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Overview of ANTAM Codes on Power Tillers/Mini Tillers and Paddy Transplanters

Ayesha Herath / CSAM

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Asian and Pacific Network for Testing of Agricultural Machinery

Trade Benefits of Quality Agricultural Machinery

Quality, safe agricultural machinery is a basic requirement for promoting agricultural mechanization.

Agricultural machinery testing ensures quality and performance reliability of machines. Helps farmers to make decisions about machinery purchases. Ultimately contributing to industry growth, livelihood development and assure the increased agricultural productivity.

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The Asian and Pacific Network for Testing of Agricultural Machinery (ANTAM), led by the Centre for Sustainable Agricultural Mechanization (CSAM) of ESCAP, aims to promote harmonized test codes for agricultural machinery in the Asia-Pacific region, promoting safe, efficient, and environmentally sound agricultural machinery.

ANTAM Test Code Development Process

ANTAM TWGs

- ANTAM Technical Working Group (TWG) is composed of technical experts in the field of agricultural engineering machinery testing. National experts are nominated by participating countries.

- TWG members are responsible for developing and updating ANTAM Test Codes, actively conduct technical consultations by contributing with national expertise in TWG meetings. In addition, TWG members are in charged of providing technical support to the Secretariat.

List of ANTAM Test Codes and Versions

1. ANTAM 001 – Test code for testing of Power Tillers
2. ANTAM 001 a – Test code for testing of Mini Tillers
3. ANTAM 002 – Test code for testing of Mister cum Dusters
4. ANTAM 003 – Test code for testing of Paddy Transplanters
5. ANTAM 004 – Test code for testing of Rice Combine Harvesters

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ANTAM Codes for Power Tillers/ Mini Tillers / Paddy Transplanters

Power tillers are popular in the Asia-Pacific region due to the region's strong reliance on agriculture, the prevalence of smallholder farming, and the need for compact and versatile machinery to work small land holdings

In the Asia-Pacific region, rice transplanting machines, particularly walking and riding types, are increasingly used to improve efficiency and reduce labor costs in rice cultivation.

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ANTAM Test Codes General Structure

- Scope
- References
- Terminology
- General Guideline
- Measuring Tolerances
- Checking of Specifications
- Engine Performance Test
- Noise Test
- Vibration Test
- Performance Evaluation Test
- Parking Brake Test
- Waterproof Test
- Safety Inspection

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Common Sections of ANTAM Codes

According to the Quality Manual the latest version of the chosen Standard has to be used to provide a perfect compliance at international level.

Engine Performance Evaluation Test

Noise Test

Vibration Test

change can be discussed in the TWG and can be included at the same time in all the Codes (with information of the other TWGs) to provide compliance and uniformity.

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Engine Performance Evaluation Test

Option 01

Perform Engine performance test as specified in the test code

Option 02

Acceptance of data from an officially accredited testing station belonging to an ANTAM member country or accredited testing laboratory according to CEI EN ISO/IEC 17025:2018 (and updates)

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Noise Test

This common test procedure for all ANTAM code is for testing of noise level at

Operators ear level

By-standing Position

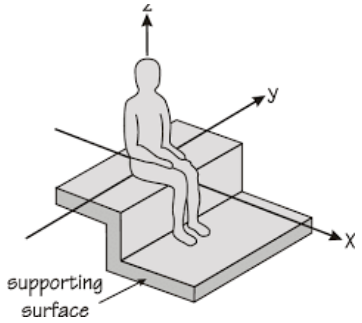
There is no pass / Fail limits specified in ANTAM codes. But the national limits can be applicable to

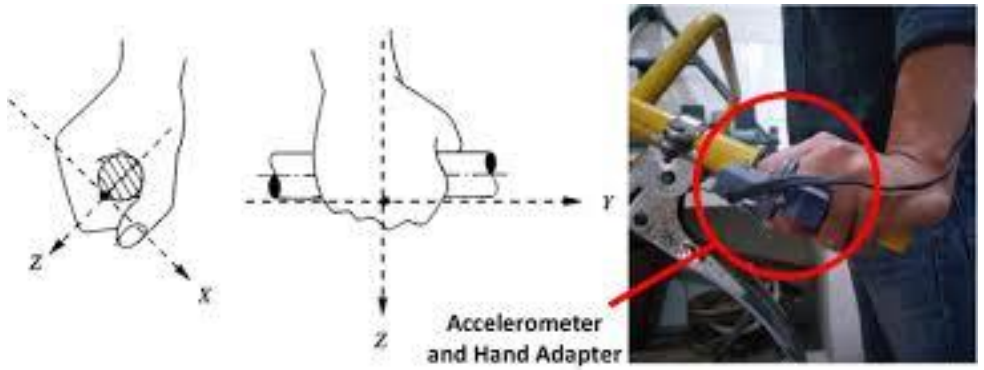
Vibration Test

Affects on Operator's health conditions.

Important to identifying potential problems, predicting breakdowns, and ensuring optimal performance, safety, and durability of the product.

There is no pass / Fail limits specified in ANTAM codes. But the national limits can be applicable to make decisions.





Performance Evaluation Tests

- Drawbar/ Rotary shaft Performance Test - power tiller
- Tilling Performance – Mini Tiller
- Field Performance Evaluation of Paddy Transplanter

Parking Brake Test

Test the ability to hold the power tiller/ mini tiller / transplanter stationary, facing up and down on slopes.

Test ramp has to be constructed in the testing station with standard dimensions.

Waterproof Test (Optional)

To determine the effectiveness of the seals of the machine when operated under lowland condition.

Safety Inspection

Guards

Controls

Lighting

Protective Covers

Safety Labels

Thank you

Overview of ANTAM Codes on Powered Mister cum Dusters / Rice Combine Harvesters

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Performance Evaluation of Mister cum Duster

Misting / Dusting Performance – Range and Width

Misting / dusting Performance – Capacity

Vertical and Horizontal Reach

Misting / Dusting Variation Test

Droplet size and Droplet density

Field Performance of Rice Combine Harvesters - Objective

Rice is the staple food for the region.

The region produce and consume 0.5 billion tons annually.

Total annual loss is around 35%.

Harvesting machinery affects at least 1-3% from this.

In some cases, it is about 15%

ANTAM focused to give a guideline to estimate losses and evaluate the quality and rate of work of the combine harvesters.

The available code version is for rice but shall be extended for other crops such as maize, wheat or pulse in future versions.

Losses associated with Combine Harvesters

Pre harvesting Loss

Header Loss

Cylinder Loss

Separation Loss

Conditions Affects the Performance of a Combine Harvester

Crop Condition

Field Condition

Machine Condition

Environment

Operator Skills

Quality of Performance

Loss Estimation

Pre-harvesting Losses

Header Losses

Cylinder Losses

Separation Losses

Grain Damage Percentage

Impurity Percentage

Rate of Work – Combine Harvesters

Effective Field Capacity

Field Efficiency

Throughput Capacity

Fuel Consumption