



“Expert Group Meeting (EGM): Development of an economically, environmentally and socially sustainable agricultural machinery and farm implements testing network for farmers in the Asia – Pacific Region”

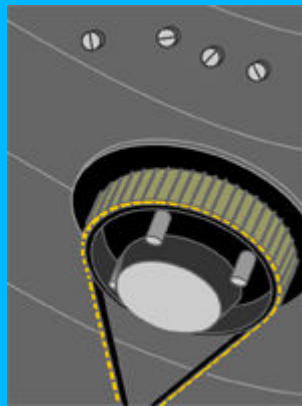
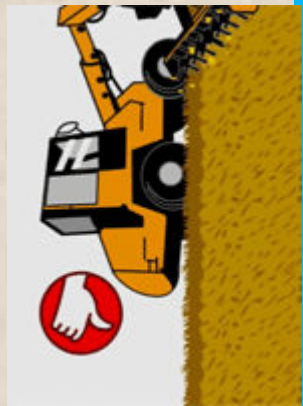
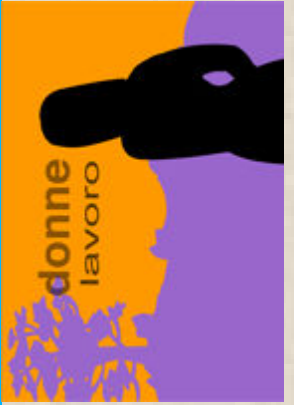
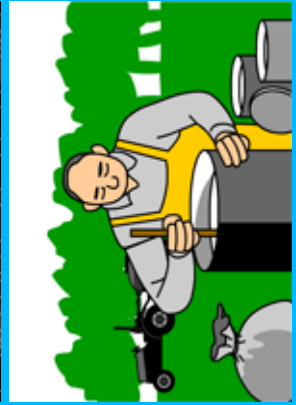
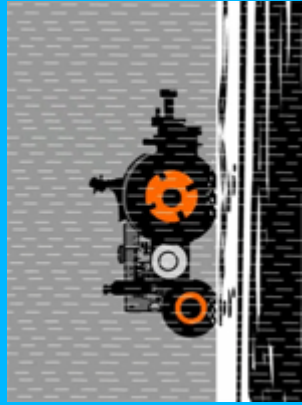
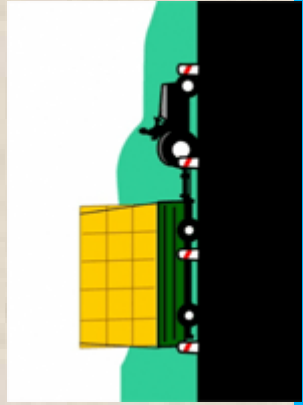
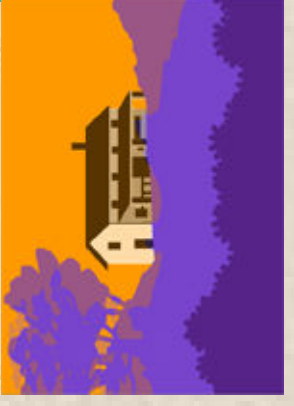
Laying a foundation for testing agricultural machinery and farm implements: The European Network for Testing Agricultural Machinery

**Sandro Liberatori
Bangkok, July 2011**



This presentation gives a quick view on the following items:

- 1 - importance of tested and certified machines;
- 2 - status of the art in the European Union;
- 3 - Italian experience of Enama as a way to promote synergies for the industry, the trade and the use of agricultural machines;
- 4 – The ENTAM Network;
- 5 - policies and strategies for the future (development of safety of the operators, the environment and the agricultural production – food - and the establishment of good practices for the co-operation among countries according to international regulations for trade).



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1 - Importance of tested and certified machines.

In first-party certification, an individual or organization providing the good or service offers assurance that it meets certain claims.

In second-party certification, an association to which the individual or organization belongs provides the assurance.

Third-party certification involves an independent assessment declaring that specified requirements pertaining to a product, person, process or management system have been met.



2 - Status of the art in the European Union.

Road Homologation: machines need an official homologation to drive on public roads;

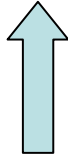
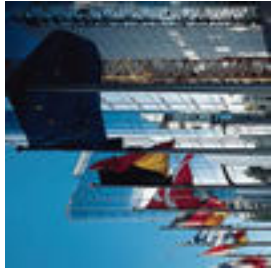
Machine Directive: contains the requirements for a machine to be sold in the EU market;

OECD: provides for an international scheme for certification with technical requirements and testing methodologies of tractors;

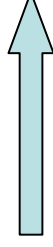
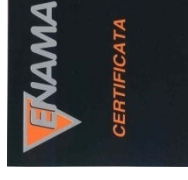
Standard Organisations: public (EN) or private (ISO) organisations providing for technical requirements and specification.



3 - Italian experience of Enama as a way to promote synergies for the industry, the trade and the use of agricultural machines.



Added value on the product



NOT TESTED

TESTED



3 - Italian experience of Enama as a way to promote synergies for the industry, the trade and the use of agricultural machines.

ENAMA has developed 2 types of “voluntary certification” of new machines:

- Certification of performances + safety



- Certification of safety



And a service of fulfilment of safety requirements of used machines will start at the end of 2006.

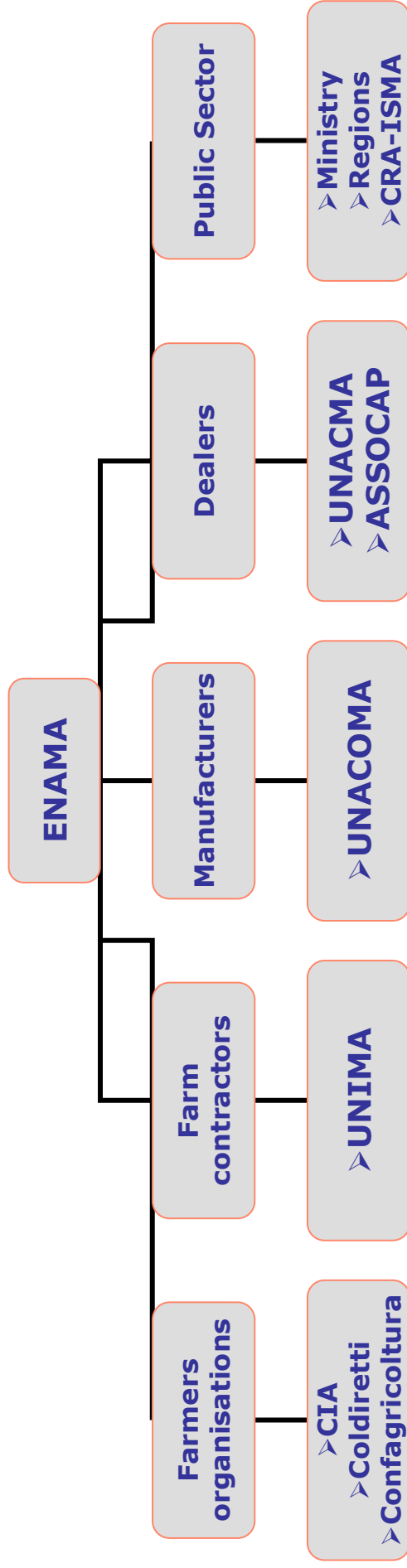


3 - Italian experience of Enama as a way to promote synergies for the industry, the trade and the use of agricultural machines.

At the end of 2010 approx. 1100 machines received the Enama certification.



3 - Italian experience of Enama as a way to promote synergies for the industry, the trade and the use of agricultural machines.



4 – The ENTAM Network.



ENTAM acts through TWG where all Members have an expert providing for technical methodologies that are approved at international level. Methodologies are based on international standards.

4 – The ENTAM Network.



Applying for and obtaining the ENTAM mark on the reports means that the manufacturer operates in an international market and it is ensured that all appropriate standards have been used giving the farmer an effective tool for the best choice when buying machines.

4 – The ENTAM Network.



ENTAM - Test Report



Sprayer type: Air Assisted Sprayer

Trade mark: [Redacted]

Model: [Redacted]

Manufacturer: [Redacted]

Test report: 05/105

Novembre 2002 / April 2009

Assessment table

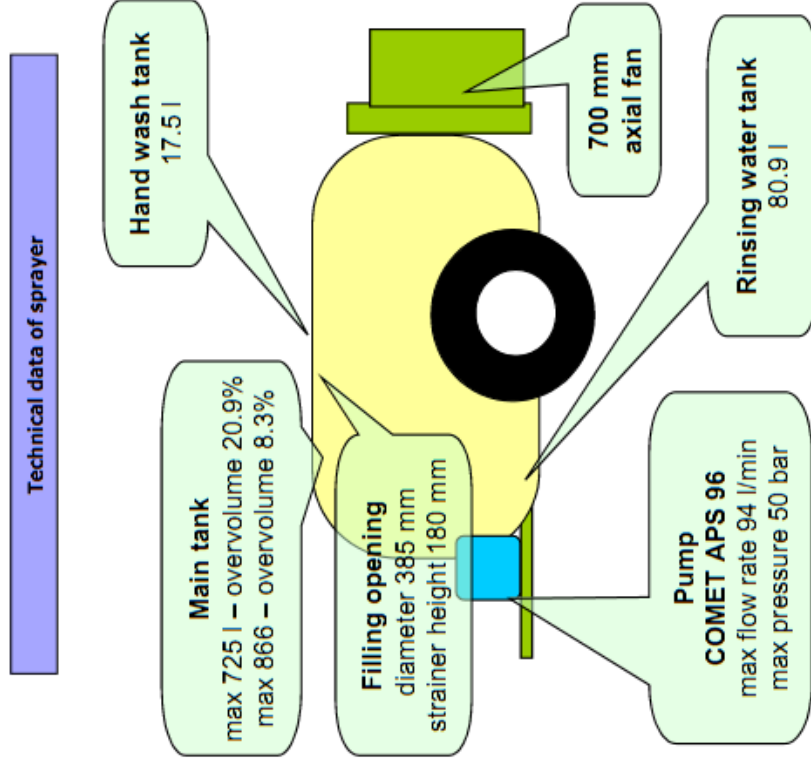
No.	Contents	Assessment	
		600 l	800 l
1	Spray tank surface roughness	xxx	xxx
2	Spray tank over volume	xxx	xx
3	Volume of total residual	xx	xx
4	Spray tank contents gauge up to 20% Filling	x	xx
5	Spray tank contents gauge from 20% Filling	xx	xx
6	Agitation system (deviation of even solution)	xx	xx
7	Pressure drop between manometer and nozzle		xxx
8	Deviation of single nozzle output from table		xxx
9	Accuracy of pressure gauge		xxx
10	Liquid flow rate left/right		xxx
11	Rinsing water tank	xx	x

Note: The assessment keys are listed below. All detailed results are in the following test report.

No.	unit	x	xx	xxx	No.	unit	x	xx	xxx
1	µm	>70-100	30-70	<30	7	%	>7-10	3-7	<3
2	%	5-8	>8-12	>12	8	%	>7-10	3-7	<3
3	of allow.value	>2/3-3/3	1/3-2/3	<1/3	9	bar	>0.10-0.20	>0.05-0.10	0.00-0.05
4	%	7.5-5.0	5.0-2.5	<2.5	10	%	4-5	2-4	0-4.2
5	%	5.0-4.0	<4.0-2.0	<2.0	11	% of nominal volume	10-12	>12-14	>14
6	%	>10-15	5-10	<5					

Free download of the complete test report under: www.ENTAM.net
 Or: www.ENAWWA.it

4 – The ENTAM Network.



Dimensions and weights

Total length:	3000 mm
Height:	1300 mm
Transportation width:	1140 mm
Unloaded weight	335 kg

Description of sprayer

The machine is a trailed air-assisted sprayer for use on vineyard crops.

Liquid is sprayed under pressure, while drops are conveyed via an airflow generated by an axial fan. The distribution system consists of an axial fan with the nozzles radiating out from inside the air outlet section. The speed of rotation of the fan may be modified via a 2-speed gear (+ disengagement).

The machine frame is made out of galvanised steel, the main and auxiliary tanks are made out of polyethylene. The main tank is equipped with two content indicators, one on the front right and the other on the left side. The liquid level is indicated by a transparent external tube. On top of the machine there is the auxiliary tank for cleaning the distribution circuit, while the auxiliary tank for the operator is in the centre front.

The diaphragm pump is located at the front of the machine and is operated by the PTO unit via the cardan shaft.

The hydraulic circuit is of the constant pressure type. The machine can be endowed with manual controls positioned on a mobile unit that can be placed near the driver's seat, or with electrical controls.

The machine's pressure gauge has a diameter of 100 mm and is in the precision class K1 1.6 in the 0+15 bar interval; in the same interval, covering an angle of the face of 225°, there are 0.2 bar intervals. The remainder of the gauge (15+60 bar) covers an arc of 90° and is in 5.0 bar intervals.

Each nozzle can be closed singly, and is endowed with an membrane antidrip device.

The filtering system consists of a filter fitted to the pump suction unit (that can be inspected even when the tank is full) and one filter located on the nozzle delivery pipes; there is also a strainer filter in the filling hole.

4 – The ENTAM Network.



Fan unit



Flow control



Manual control unit



Electrical control unit

Sizes and weights

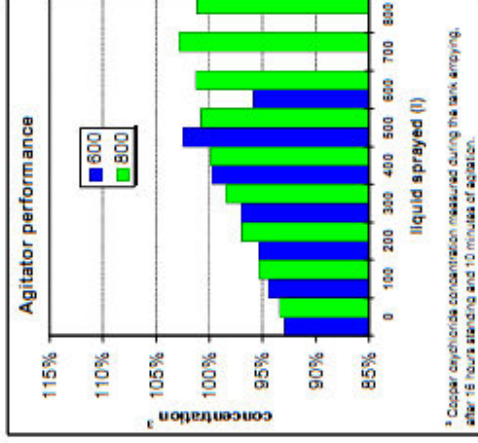
extension	height (mm)	width (mm)	max height (mm)	empty weight (kg)	total weight (kg)
a	3000	1140	1300	335	1160
b	3000	1140	1300	335	1300

Main results of functional tests

Residual (l)	
in the tank	
horizontal	--
with back flow - with agitation	--
with back flow - without agitation	1.10
without back flow - without agitation	2.20
inclined to right	2.00
inclined to left	4.70
inclined to rear	4.30
inclined to front	5.20
in the hoses: dilutable	9.90
dilutable residual ¹	0.80
in the hoses: non dilutable ²	10.70
total residual	

¹ Liquid that can flow back into the main tank and can be diluted by the washing tank contents

² Liquid that not can flow back into the main tank



³ Copper sulphate concentration measured during the tank emptying, after 15 hours standing and 10 minutes of agitation.

Pressure gauge

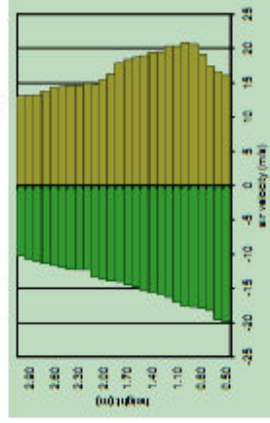
diameter	100 mm
distance between mark	0.2 bar
accuracy	0.04 bar

Fan

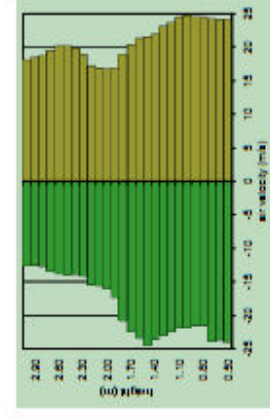
flow rate	power needed
I 33170 m ³ /h	16.9 kW
II 38770 m ³ /h	22.2 kW

Trend 700 mm

Air velocity measured 0.50 m from outlet



Gear I



Gear II

4 – The ENTAM Network.



Testing of Safety

The machine is endowed with CE marking, an identification plate, safety pictograms, an instruction handbook and an EC manufacturer's declaration of conformity.

The implement meets the requirements of Enama safety regulations cat. 05.05 – Crop protection machines: Trailed boom sprayers - rev. 2.4 of 1/04/2008, containing the following harmonised standards and technical specifications: UNI EN 907: 1998, UNI EN 1553: 2001, ISO 11684: 1995. The relative documentation has been filed.

Explanation on testing

Testing takes place according to the Technical Instructions for ENTAM-Tests of Air-Assisted Sprayers (Rel. 1 and Rel. 3). This procedure was developed by the competent testing authorities of the European countries participating in ENTAM and is based on the CEN standard EN 12761 "Agricultural and forestry machinery – Plant protection equipment for the application of plant protection products and liquid fertilizers". This test is only a technical performance test which takes place without an accompanying field test.

The test results apply only to the tested appurtenances of the sprayer. Statements on the behaviour of the sprayer with different appurtenances cannot be derived from this results.

Responsibility and recognition



Ente Nazionale
Meccanizzazione Agricola

Performing competent authority:

Crop Protection Technology DEIAFA - meccanica
Via L. da Vinci, 44
I-10095 Grugliasco (TO)

This test is recognized by the ENTAM members:



JKI - Julius Kühn -Institut (formerly BBA) - GERMANY
n°ENT-1-05/09



BLT - Bundesanstalt für Landtechnik Federal Institute of Agricultural
Engineering – AUSTRIA
n°. 037/09



CEMAGREF - Institut de recherche pour l'ingénierie de l'agriculture
et de l'environnement – FRANCE n° CEMAGREF/ENTAM/09/009



DIAS - Danmarks Jordbrugsforskning Danish Institute of Agricultural
Sciences – DENMARK
n° 948-5a-34



HIAE - Hungarian Institute of Agricultural Engineering
– HUNGARY
n°. 1-3/2006



EMA - Estación de Mecánica Agrícola – SPAIN



n° 06/03/6

FAT - Swiss Federal Research Station for Agricultural Economics
and Engineering – SWITZERLAND
n°. 1-05.03



N.AG.RE.F. - National Agricultural Research Foundation – GREECE
n° .AE/29/01/ZZ



PIMR - Industrial Institute of Agricultural Engineering - POLAND
n° . PIMR-2/ENTAM/07



5 – Policies and strategies for the future.

It is the “conformity assurance” of products / processes to Technical Regulations (mandatory certification) or to Technical Standards or equivalent documents (voluntary certification).

therefore

the voluntary certification is intended to assess conformity of products to the requirements established by voluntary Technical Standards or equivalent normative documents. They are produced with the consensus of all interested parties.

and

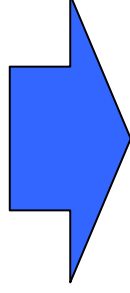
it guarantees the manufacturer, the dealer and the farmer that they are producing, selling and using a high value and safe machine;

it helps manufacturers to improve their products.

5 – Policies and strategies for the future.

Future steps to be developed gradually:

- 1 – setting up of methodologies with the consensus of all involved parties (they should involve safety of the operator of the environment and agricultural production);
- 2 – setting up of testing facilities;
- 3 – setting up of regulations and policies that will favour tested machines.



Benefit for the operator's safety, the environment and productions



Reduction of social costs for the health and environment and better prices for agricultural products



**THE PRICE OF A PRODUCT IS A POWERFUL TOOL BUT NOT
ENOUGH TO BE ON A MARKET WERE ACTORS SEEK FOR
GLOBAL QUALITY**

THEN

**PLAN AND PRODUCE MACHINES ACCORDING TO THE NEEDS
OF THE CUSTOMER, THE ENVIRONMENT, THE SAFETY, THE
ETHICAL MODELS etc. TOGETHER WITH CO - OPERATION
IS THE PRESCRIPTION TO GROW IN A MARKET**



Good Government

Bad Government



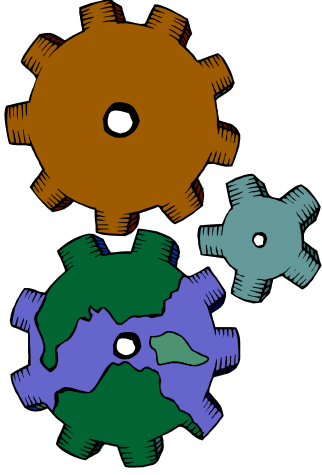
Ambrogio Lorenzetti – 14th century



SOME TOPICS FOR THE DISCUSSION

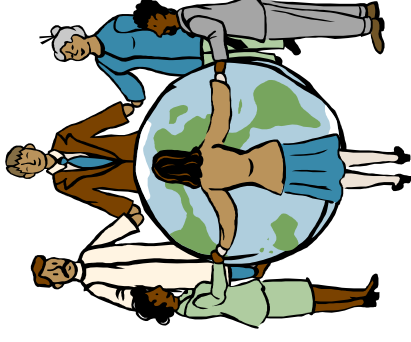
- 1 ORGANISATION OF THE ANTAM NETWORK: relation with Governments, role of the existing testing stations, interest of manufacturers and farmers, costs, ...**
- 2 HOW TO START: identification of key sectors (tractors and sprayers ?), methodologies, ...**
- 3 ROLE OF COUNTRIES: benefits for countries producing and importing machines, ...**

ENAWWA



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www.enama.it



Thank you and special thanks to the organisers of the Meeting.