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Asian and Pacific Network for Testing of Agricultural Machinery

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Overview of ANTAM Codes on Mister cum Duster/ Combine Harvester

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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 (Combine Harvester)
- Turning Ability Test (Combine Harvester)
- Safety Inspection

General Guideline – Running inn

The manufacturer/applicant shall run-in the machine before the test, under his responsibility and in accordance with his usual instructions.

The running-in shall be carried out in collaboration with the testing authority if the manufacturer directly dealing with the testing station.

After completion of running-in, servicing, and preliminary settings should be done according to the printed literature supplied by the manufacturer/applicant.

The manufacturer/applicant may adjust fuel injection pump, governor, and fuel injector during the period the machine is prepared for tests.

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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

Combine Harvester Code Development Process- Objectives

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.

With poor quality harvesting machinery, it is about 15%

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Conditions Affects the Performance of a Combine Harvester

Crop Condition

Variety of crop, Maturity, Grain Moisture Content, Straw Moisture Content, Uniformity, Disease and Weeds, Lodging Condition, Plant Height, ground height of grain panicles, Stem Angle, Crop: Grain Ratio, G: MOG Ratio, Plant Population

Field Condition

Flatness and Regularity of Surface, Soil Type, Soil Moisture Content, Soil Hardness Properties

Machine Condition

Operating Gear Position, Engine Speed (rpm), Blower Fan Speed, Sieve Angle, Cutting Height, Actual Width of cut

Environmental Conditions

Temperature, Relative Humidity, Wind direction and wind Speed

Operator Skills

Highly trained and be familiar with the operation / The applicant might provide a skilled/licensed operator to perform testing.

ANTAM 004 – Combine Harvester

ANTAM focused to give a guideline to

- Estimate losses of the Combine harvesting operation
- Evaluate the quality of harvest
- Evaluate the working capacity of the combine harvester

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

Grains lying on the ground in the standing crop ahead of the combine before the process of harvesting operation. These losses include shattered grains, broken grains in heads or broken stems due to insects, weeds, rusts and wind.

Header Loss

Grains on the ground due to the processes that take place at the head including guiding, gathering, cutting and conveying which is the process of feeding the crop into the machine header prior to threshing.

Cylinder Loss

Unthreshed grains that is left behind by the combine head and transported to the machine's rear via a straw rack.

Separation Loss

Threshed loose grains passed out at the back of the combine with the straw, after separating and cleaning process by the sieves and walkers, and/or chain conveying process for straw.

Quality of Performance

Calculation of Quality of Harvest

- Grain Damage Percentage
- Impurity Percentage

Rate of Work – Machine Performance

Effective Field Capacity

Field Efficiency

Throughput Capacity

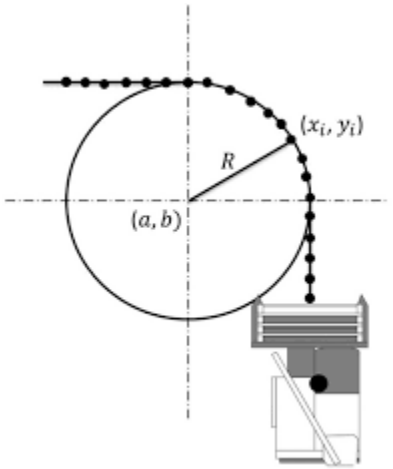
Fuel Consumption

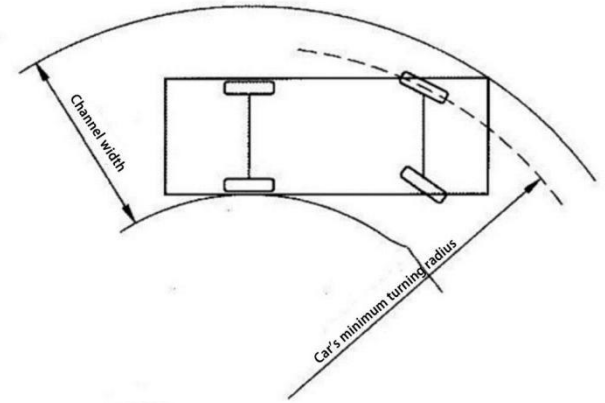
Turning Ability Test

Diameter of the minimum turning circle

Diameter of the minimum turning space required

For track type combine harvester which can turn on the spot and thus have no measurable minimum turning diameter, minimum clearance diameter only shall be reported. In case of a soft turn, radius shall be measured and reported. The speed shall maintain in a minimum speed.





Schematic diagram of car's minimum turning radius and channel width

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Thank you

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