Control testing of sprayers and air assisted sprayers in Serbia - In anticipation of new legislation

Dr Aleksandar Sedlar
BSc Snežana Savčić Petrić
MScVladimir Višacki
Dr Rajko Bugarin
BSc Petar Radić
### SPRAYERS IN USE IN EU (source: Spise)

<table>
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<td><strong>878820</strong></td>
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**Census of Agriculture in 2012**

- **22 sprayer producer in Serbia**
- Low quality
- Low price: 400-600 €
What we have in Serbia?
Obligatory inspection of sprayers and air assisted sprayers since 1999.

Policy on rendering services in plant protection
Authorized body's: Faculty of Agriculture Novi Sad and Faculty of Agriculture Zemun

Low on "Plant Protection Products" – article 51 (2008)

Since 2006. Faculty of Agriculture, University of Novi Sad make sprayer inspection. Every year Laboratory of control techniques for pesticide application (LTAP) makes around 50 sprayer inspection. It is equipped with manotester, pump tester, spray scanner, nozzle tester for sprayers and nozzle tester for air assistance sprayers and vertical sprayer patternator.

2009.

This activities of Faculty of Agriculture Novi Sad and Plant protection Directorate were focused on establishing a system for control testing of sprayer and air assisted sprayers on the territory of the Republic of Serbia.

What we need to start with obligatory inspection?
• EQUIPMENT AND WELL TRAINING INSPECTORS.

• PROPOSITION OF FUTURE INSPECTION SPRAYERS AND AIR ASSISTED SPRAYERS IN USE ACCORDING EN 13790 or ISO 16122.
Information about inspections in other countries.
Using of other experience and mistake in aim of proper sprayer inspection establishment.

Serbia apply for IPA Twinning Project
2014. - Project SR12 / IB / AG / 01 "Implementation of sustainable use of plant protection products and establishing systems for regular technical inspection of pesticide application equipment"

Plant protection Directorate of the Ministry of Agriculture, Forestry, Watermanagement and Environment and Twining Partner Italy’s Ministry of Agricultural, Food and Forestry Policies.

Thanks to Faculty of Agriculture activities and the activities carried out through the IPA Twinning Project SR12 / IB / AG / 01 (feb. 2014 – feb. 2017) was created all the prerequisites for the start of mandatory control testing in Serbia.

Developing system for sprayer inspection in Serbia - Forming the regional management

The whole system is based on a 31 regional station for control testing of machines for pesticides application and 2 central bodies who are responsible for control and system organization.

Central bodies are:
• Faculty of Agriculture, University of Novi Sad and
• Faculty of Agriculture, University of Beograd.
Regional station are:
• Agricultural schools,
• Agricultural extension services,
• Agricultural high schools,
• Agricultural Institutes.
• Faculty of Agriculture, University of Kragujevac.

Leader of inspection will be Ministry of Agriculture R. Serbia – Plant protection Directorate.

All stations will be controlled by the two Faculties. These are the Faculty of Agriculture, University of Novi Sad and the Faculty of Agriculture, University of Belgrade.

Both of these faculties have the equipment for control testing and additional equipment to verify equipment operation accuracy. Also, these institutions will carry out an annual check of each station. All data, reports will be stored in these two control bodies. Each regulatory body have its own area. So half stations will be controlled and monitored by a single body and the other half by another body.

The optimal number of stations for Serbia is 100, because of very large number of tractor sprayer and air assisted sprayers (approximately 150,000), as well as their high average age.
Organization of sprayer inspection in Serbia

**The Ministry of Agriculture, Forestry, Watermanagement and Environment**
**Plant protection Directorate**

**Scope**: The entire territory of the Republic of Serbia.

**Responsibilities**: Certification of quality surveyed machinery of the Central and district laboratories, and on the basis of annual requisition central laboratory. Analysis reports annually sent to the Central Laboratory.

**Central Laboratory of control techniques for pesticide application**
**Faculty of Agriculture, University of Novi Sad**
**Department of Agricultural Engineering**

- Inspection of regional laboratories
- Issuance of Certification for machines past inspection
- Writing annual reports
- Administration of inspections conducted training and issuing certificate to operate regional laboratories for each cycle control (each 3 years from the 2020)

**Central Laboratory of control techniques for pesticide application**
**Faculty of Agriculture, University of Beograd**
**Department of Agricultural Engineering**

- Inspection of regional laboratories
- Issuance of Certification for machines past inspection
- Writing annual reports
- Administration of inspections conducted training and issuing certificate to operate regional laboratories for each cycle control (each 3 years from the 2020)

**31 regional laboratories for sprayers inspection**

- Sprayer inspection in thher region
- Sending control plan Central laboratory at the beginning of each year and the acquisition of certificates for sprayer which pased inspection
- Participation in trainings organized by the Central Laboratory in order to train the people
- Calibration of sprayer
In December 2014, the equipment supplied to all stations. Regional Stations are equipped with **manotester**, **pump tester**, **spray scanner**, **nozzle tester for sprayers and nozzle tester for air assistance sprayers**, software (AAMS-Salvarani). The equipment is contained hooks with manometers for measuring the pressure drop at the ends of the boom sections. The equipment is at each station entrusted to graduate agricultural engineering who have full-time job in the institution which received the equipment.

Central Laboratory in Belgrade are equipped with **manotester**, **pump tester**, **spray scanner**, **nozzle tester for sprayers and nozzle tester for air assistance sprayers**, **vertical sprayer patternator** and software. Also it is equipped with **reference manometer calibration set**, **flow-meter calibration set and electronic patternator calibration set**. Central Laboratory in Novi Sad is equipped with **reference manometer calibration set**, **flow-meter calibration set**, **electronic patternator calibration set and software**.
MLAĐENOVAC JE OBELEŽEN ZELENOM BOJOM JER JE SAM KUPIO OPREMУ. Završio je sad i obuku.
No. of sprayers per regional stations to be inspect
Future inspectors are graduate Agricultural engineers who finished Agricultural Faculty, course: Agricultural engineering. Engineers were trained in two basic courses (2010. and 2011.) and two refreshing course (2014. and 2015.). Another refreshing course was conducted in December 2015. by experts in the project - prof. Balsari Paolo, prof. Emilio Gil and Jaco Kole. Training contained all aspects of control sprayer testing and air assisted sprayers and followed by tutorials made for these purposes only.

First and second basic course
Panonija (B. Topola) 28. 02. and 01. 03. 2011.
Refreshing course 10. 11. 2014.
Refreshing course December 2015.
Faculty of Agriculture Novi Sad,
Educational development center techniques for pesticide application (ERTAP)
Enjoy the benefits of a well-inspected sprayer!

www.inspectionserbia.com
Исправност машине
Дистрибуција
Мање резидуа
Смањење заносења - дрифта
Безбедност руковаоца
Смањење заносења - дрифта
Проток
Ефективност
Исправност машине
Притиса
Дистрибуција
Управа за заштиту биља
КОНТРОЛА ПРСКАЛИЦА И ОРОШИВАЧА У СРБИЈИ
ПОЧНИ ВЕЋ САДА!
Република Србија
Министарство пољопривреде и заштите животне средине
Управа за заштиту биља
У Републици Србији (РС) контрола почиње од 2017. године.
2015. и 2016. године контрола у РС је добровољна и бесплатна.
Погледај више на:
www.uzb.minpolj.gov.rs


За шта, шта, како, када и ко?
Inspection of sprayers in use became mandatory in EU after publication of European Directive of Sustainable use of Pesticides. It will be mandatory in Serbia from xxxx.

Aspects to be inspected (according Annex II of SUD)

- Power transmission parts
- Pump
- Agitation
- Spray liquid tank
- Measuring systems, regulation
- Pipes and hoses
- Filtering
- Spray boom
- Nozzles
- Distribution
- Blower

Benefits

The inspection will cover all aspects important to achieve a high level of safety and protection of human health and the environment. It also represents important benefits for farmers, able to reduce the amount of pesticide, produce a better food and to guarantee the sustainability.

Who and when

Ministry of Agriculture in Serbia has already arranged XX inspection workshops, disseminated all around the country, managed by well trained professionals and equipped with time latest technology, able to offer this service to all the Serbian farmers.

Mandatory inspections program in Serbia will start in XXXX.
### МЕСТО

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### ЗАШТО?
Безбедност, заштита здравља људи и животне средине.

### ШТА СЕ КОНТРОЛИШЕ?
- Делови за пренос снаге
- Цеви и црева
- Пумпа
- Филтери
- Мешалица
- Крила
- Резервоар(и)
- Распрскивачи
- Мерно-регулативна јединица
- Манометар

### КО И КАДА?
Управа за заштиту биља Министарства пољопривреде и заштите животне средине успоставила систем контроле прскалица и орошавача. Будуће контролне станице (31) опремљене су са најновијим технологијом за контролу. Станице су распоређене на целој територији РС. Њима ће руководити добро обучени контролори (дип. инжењери пољопривредне технике), спрмен да понуде услуге контроле прскалица и орошавача пољопривредницима РС.

### ЕФЕКТИ
- ЕКОНОМСКИ – Мања потреба СЗБ. Безбедна храна и хране за животиње. Одржива производња. Конкурентност.
- ЕКОЛОШКИ – Чистија животна средина.
- ЗДРАВСТВЕНИ – Мање резидуа у храни.

**Позовите обучене контролоре ВСГ ГАУ. Они ће доћи до вас!**
Manual for the implementation of the control sprayer testing and assisted sprayers intended for all certified controllers that implement control testing in cells that have the equipment. It contains all the steps of the test in accordance with ISO 16122 to 2.3: 2015. It contains a total of 53 A4 pages with about 90 images.
It is written in accordance with the engineering vocabulary to avoid any problems during implementation. Exactly describes functionality and purpose of the element, subassembly or assembly with the corresponding photograph in order to simplify and show control testing process itself. Additionally it was added a part of what is tested and how. This manual provides to all that in a very fast and easy way to reach the requested information.

It is divided into two large sections with several subsections that seeking to be efficient and fast. The limit values are unambiguously. According to the manual, controller can perform overall control without falling into a dilemma.
FIRST STEP IN PROCESS SPRAYERS INSPECTION IMPLEMENTATION

Faculty of Agriculture, Novi Sad  
Department of Agriculture Engineering  
ERTAP

Education
Voluntary inspection + Calibration

Horgoš 18. 02. 2016.
Senta 03. 03. 2016.
2016.
XLII workshops, congress....

Plandište 14. 03. 2016.
What is in this moment of implantation control testing in Serbia needed is an urgent adoption of a new law on "Plant Protection Products", as well as supporting acts, with emphasis Rules on control testing, in order to implement the system in practice.

The plan is to start mandatory control testing during 2017.
THANKS FOR YOURS
ATTENTION