

# TECHNICAL REVIEW OF THE ANTAM CODES 2017

4<sup>TH</sup> ANNUAL MEETING OF THE ASIAN AND  
PACIFIC NETWORK FOR  
TESTING OF AGRICULTURAL MACHINERY (ANTAM)

*22-24 NOVEMBER, 2017  
MANILA, THE PHILIPPINES*

- General Overview
- ANTAM Standard – Suggestion for all Coded
- ANTAM Standard Code for Testing of Power Tillers - Suggestion
- ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - Suggestion
- ANTAM Standard Code for Testing of Paddy Transplanters - Suggestion

# General Overview

3

In Seoul in 2006 **ENAMA** launched the message that an Asian network – **ANTAM** - could provide a lot of benefits.

At present time it's a reality thanks to the excellent work of **ESCAP-CSAM** and all **Member Countries**. The first edition of methodologies are being used and some machines being tested.

Besides, ENTAM is a powerful system to start other common activities as such as the development of new standards and new technologies for manufacturers and farmers. At the present time we are at the end of some interesting projects financed by the European Union that have the aim to organise and manage strategies for a better use of machinery. Also new technologies provide for better working conditions related to the environmental protection, operator safety and quality of agricultural production.

#### 5 Policies and strategies for the development of quality, the establishment of co-operation and the removal of barriers: the need for establishing a network.

Networking means co-operation and co-operation is a powerful platform to exchange information as well as to provide for the recognition of the activities carried out improving the trade of quality products or in other words quality machinery. The ENTAM experience is very interesting because in a short time it provided for a unique testing and checking system in Europe offering a wide range of information to farmers. It also offers the opportunity for manufacturers to be supported by the national ENTAM partner for the necessary information and the fulfilment of the requirements needed for machines to be sold and used in other countries.

An example may be given by crop protection machines where there are not only common European regulations but also national regulations that may be official or not. The official regulations are provided by the national governments and the others by farmers who use different technologies related to the crop management or to the traditional way to work. In both cases ENTAM offers the opportunity for manufacturers to have all the necessary information as well as the knowledge to build machines that will be well accepted by farmers. This is possible because experts from the different testing stations work together in WG (working groups) to set up common methodologies and share all the necessary information.

Co-operation also offers also the possibility to improve tests and optimise investment in the testing equipment. Just some months ago some Italian made mineral spreaders were tested in Denmark according to the ENTAM methodology at the Dias facilities. ENTAM has chosen not to build a testing station for those machines because there is a top testing station in Denmark and thanks to the ENTAM network Italian machines are tested in Denmark. According to this experience we may imagine a new network, perhaps called "ANTAM" (Asian Network for Testing of Agricultural Machines) as a powerful tool to build a new international market in connection with the ENTAM network in order to offer a unique opportunity to manufacturers, traders and farmers. The ENTAM experience could be an example to copy and improve according to the needs of the Asian agricultural machinery sector. Besides, a strong connection with the ENTAM network will offer the opportunity to work for a stronger platform for a wider exchange of information, recognition of activities and the improvement of global trade and global quality.

All this becomes more important if we keep in mind that the price of a product is a powerful sales tool but only for a short time. For a long term strategy it is necessary to plan and produce machinery according to the needs of the customer, the environment, the safety and the ethical models.

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# General Overview

- The Asia Region is a decisive component in the global food chain, accounting for 19% of total global food and agriculture exports and 31% of total food and agriculture imports
- Asia's large and growing population, coupled with rising incomes and a growing middle class, will continue to drive demand for food & agricultural commodities and resources
- Asia agribusiness and food & agriculture companies are likely to grow in size and scope to meet the increasing demand, national policies, rising organisational capabilities.

# General Overview

- The ANTAM network develops regional standards to promote the use of safe, efficient and environmental friendly agricultural machinery in the Asia-Pacific region
- In the coming years, **modernization of production systems** can empower the agricultural workforce and is expected to play a central role in increasing productivity in the agricultural sector
- **Substantive progress** in the modernization of agricultural production in the Asia-Pacific Region requires **sustainable agricultural mechanization** and **regional integration**

## ONE TEST FOR ASIA

The adoption of **mutually recognized testing Codes** for agricultural machinery can significantly reduce the need for additional local testing improving, at the same time, **safety and efficiency**.

The integration will facilitate **technology** and **knowledge exchange/transfer** and at the same time will **protect farmers** from the use of unsafe and inefficient inputs.

## ONE TEST FOR ASIA

It will contribute in a sustainable way to increase yields, reduce the excessive use of chemical fertilizers and pesticides and minimize the related environmental footprint, optimizing public/private investments too.

The ANTAM Codes can guide manufacturers and end users towards this objective.

## 1) Insert chart with list of previous Code's edition with reference of version/date


■ Example:

Name	Version	Date
ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters	Version 002-2016	August 2016
ANTAM Standard Code for Testing of Power Tillers	Version 001 - 2016	August 2016



2)

Upon approval and validation of the test report by the ANTAM Secretariat, the ANTAM logo may be used on the tested machinery. The ANTAM Secretariat will then release the test report on its website.

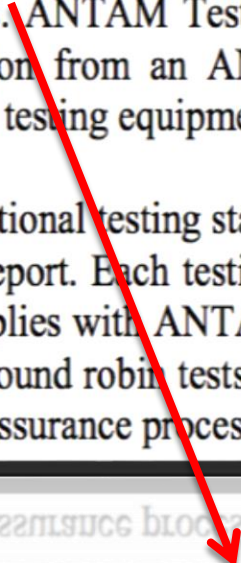


Adding *“together with the Certification number”*

3)

Implementation of ANTAM Test Codes is voluntary. Member countries can use ANTAM Test Codes in their entirety or refer to parts of the Code to integrate them with procedures applied in national testing stations. ANTAM Test Codes apply only to the equipment described in the Codes. Thus, any testing station from an ANTAM member country is welcome to use the test Codes assuming it has adapted testing equipment, facilities and skilled personnel.

Participating national testing stations are responsible for using the Codes to carry out the tests and complete the test report. Each testing station shall certify that ANTAM Codes are followed and that the test report complies with ANTAM Test Codes and procedures. ANTAM strongly encourages the implementation of round robin tests<sup>4</sup> among testing stations in order to ensure that test reports are supported by a quality assurance process.

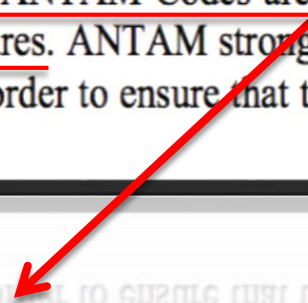


Using parts of Code in a system as the ANTAM Network should not be eligible for certification. Indeed it will be possible to use the whole Code and additional test for any other purpose

4)

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Adding word “**completely**” in order to provide for a full compliance with the Code

5)

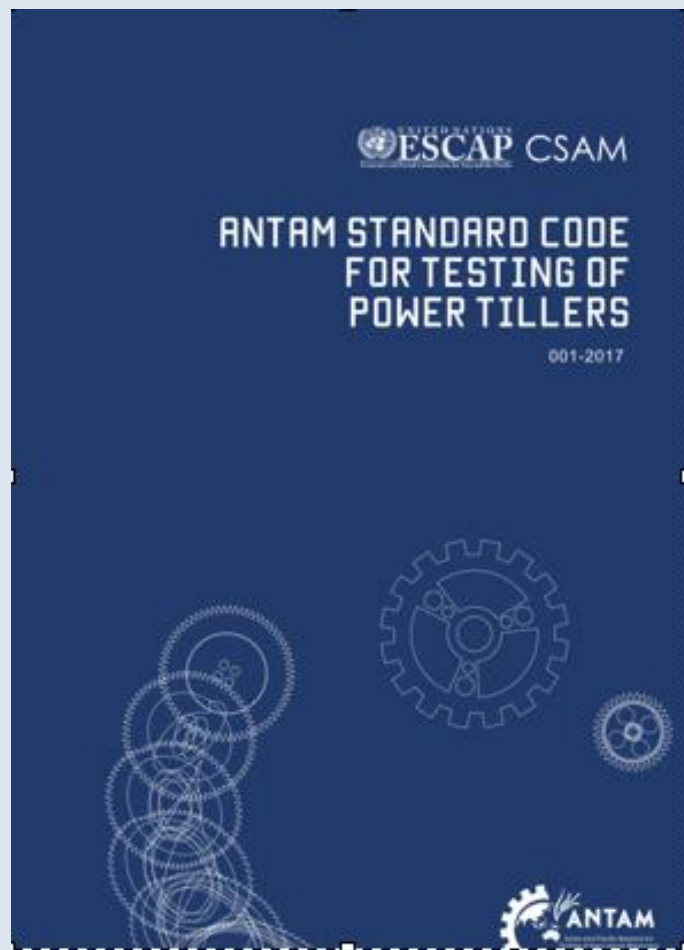
## ANNEX B

### B-1 Detailed Technical Specification of Powered Knapsack Mister-Cum-Dusters

#### 1.2 Name and address of the applicant for test

We suggest to add *“if different from manufacturer (importer)”*.

It is important for responsibility, certification cannot be used to check manufacturer’s declaration and/or products



13

## ANTAM Standard Code for Testing of Power Tillers

# ANTAM Standard Code for Testing of Power Tillers

The third version of the ANTAM Code for Testing of Power Tillers that ANTAM has presented in 2017, builds upon the work conducted in 2016 and is enriched with enhanced **safety standards** to assure end users with **efficient, durable and safe equipment**

# ANTAM Standard Code for Testing of Power Tillers

## - SUGGESTION

15

### 1.0 SCOPE

1)

This Test Code covers the terminology, general guidelines and tests to be conducted on power tillers with diesel engine excluding mini tillers. It also covers methodology for checking on machine specifications, engine performance, rotary shaft performance, vibration level, drawbar performance, turning ability, parking brake ability, noise measurement, waterproof ability and safety requirements.

The tests are conducted for establishing performance characteristics of power tillers that are ready for commercial production or already in production. The manufacturer has to specify whether the test is confidential or for commercial purpose.

This publication supersedes the previous ANTAM Standard Code for testing of Power Tillers (ANTAM 001-2016).

To be considered event other fuels or engine type to be specified in the report

The Code has to be used only for certification purposes. Any other use is not a certification.

Besides the manufacturer/importer will always be asked for permission to publish resulting data.

# ANTAM Standard Code for Testing of Power Tillers

## - SUGGESTION

2)

### **3.3 Operational Mass**

The mass of the power tiller without operator in normal working condition with fuel tank and radiator (if fitted) full and lubricants filled to the specified levels.

Note: Any accessory fitted and its mass should be stated.



We suggest to change with:  
“Any accessory fitted and its mass should be stated separately”. Accessories can depend on the different market where the machine will be sold.



# ANTAM Standard Code for Testing of Power Tillers

## - SUGGESTION

3)

### **4.7 Auxiliary Equipment**

For all power tests, accessories/ auxiliary drives (if any) may be disconnected only if it is practicable to do so as a normal practice during work in accordance with the operator's manual without using any tool. If not, they shall remain connected and operate at minimum load.

### **4.8 Fuel Consumption**

The fuel measurement apparatus shall be so arranged that the fuel pressure at the fuel transfer pump is equivalent to that which exists when the power tiller fuel tank is half full. The fuel temperature shall be comparable to that in the normal operation of the power tiller when fuel is taken from the power tiller fuel tank.

**4.8.1** To obtain hourly fuel consumption by volume and the work performed per unit volume of fuel, conversion of unit of mass to unit of volume shall be made using the density value at 15°C (IS 9935:2002).

**4.8.2** When the fuel consumption is measured by volume, the specific fuel consumption shall be calculated using the density corresponding to the appropriate fuel temperature.

### **4.9 Atmospheric Conditions**

#### **4.9.1 Atmospheric Pressure**



However every specific configuration of the machine has to be mentioned in the test report

# ANTAM Standard Code for Testing of Power Tillers

## - SUGGESTION

4)

### **2.3 High Ambient Test (Optional)**

The following tests on the engine shall be conducted under high ambient temperature ( $43 \pm 2$  °C) (IS 9935:2002).

#### ***2.3.1 Maximum power test***

##### ***2.3.1.1 Maximum power absolute***

Operate the power tiller at the engine speed where maximum power occurs for a period of two-hour subsequent to a warming-up period to reach stabilized running conditions. Measure the power, torque, fuel consumption and speed. The maximum power quoted in the test report shall be the average of at least six readings made at regular intervals during two-hour period. If the power varies by more than  $\pm 2$  percent from the average, repeat the test. If the variation continues, report the deviation.

If power tiller is not capable of transmitting the full power of the engine, operate it for two-hour at a power specified by the manufacturer. If possible, a 20 percent increase in power shall be applied every 5 minutes for a period of one minute. If the engine cannot develop the 20 percent increase in power, carry out the intermittent test at full engine power.

“High Ambient  
Temperature Test”

These info have to be  
included in the test report

# ANTAM Standard Code for Testing of Power Tillers

## - SUGGESTION

### 5) **8.0 NOISE MEASUREMENT TEST**

#### **8.1 General**

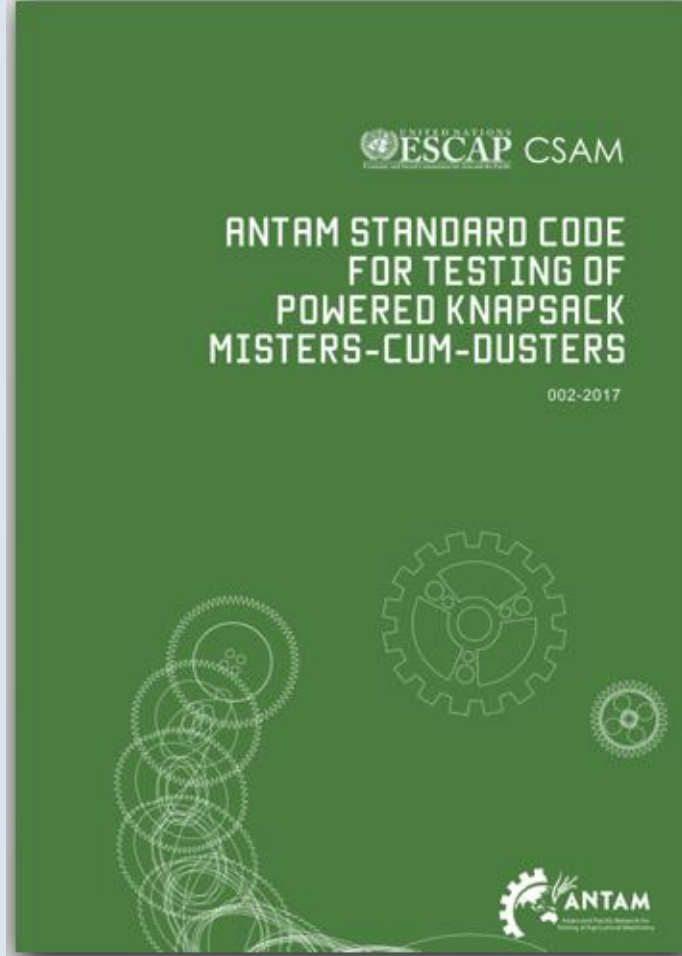
**8.1.1** Sound level meter which meets the requirements of IEC 60651-1979 for a type 1 instrument shall be used.

**8.1.2** The test area shall be a flat open space and shall be within at least 20 m of the test machine. There shall be no obstacle likely to reflect significant sound, such as building, solid fence, tree or other vehicle.

**8.1.3** The air temperature shall be in the range from -5 °C to 35 °C and the wind velocity at 1.2 m above ground level shall not exceed 5 m/s (9.2.4 GB/T 6229-2007).



To be verified with other methodologies in order to have the same approach for every machine



20

ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters

The third version of the ANTAM Code for Testing of Powered Knapsack Misters-Cum-Dusters was presented in 2017 basing on the work conducted in the previous years.

This version provides for an increased **accuracy of test results** and **new requirements** to facilitate the provision of efficient, durable and safe equipment for end users.

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

1)

## 1.0 SCOPE

This Test Code covers the terminology, general guidelines and tests to be conducted on powered knapsack mister cum duster fitted with a small  $\leq 4.5$  kW gasoline engine coupled with a centrifugal fan. The Code covers methodology for checking on machine specifications,

### 1.1.1 Material

The material for construction of different components of powered knapsack mister cum duster except gasoline engine is given in B-2 Annex B. All components come in contact with the chemicals shall be of good quality chemical resistant materials.

### 1.10.9 Gasoline Engine

1.10.9.1 The gasoline engine used should comply with JB/T 5135.1-2013, IS:7347-1974 or ISO 8178-4: 2007 (without governor).

We suggest to not use “gasoline”

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

## 2) 2.0 REFERENCES

The Standards listed in **Annex A** contain provisions which through reference in this text, constitute provision of this draft standard incorporating existing international standards (ISO) and national standards practiced by China, India and Vietnam. The selection of publications, the editions indicated were provided by the various national representatives on test standards. Typical engine power for powered knapsack mister cum duster is 3 kW, current relevant standards for 3 kW and below small gasoline engines in the Chinese JB/T 5135.1.2.3-2013 (for engine less than 30 kW) and the Indian IS: 7347-1974 (for engine less than 20 kW) are referred. The ISO 8178-4: 2007 standard is also referred. Specific references selected are the Chinese JB/T 7723-2014 and the Indian IS: 7593.1-1986. All selected standards are considered recent as per documents provided. All documents provided from the various national standards agency are copyrighted.

We suggest to add ≈

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

3)

## 1.1.2 Manual

Manufacturer can prepare operators and service manual separately or as a single document. Operational and maintenance manual should contain complete list of regular and optional parts, method of converting the mister into duster, instruction on adjustments, assembly and disassembly for cleaning and routine inspection and replacement of parts and safety precautions to be taken during operation and handling. Manuals shall comply with the ISO 3600: 1998 or IS 8132: 1999 standards and contain information on: main technical details of engine, rated speed, tank capacity, misting/dusting rate at recommended pressure, recommended pressure range, horizontal spray range, starting and stopping instructions, safety, common faults and repairs, safe chemical handling, cleaning, maintenance, storage, forbidden chemical/liquid to be used, manufacturer and supplier contact details.

We suggest to add “*The manual must also contain proper information for a safe use and maintenance of the machine*” and some pictures of safe use of machine





# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

25

4)

Table 1a: Accuracy Requirements of Measurement

Parameters, unit/scale	Accuracy	Notes
Rotational speed, rev min <sup>-1</sup>	$\pm 0.5$	Tachometer may be used
Time variation, s	$\pm 1$	Digital stopwatch

Indicate clearly the referring value.  
Example: Rotational speed -  $\pm 0.5$  % ?

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

5)

## 1.6.1 Servicing

After completion of running-in, servicing and preliminary settings should be done according to the printed literature supplied by the manufacturer/applicant. The following may be carried out, wherever applicable:

- a) Change of the engine oil;
- b) Change of oil and fuel filters (if required);
- c) Greasing/oiling of all the lubricating points;
- d) Tightening the nuts and bolts;
- e) Checking and adjustment of safety devices, **if any**;
- f) Any other checking or adjustment recommended by the manufacturer after the running-in period, and included in the printed literature of the powered knapsack mister cum duster.

We suggest to delete “if any”.  
It means there can be no safety device.

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

27

## 6) 1.10.2 Tank

A tank for holding the liquid shall be provided with the provision of easy conversion into a dust/micro granules tank. A filling hole of 90 mm minimum diameter if circular or in minor axis if oval, shall be provided on the top of the tank. The hole shall be covered with a cap or lid so that no leakage of the liquid or dusting powder takes place during the mounting of the mister cum duster and during its operation. The tank capacity (nominal value) shall not exceed 0.02 m<sup>3</sup> (20 l). The tank capacity shall be declared by the manufacturer. The full tank capacity shall not differ by more than 7.5% of the declared value (ISO: 9357: 1990). The

We suggest to add “ and/or transport”.

Besides, it would be necessary consider the total allowed weight of machine: in the Code a maximum of 20 kg (+/- 7,5%) and 11 kg are allowed.  
(ISO 19932 part.1 /2013 states 25 kg as a maximum).

# ANTAM Standard Code for Testing of Powered Knapsack Misters-Cum-Dusters - SUGGESTION

## 7) 1.10.11 Safety Requirements

Dangerous parts of the gasoline engine: recoil rope starter, exhaust (silencer), inlet of blower shall be fitted with protective cover. The rotating parts such as the entrance of fan, starting wheel, etc. shall be equipped with protective cover with proper strength. The muffler and other high-temperature components shall be equipped with protective device to avoid emprises (ISO 8178-4: 2007). If dimensions are not available because of structure, warning signs shall be set up, and note it in the manual.



To be specified

UN ESCAP CSAM

# ANTAM STANDARD CODE FOR TESTING OF PADDY TRANSPLANTERS

003-2017



29

## ANTAM Standard Code for Testing of Paddy Transplanters

# ANTAM Standard Code for Testing of Paddy Transplanters

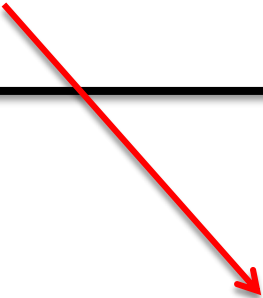
The first version of the ANTAM Code for Testing of Paddy Transplanters aims to provide a guideline to facilitate the provision of **efficient, durable and safe equipment for end users** to support the cultivation of one of the key crops in the Asia-Pacific Region.

# ANTAM Standard Code for Testing of Paddy Transplanters

1)

## 1.2 Manual

The applicant shall submit operation, maintenance and service manuals. The operational manual shall include schematic diagrams of levers, switches and other parts with functional description and instruction on all adjustments necessary for operation of the transplanter, assembly and disassembly for cleaning and routine inspection, replacements of parts, safety precautions to be taken during operation and handling and spare parts list with part no (number) in the manual. Manuals shall comply with ISO 3600:1998, GB/T 20864-2007 or IS 8132:1999 standards and contain information on main technical details of the engine with filters and other accessories, technical details on transplanting spacing, speeds, planting depths, plants per hill, cuts per tray and contact details of manufacturer and supplier.

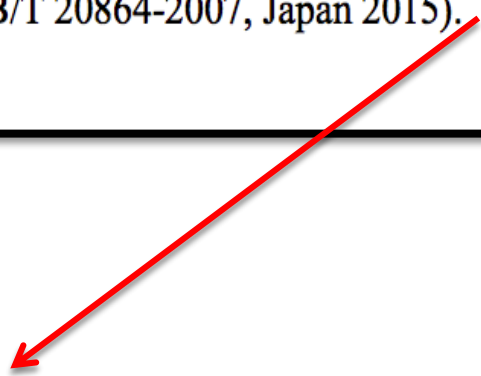


We suggest to add “*The manual must also contain proper information for a safe use and maintenance of the machine*” and some pictures of safe use of machine

# ANTAM Standard Code for Testing of Paddy Transplanters

## 2) 1.5 Mechanisms

Power transmission, transplanting and floating mechanism should be specially examined or investigated during the beginning of the testing (GB/T 20864-2007, Japan 2015).



We suggest to add at the end of sentence “and described in the report”



# ANTAM Standard Code for Testing of Paddy Transplanters

3)

## 2.0 SAFETY REQUIREMENTS

2.11 Dangerous moving parts must be indicated by safety signs and should be presented in the operating manual.



We suggest to change in:  
“Dangerous moving parts must be properly protected and indicated by safety signs and should be presented in the operating manual.”

# ANTAM Standard Code for Testing of Paddy Transplanters

## 4) **4.0 NOISE MEASUREMENT TEST (ANTAM 001-2016)**

4.1 The noise level shall be measured at the operator's ear level during transplanting operation.

4.2 The noise shall be measured with instrument and expressed in decibels set on slow level.

4.3 The test area shall be a flat open space. There shall be no obstacle likely to reflect significant sound, such as building, solid fence, tree or other vehicle for a distance of at least 20 m from the tested machine (ANTAM 002-2016).



Make Noise Measurement Test's text more uniform

# ANTAM Standard Code for Testing of Paddy Transplanters

## 5) 5.0 PERFORMANCE TEST

### 5.1 General

**5.1.1** The objective or purpose of this test is to determine the actual field performance of the machine. It includes field efficiency, transplanting accuracy, and uniformity of transplanting.

The applicant should supply the transplanter with standards accessories and in a condition as generally offered for sale. The transplanter shall be new and should not be given any special treatment or preparation for test (ANTAM 002-2016).



Accessories should be mentioned in the report

**THANK YOUR FOR YOUR ATTENTION**

[WWW.ENAMA.IT](http://WWW.ENAMA.IT)

