The SPISE Advice for functional inspection of seed treatment equipment

Hans-Jürgen Osteroth, JKI
Eskil Nilsson, Visavi
SPISE Advice for functional inspection of seed treatment equipment

- Actual Situation (in Germany)
- Which kind of Seed Treatment Equipment (STE) we find currently on the market
- How to inspect seed treatment equipment and what is needed
- SPICE Advice with requirements for STE
- Next steps
SPISE Advice for functional inspection of seed treatment equipment

Actual situation (in Germany)

➢ The inspection for seed treatment equipment (STE) must be introduced before the end of the year 2020 – German „ArtikelVerordnung“

➢ Discussion of how and what to inspect is ongoing with the requirements for STE on the basis of the SPISE Advice!

➢ For the moment no available standards neither for brand new STE nor for STE in use - but we have the SPICE   Advice available

➢ Both mobile STE (rarely) and stationary equipment (mostly) can be found

➢ The equipment can be located - on farms,
  - on the field (mobile on potato planters),
  - at contractors,
  - in warehouses,
  - in laboratories of chemical or seed breeding companies
Discussion about requirements for inspection of ST E start at the end of 2017 - also in SPISE the discussion starts

Many experts were involved:
- STE – manufacturer (Niklas, SUET, Petkus, SATEC)
- Chemical Industry (Bayer, BASF, Syngenta, Adama)
- Seed Association
- Official German and Swedish experts (most are active in SPISE)

Last version of SPISE Advice from August 2018 is now available

Some of the open questions from 2017 are answered now:
Inspection staff from the Chemical industry (BAYER, BASF, SYNGENTA) check already for many years STE of customers, they will inspect the machines in the future.
Other Association personel will do it also.
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Some of the open questions from 2017 are answered now:

All measurements will be done with water, so no PPP will be needed (better for environmental protection and work safety of the operator)

Check of the dose rate will be optional. In the case of testing, there must be sufficient seed available

Next steps (for GERMANY):

- Official publication of the inspection requirements (September 2018)
- Implementation of the new requirements into the inspection procedure
- Training of inspection personell in the next year (2019)
- First official inspection at the beginning of 2020
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Which devices can be found at the moment?

Mobile STE

- for potatoes
- for cereals

Pictures: Manufacturer, Hans-Jürgen Osteroth
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Which devices can be found at the moment?

Is this equipment also a mobile STE? (concrete mixer)

Manufacturer say it is usable for seed treatment!

Pictures: Manufacturer
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Which devices can be found at the moment?

STE for potatoes on farms

Pictures: Eskil Nilsson, Hans-Jürgen Osteroth

Institute for Application Technique in Plant Protection, Messeweg 11-12, 38104 Braunschweig - GERMANY

www.julius-kuehn.de
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Which devices can be found at the moment?

STE at contractors

Mobile STE

Seed treatment equipment

Seed cleaning device

Pictures: Eskil Nilsson, H.-J. Osteroth, Manufacturer
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Which devices can be found at the moment?

STE for laboratories or chemical industry

STE in industry often work with more than 20 t/h. The seed treatment equipment is often located over more than one floor!

Work safety is important!
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How to inspect seed treatment equipment and what is needed

- inspection staff must be trained in STE

- inspection take place on company ground / farms / contractors
  = Inspection staff and equipment must be transportable

- which equipment is needed?
  easy: balance, flowmeter, stopwatch, pressure gauge, measuring cylinders
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SPISE Advice - General
What is an STE and which equipment belongs to the STE?

STE: All parts which coming into direct contact with the treatment liquid such e.g.
- hoses,
- lines and pumps from the PPP-container to the spray and mixing chamber,
- the treatment zone,
- post-mixing devices,
- seed and liquid dosing systems and
- provided mixing container.
SPISE Advice - General

What is an STE and which equipment belongs to the STE?

Not included:
- Parts of facilities before or after the seed treatment process
- Fans for aspirators
- Augers or conveyers for transport of seed
- Balances for weighing seeds packages
- Storage for PPP

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SPISE Advice - General

Definition of different seed treatment equipment:

- Continuous treatment
- Semistationary equipment
- Continuous treatment in auger
- Batch seed treatment
- Mobile spraying on seeds
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SPISE Advice - General

Not regarded in SPISE Advice:

Bandspraying according to EN-ISO 16122-2 when nozzles are spraying on potatoes laying in soil or on soil.

Picture: H.-J. Osteroth
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SPISE Advice - General

Place for inspection and inspection material:

The location avoiding any risk of pollution of environment, sprayed/leaked liquid shall be collected and transferred back into the equipment.

Material: All inspection measurements shall be carried out without seed and with water as substitute for PPP.

Provided that the dosage should still be checked with seed and PPP: It must be possible to collect the material separately and without treating any seed.

Picture: H.-J. Osteroth
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SPISE Advice – 1. Pre-Inspection

First look at the STE:
Heavy contamination?
Incrustations and dirt?

STE shall be cleaned

No unintended discharge of PPP – place for the container

Power transmission parts shall be protected to necessary level. Hydraulic pipes and hoses without leakage, electrical power transmission free from bruises and cracks

Pictures: H.-J. Osteroth
SPISE Advice – 1. Pre-Inspection

Structural parts and framework shall be in good condition (deformations, corrosion or other defects)

If present: Lockable foldable parts for tractor mounted STE must be in good condition

Blower/fan if provided: no blades missing, no mechanical deformation, guarding present? no vibrations?
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What to inspect every three years?

2. Requirements

- Static leaks: Pump not running and visual inspection of pump, tank, hoses and lines.

- Pump leakage while pump is running (with water) – function test

Pictures: JKI
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What to inspect every three years?

2. Requirements
   - Pump:
     Capacity shall be suited to the needs of equipment
     
     if air chamber is present: air pressure between 30 to 70 % of the working pressure
     
     - Tank (mixing tank or tank for spray liquid)
     Spray mix agitation (if a tank or mixing container is present) – clearly visible agitation with 50 % filled tank
     
     Tank – pressure compensation. Lid well adapted and in good condition, no deformations, holes etc.
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What to inspect every three years?

2. Requirements

- **Mixing device** for continuous STE:
  The state of the mixing device shall be in good condition for a correct function

Picture: Eskil Nilsson
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What to inspect every three years?

2. Requirements

- **Cleaning:**
  cleaning device for product container shall work properly,

  tank cleaning device for external cleaning, internal cleaning and induction hopper shall work properly

Picture: H.-J. Osteroth
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What to inspect every three years?

2. Requirements

- Measuring systems, controls and regulation systems

   It shall be possible to collect the operated seeds and PPP independently to check the dose rate for continuous STE the flow of seed or PPP shall automatically stop if one or the other is interrupted

   all controls shall operate reliably and be able to be operated from the operators position, instrument displays shall be readable

Pictures. JKI
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What to inspect every three years?

2. Requirements

- Pressure indicator (if it will be used for the dosing of PPP):

  clearly readable from operators position,
  Diameter 63 mm,
  Scale 0.2 bar less than 5 bar,
  Scale 1.0 bar between 5 and 20 bar,
  Accuracy +/- 0.2 bar < 2.0 bar,
  Accuracy +/- 10 % >2.0 bar,

  All devices for adjusting pressure or flow shall maintain a constant pressure or flow (tolerance 10 % at constant settings)
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What to inspect every three years?

2. Requirements

- Lines (pipes and hoses)

No excessive bending and abrasion through contact with surrounding surfaces.

No cuts or cracks.

Hoses and pipes shall be mounted in a way to avoid blockage or damages.
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What to inspect every three years?

2. Requirements

- Filtering
  
  Filters, if present, shall be in good condition,

  Meshsize shall correspond with the used nozzles,

  Inserts shall be changeable,
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What to inspect every three years?

2. Requirements

- Application units

  Holders for atomizers shall be stable in all directions, no movement and not be bent

  No unintentionally changing of the position and spray direction possible

  Flow of nozzles must be collectable

  The function of atomizer shall not be affected by dirt or encrustations

  No dripping after 5 seconds of liquid has been shut off
What to inspect every three years?

2. Requirements

- **Flowrate**

Nominal nozzle flow rate known: flow rate of each nozzle shall not exceed 10% of the nominal flow rate at the working pressure.

Nominal nozzle flow rate unknown: flow rate of a single nozzle shall not exceed +/- 10% of the average flow rate of mounted nozzles. In case of only one nozzle, a measurement is performed at a normally used setting to give the operator information about it.
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What to inspect every three years?

2. Requirements

- **Chemical dosing system:**
  Dosing systems shall not leak;
  have no backflow leakage through the chemical pathway or water inlet;
  setting of dose adjustment shall be clearly readable.

- **Other electronic devices and other equipment** shall work properly;
  not be influenced by wear and damages.

Picture: JKI
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Not to be inspected with the proposed requirements:

Quality of treated seed

- PPP on the single corn (µg/corn)
- PPP on a sample (mg / 50 g seed)
- The amount of dust in the seed
- Dosage with PPP / Water / Seed (may be optional)
- Proper storage of PPP

Pictures: JKI
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Next steps:

• Spise Advice for Seed Treatment Equipment (STE) must be published
• Requirements for STE in use in the Memberstates must be worked out
• Inspection stuff must be trained
• SPISE ADVICE for STE is a good basis for a EN-standard
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Thank you for your attention!

Mail: hans-juergen.osteroth@julius-kuehn.de
Tel.: 0049-531-2993658