

**Findings of the Questionnaire for the Members of the
ANTAM Technical Working Group on Combine Harvesters**

**The purpose of the Questionnaire is to draft an overview of
Combine harvesters in the Asia and Pacific Region.**

The countries below participated in the questionnaire, the data is thus limited to these national situations, but can still provides interesting perspectives for the region.

Bhutan, Cambodia, India, Malaysia, Pakistan, Philippines, Russian Federation, Republic of Korea, Sri Lanka, Viet Nam

1. How many combine harvesters are in use in your country?

- ▶ 34
- ▶ 1.500
- ▶ 6.800
- ▶ 5.334 (government procurement) + 2.000 (private)
- ▶ approx. 15.000 (no authentic data available)
- ▶ 15.000-20.000
- ▶ 54.000
- ▶ 73.000
- ▶ 90% of rice is using combine harvesters



HARVESTERS IN USE
34 - 73.000

Most countries use small size machines (with some exceptions like Malaysia and Russian Federation). It means that with small machines even fields are small (according to the answers received).

2. How many combine harvesters are sold in your country on a yearly basis?

- ▶ 45 received through grants
- ▶ 60
- ▶ 150
- ▶ 600-800
- ▶ 1.200
- ▶ 2.000-2.500
- ▶ 6.000
- ▶ 7.000-8.000
- ▶ 250.000***
- ▶ 90 % of sales are reconditioned machines imported from China, Europe, Japan




NUMBER SALES/YEAR
45 - 8.000



The rate of renewal is very interesting offering a data on the average age of machines being used. Some of the answers received may also carry on a reporting error or misunderstanding

3. What is the average size of combine harvesters being used in your country?

- ▶ Mini
- ▶ 60 - 100 hp
- ▶ 70 hp
- ▶ 70-80 hp
- ▶ 90 hp
- ▶ 90-110 hp, drive type wheel, cutting width m 3,0 - 4,5
- ▶ Large machines
- ▶ 4 row feeding (approx. 12 %), 5-6 row (approx. 82 %), 7-8 row (approx. 4 %) and hole feeding (2 %)
- ▶ 14 ft
- ▶ ACROS 500 with capacity of 18 t/h



SIZE OF HARVESTER
Mini, 60 hp, >100 hp

The provided data is in line with the previous answers stating the use of small machines in most cases

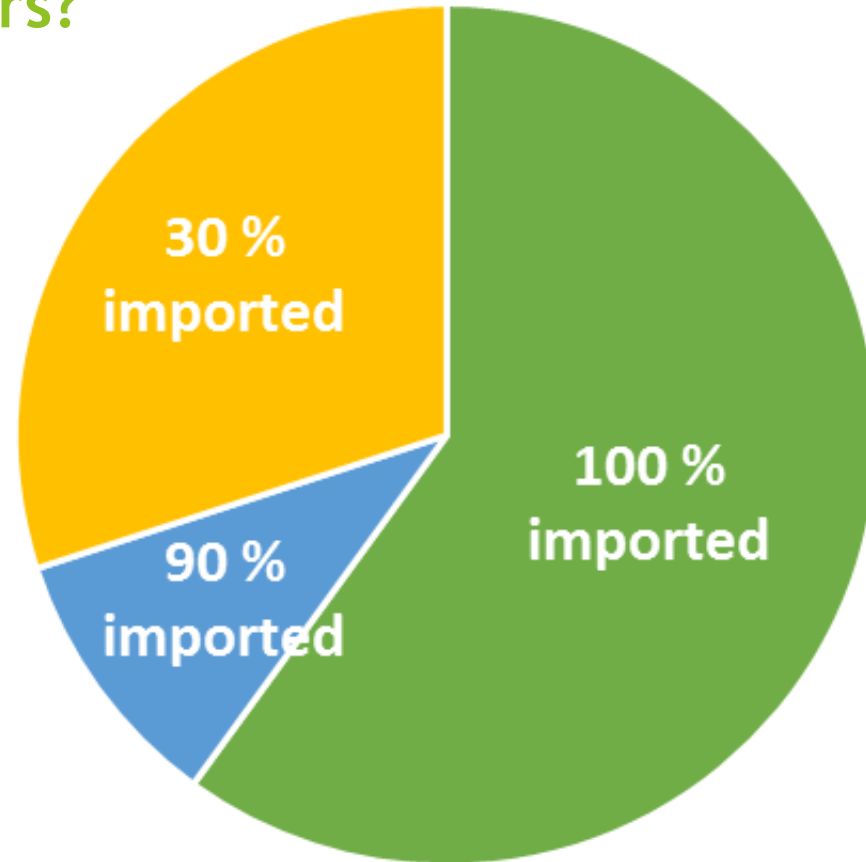
4. What are the crops for which combine harvesters are being used?

- ▶ Paddy
- ▶ Rice, corn
- ▶ Rice, maize
- ▶ Rice, maize, soybean
- ▶ Paddy, barley, soybean
- ▶ Paddy (maize and soybean)
- ▶ Wheat, rice, (with locally made kits)
- ▶ Cereals, legumes, sunflower, corn etc.
- ▶ Wheat, paddy, corn, soybean, millets and potato

**CROPS:
PADDY, WHEAT, MAIZE
LEGUMES,
SUNFLOWER**

Paddy/rice is the most important crop, but the multipurpose use of machines makes it important even for other crops (maize, corn, barley, soybean) according to the answers received.

5. What is the percentage of imported combine harvesters against nationally produced combine harvesters being used by farmers?



**RANGE imported machines (%):
30 - 100**

Machines are mostly imported except for a few countries having a national manufacturing industry as well as a testing system. Answers are an example on how having an ANTAM testing Code can help countries to import only well-performing and safe machines.

6. What are the main critical points of combine harvesters concerning performance?

- ▶ Small size of fields and sloppy and uneven field for other crops
- ▶ Harvest losses, broken grains
- ▶ Harvesting of lodged crops, harvesting losses specially in soybean, green gram and chickpea
- ▶ Type of combine - tangential or axial flow, periodical inspection and maintenance (both may influence the performance (grain losses and field capacity)
- ▶ Preference to large size machines
- ▶ Gathering width, efficiency of threshing
- ▶ Increase of efficiency in high yield fields, work with high straw moisture without losses and downtime
- ▶ Abnormal stop/blockage, grain losses, damaged grain, cleaning losses, efficiency in logged crops, low durability
- ▶ Use, safety, economic aspects

According to the answers there is a need for an ANTAM Code that might improve the overall quality of machines taking into account performances and safety even during maintenance

7. What is the average of losses during harvesting?

- ▶ From 0.7 %
- ▶ Soybean (0.5-4.0 %), gram (0.5 -2.5 %), wheat (0.1-2.5 %), paddy (0.076-2.5 %)
- ▶ No information in the field, during testing approx. 2 % barley and 3 % soybean
- ▶ 3.5% for rice, 3 % for corn
- ▶ 5 %
- ▶ 6 % or lower
- ▶ Conventional combine harvesters 5 - 10 % shattering losses, 3 - 7 % threshing losses; manual cutting 10 - 13 % shattering losses, 2 - 5 threshing losses
- ▶ 15-25 %

LOSSES
0,7 - 25 (%)

Losses are an important index that considers some agronomic aspects as well as the real efficiency of machines being used. Some data are impressive (from a positive as well as negative point of view) and show clearly that quality machines might reduce losses

8. Are there other issues, in particular concerning safety, during the use of combine harvesters? If yes, please list some of them.

- ▶ No issue of the safety, however, in-field repair and maintenance of combine harvester during peak period is a big issue for farmers
- ▶ Cabin and periodical maintenance affecting safety/quality
- ▶ Safety during field operation, repair and maintenance
- ▶ National standards provide for requirements
- ▶ No significant issues
- ▶ Training of operators



**CRITICAL SAFETY
MAINTENANCE, ROPS,
TRAINING**



Even if safety might not seem a priority for combine harvesters there are some points to be seriously considered as cabs (mostly they do not provide for any ROPS test) as well as repair/maintenance. Training of operators remains important, as well as extension.

MAIN OUTCOMES OF THE SURVEY

- 1. There is the need for a common Code on Combine Harvesters
In order to assure better machines in terms of performances
and safety.**
- 2. Different size of machines are being used according to the
different way to manage crops and plots size is a key issue.**
- 3. The renewal rate in countries is different and might affect
the timing for the introduction of certified machines.**

Thank you !

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