.1 Number		
C.7.1.3.2 Material		
C.7.1.3.3 Other features		
C.7.2 Cylinder teeth		
C.7.2.1 Type		
C.7.2.2 Size (mm)		
C.7.2.3 Number		
C.7.2.4 Distance between teeth (mm)		
C.7.2.5 Arrangement		
C.7.2.6 Material used		
C.7.2.7 Means of attachment		
C.7.2.8 Others		
C.7.3 Cylinder cover		
C.7.3.1 Shape		
C.7.3.2 Material		
C.7.3.3 Louver		

C.7.3.3.1 Number		
C.7.3.3.2 Inclination with respect the vertical axis (degrees)		
C.7.4 Concave		
C.7.4.1 Lower concave		
C.7.4.1.1 Material		
C.7.4.1.2 Spacing between grills		
C.7.4.1.3 Clearance between concave and cylinder teeth (mm)		
C.7.4.1.4 Stripper bars		
C.7.4.1.4.1 Number		
C.7.4.1.4.2 Location		
C7.4.1.4.3 Material		
C.7.4.2 Upper concave		
C.7.4.2.2 Material used		
C.7.4.2.3 Spacing between grills (mm)		
C8 Feeding Table		
C.8.1 Length (mm)		
C.8.2 Width (mm)		
C.8.3 Height from the ground (mm)		
C.8.4 Dimension of feeding port, L x W (mm)		
C.8.5 Mode of attachment		
C.8.6 Material		
C.9 Oscillating Screen/Sieve		

C.9.1 Length (mm)		
C.9.2 Width (mm)		
C.9.3 Size of perforations (mm)		
C.9.4 Length of stroke (mm)		
C.9.5 Angle of inclination (degrees)		
C.9.6 Material		
C.10 Blower/Aspirator		
C.10.1 Type		
C.10.2 Total Length		
C.10.3 Diameter		
C.10.4 Number of blades		
C.10.5 Size of inlet port (mm)		
C.10.6 Material		
C.10.7 Adjustment (if any)		
C.11 Auger		
C.11.1 Pitch (mm)		
C.11.2 Length (mm)		
C.11.3 Overall diameter (mm)		
C.11.4 Minimum clearance from housing		
C.11.5 Material		
C.12 Grain Chute		

C.12.1 Angle of inclination		
C.12.2 Material		
C.13 Transport device		
C.13.1 Type		
C.13.2 Size		
C.13.3 Adjustment (if any)		
C.14 Chassis		
C.14.1 Material		
C.15 Safety device(s), if any		
C.16 Minimum labour requirement		
C.17 Adjustment (s)		
C.18 Tools available with machine		
C.19 Other special features		
C.20 Illustration of Transmission System		

## Annex C (normative)

### Sampling and measurements for test material

#### C.1 Sampling from different outlets

**C.1.1** During each test trial, samples shall be collected from different outlets to be analyzed in the laboratory for losses, purity and grain quality.

**C.1.2** The minimum amount of sample to be taken shall be twice as much as what is needed for a particular analysis.

**C.1.3** The excess sample shall be used for reference purposes or for an eventual second check in case of review.

**C.1.4** The sampling procedures shall be undertaken at the following thresher outlets:

a) main grain outlet:

- 1) using a plastic bag or an appropriate container, collect four or more samples of approximately 0.5 kg each from the outlet; and
- 2) a final sample of approximately 1.5 kg shall be taken to the laboratory for analysis.

b) straw thrower outlet:

- 1) in the collection of sample in this outlet, use a rectangular box-shaped nylon catch with a dimension of 1.5 m x 0.5 m open at one end of the small side;
- 2) five samples shall be collected from this outlet with five-second duration per collection;
- 3) separate the free grain mixed with the straw and the grains that are still attached to the panicle; and
- 4) put them in a separate container and label them as separation loss and unthreshed loss, respectively.

c) chaff outlet:

- 1) during the test, five samples shall be taken from the chaff outlet for duration of about one minute per collection by using nylon net with a dimension of 1.5 m x 1.0 m held by two persons at both ends;

- 2) these samples shall be placed in appropriate containers and labelled as blower loss;
- 3) if there is an outlet chute whose function is to collect and recycle the chaff materials, the amount of grains being recycled and the blower loss shall be taken separately;
- 4) at the outlet chute a plastic bag or any appropriate container shall be used to collect three samples; and
- 5) these samples shall be placed in appropriate containers and labelled as recycled sample.

## **C.2 Collection of scattered grains**

**C.2.1** For testing purposes, scattered grains shall be gathered since these grains are part of the total grain input.

**C.2.2** Spread canvas sheets around the threshing floor area to catch these grains after each test trial. Place the collected grains in appropriate containers and label them as scattered grains.

**C.2.3** Provisions shall be provided for the collection scattered grains with maximum distance of 1.0 m away from the base of the machine.

## **C.3 Handling of samples**

**C.3.1** All samples to be taken to the laboratory shall be placed in appropriate containers and properly labelled.

**C.3.2** If the samples are not to be immediately analyzed, they should be air-dried and if necessary, treat the samples with chemicals such as insecticide in order to prevent the samples from possible damage.

**C.3.3** If the sample is to be used for determining moisture content, it shall be kept in dry and airtight containers.

## **C.4 Other measurements required during the test run**

**C.4.1** Data shall be taken for the following: speed of rotating components, air velocity, and noise level at the location of the operators and baggers.

**C.4.2** For each data to be taken there shall be a minimum of five observations and these shall be taken without and with load.

**C.4.3** Before taking of data, it shall be ensured that the feed rate, speed and other functional characteristics have stabilized.

**C.4.4** The time of sampling shall be properly spaced during the whole duration of the test trials.

**C.4.5** For air velocity, measurement shall be taken in at least six measuring points.

**C.4.6** The test engineer shall decide on the location of the measuring points, which will provide him with a good estimate of the blower's air velocity.

### **C.5 Measurement of fuel consumption**

**C.5.1** To get the amount of fuel consumed, the tank shall be filled to full capacity before the test.

**C.5.2** After the test, fill the tank with measured fuel to the same level before the test.

**C.5.3** When filling up the tank, careful attention shall be paid to keep the tank horizontal and not to leave empty space in the tank.

Copy for public review

**Annex D  
(normative)**

**Field performance test data sheet**

Test Trial No: \_\_\_\_\_ Date: \_\_\_\_\_

Test Engineers: \_\_\_\_\_ Location: \_\_\_\_\_

Test Specimen: \_\_\_\_\_

**Table 2 — Items to be inspected**

Items	Trial			
	1	2	3	Average
D.1 Crop Condition				
D.1.1 Variety				
D.1.2 Days after harvest				
D.1.3 Straw length (mm)				
D.1.4 Grain moisture content (%)				
D.1.5 Grain-straw ratio				
D.2 Performance test				
D.2.1 Speed of components (rpm)				
D.2.1.1 Prime mover				
D.2.1.1.1 Without load				
D.2.1.1.2 With load				
D.2.1.2 Threshing cylinder shaft				



D.2.1.2.1 Without load				
D.2.1.2.2 With load				
D.2.1.3 Fan shaft				
D.2.1.3.1 Without load				
D.2.1.3.2 With load				
D.2.1.4 Oscillating screen shaft				
D.2.1.4.1 Without load				
D.2.1.4.2 With load				
D.2.1.5 Grain auger shaft				
D.2.1.5.1 Without load				
D.2.1.5.2 With load				
D.2.2 Fan air velocity (m/sec)				
D.2.2.1 Without load				
D.2.2.2 With load				
D.2.3 Noise level [db(A)]				
D.2.3.1 Feeder				
D.2.3.1.1 Without load				
D.2.3.1.2 With load				
D.2.3.2 Bagger				
D.2.3.2.1 Without load				
D.2.3.2.2 With load				
D.2.4 Operating time (min)				

D.2.5 Threshed grains (kg)				
D.2.6 Threshing capacity (t/h)				
D.2.7 Fuel time (min)				
D.2.8 Fuel consumed (L)				
D.2.9 Fuel consumption (L/h)				

D.2.10 Observations:

D.2.10.1 Ease of transporting the machine

---



---



---

D.2.10.2 Adjustments such as belt tensions, clearance, air velocity and others

---



---



---

D.2.10.3 Safety features

---



---



---

D.2.10.4 Presence of grains that are blown back at the feeding port during threshing operation

---



---



---

D.2.10.5 Ease of cleaning the cylinder and concave

---



---



---

D.2.10.6 Ease of cleaning the fan and housing assembly

---

---

---

D.2.10.7 Labor requirement

---

---

---

D.2.10.8 Failure or abnormalities that shall be observed on the thresher or its component parts during and after the threshing operation.

---

---

---

D.2.10.9 Others

---

---

Copy for public review

## **Annex E (normative)**

### **Laboratory work**

#### **E.1 Measurement of straw length**

This shall be taken using at least ten representative samples of cut plants and measuring the length from the point of cut to the tip of the panicle.

#### **E.2 Measurement of grain content**

**E.2.1** In measuring the grain-straw ratio, take three representative samples of approximately 500 g each of cut plants from the test materials.

**E.2.2** For each sample, manually thresh the grains from the panicle and determine the weight of the grain and the straw separately.

**E.2.3** Record and calculate the grain-straw ratio using the formula in Annex G.

**E.2.4** The average of the three samples shall be taken as the grain-straw ratio.

#### **E.3 Purity determination**

**E.3.1** Take 500 g from the final sample taken from the main grain outlet and clean the grains to remove the impurities and other foreign matters.

**E.3.2** The clean grain shall be weighed and recorded.

**E.3.3** The percent purity is calculated using the formula in Annex G.

#### **E.4 Determination of losses**

##### **E.4.1 Blower loss**

**E.4.1.1** Five samples shall be taken at the chaff outlet to collect grains mixed with the chaff.

**E.4.1.2** Each sample shall be cleaned and weighed.

**E.4.1.3** The total weight of the clean grains and the total time of collection shall be recorded for the computation of blower loss.

#### **E.4.2 Separation loss**

**E.4.2.1** Five samples shall be taken at the straw outlet to collect loose grains mixed with the straw.

**E.4.2.2** The total weight of the clean grains collected and the total time of collection of the five samples shall be taken and recorded for the computation of separation loss.

#### **E.4.3 Unthreshed loss**

**E.4.3.1** Unthreshed grains collected at the straw outlet shall be hand threshed and weighed.

**E.4.3.2** The total weight and time of collection shall be taken and recorded for the computation of unthreshed loss.

#### **E.4.4 Scattering loss**

Grains scattered around the thresher with a maximum distance of 1.0 m away from the base of the machine, shall be collected after each trial, cleaned and weighed for the determination of scattering loss.

### **E.5 Determination of net percent cracked grains**

**E.5.1** Three samples each from manually threshed and machine threshed grains shall be taken for analysis.

**E.5.2** Each sample shall consist of 100 grains.

**E.5.3** These grains shall be manually dehulled and inspected for the presence of fissures.

**E.5.4** The net percent cracked grains shall be taken as the difference between the values obtained from the manual and machine-threshed grain samples.

### **E.6 Determination of percent mechanically-damaged grains**

**E.6.1** Three samples from machine-threshed grains shall be taken for analysis.

**E.6.2** Each sample shall consist of 100 g.

**E.6.3** Separate those grains that were broken, crushed or dehulled (partially or fully) and weigh.

**E.6.4** Compute for the percentage of mechanically damaged grains

**Annex F  
(normative)**

**Laboratory grain analysis data sheet**

Machine Tested: \_\_\_\_\_ Analyzed by: \_\_\_\_\_

Date of Test: \_\_\_\_\_ Date Analyzed: \_\_\_\_\_

**F.1 Crop conditions**

**Table F 1 — Moisture content, (% w.b)**

Sample No.	Initial weight	Final weight	Moisture content%
<b>Average</b>			

**Table F 2 — Grain – Straw Ratio**

Sample No.	Weight of Grain and Straw (g)	Weight of Grain (g)	Grain-Straw Ratio
1			
2			
3			
4			
5			
6			

7			
8			
9			
10			
<b>Average</b>			

**F.2 Kernel analysis**

Initial Weight of Samples (uncleaned) = 500 gms

**Table F 3 — Purity determination**

Items	Trail 1				Trail 2				Trail 3				Gen Avg
	1	2	3	Avg	1	2	3	Avg	1	2	3	Avg	
Cleaned (g)													
Purity (%)													

**Table F 4 — Loss determination**

Trial No.		Blower Loss		Separation Loss		Unshelled Loss		Scattering Loss	
		Duration:		Duration:		Duration:		Duration:	
		Sample wt (g)	Total (Kg)	Sample wt (g)	Total (Kg)	Sample wt (g)	Total (Kg)	Sample wt (g)	Total (Kg)
		1	a						
	b								
	c								
<b>Average</b>									
2.	a								

	b								
	c								
<b>Average</b>									
3.	a								
	b								
	c								
<b>Average</b>									
<b>Gen. average</b>									

**Table F 5 — Threshing efficiency/recovery determination**

Trial No.	Blower Loss		Separation Loss		Unshelled Loss		Scattering Loss		Total	
	wt	%	wt	%	wt	%	wt	%	Output (kg)	Input (kg)
	1									
2										
3										
Average										



## Annex G (normative)

### Formula used during calculations and testing

#### 1 Grain-straw ratio (R),

$$R = \frac{W_g}{W_s}$$

where:

$W_g$  is the weight of grain, g

$W_s$  is the weight of sample (grain and straw), g

#### 2 Fuel consumption (F<sub>c</sub>), L/h

$$F_c = \frac{F_1}{T_o}$$

where:

$F_1$  is the amount of fuel consumed, L

$T_o$  is the time of operation, h

#### 3 Capacity

##### a) Actual capacity (C<sub>a</sub>), kg/h

$$C_a = \frac{W_c}{T_o}$$

where:

$W_c$  is the weight of threshing output, kg

$T_o$  is the duration of operation, h

##### b) Corrected capacity (C<sub>c</sub>), kg/h (at 100% purity, 20% moisture content and 0.55 grain-straw ratio)

$$C_c = \frac{100 - MC_o}{100 - MC_m} \times \frac{R_m}{R_o} \times C_o$$

where:

$C_c$  is the corrected capacity, kg/h

$C_o$  is the actual capacity, kg/h

$MC_o$  is the observed moisture content, %

$MC_m$  is the grain moisture content, at 20%

$R_o$  is the observed grain-straw ratio

$R_m$  is the standard grain-straw ratio of 0.55

#### 4 Purity (P), %

$$P = \frac{W_c}{W_u} \times 100$$

where:

$W_u$  is the weight of uncleaned grain, g

$W_c$  is the weight of cleaned grain, g

Copy for public review

Copy for public review

---

---

Price based on 25 pages

©RSB2020- All rights reserved