



Mycotoxins management Traders' operations

**Mycotoxins Forum
Brussels, 5-6 September 2013**



Outline

- Cereal traders: role in the supply chain
- Characteristics of the bulk grains handling system
- Mycotoxins : regulatory environment
- Mycotoxins management: traders' operations
- Conclusions and suggestions



Cereal traders: Role in the supply chain



Role of grain traders in the supply chain

- **Grain collectors and international traders intervene after the grain is harvested**
 - Sample and analyse the crops at collection
 - Dry (if necessary), clean and protect from insect infestations to **ensure compliance to both regulatory and commercial requirements**
- Grain traders are submitted to a complex and strict regulatory system both at EU and national level
 - They apply the due diligence to comply with existing legislation on food and feed safety



Role of grain traders in the supply chain

Food & Feed chain COCERAL representation



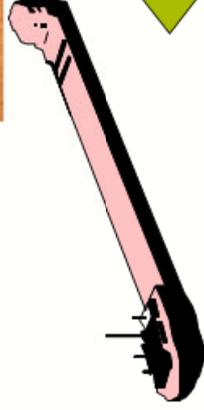
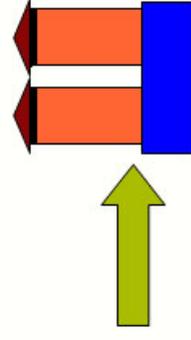


Characteristics of the bulk handling system

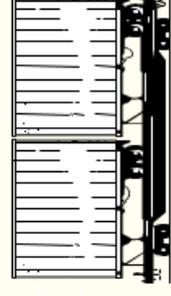
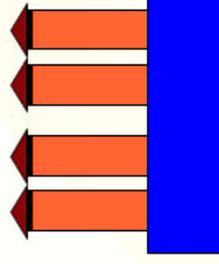
Collection, storage, trade, transport & processing of commodities are characterized by aggregation of many small consignments into large, uniform bulk shipments



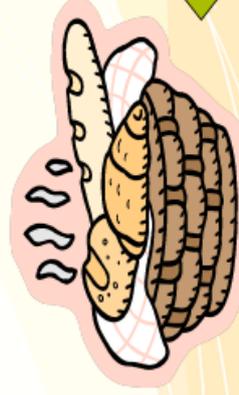
Bulk commodity movement



Export



Processing or Feeding



Customer

Processing or Feeding

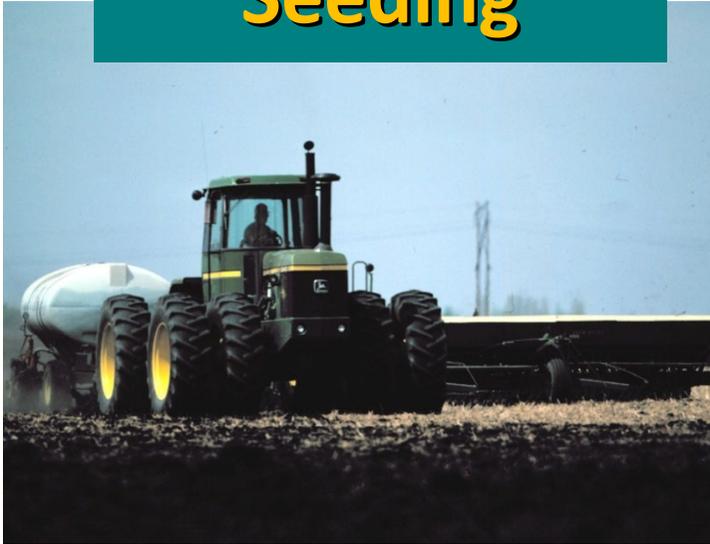




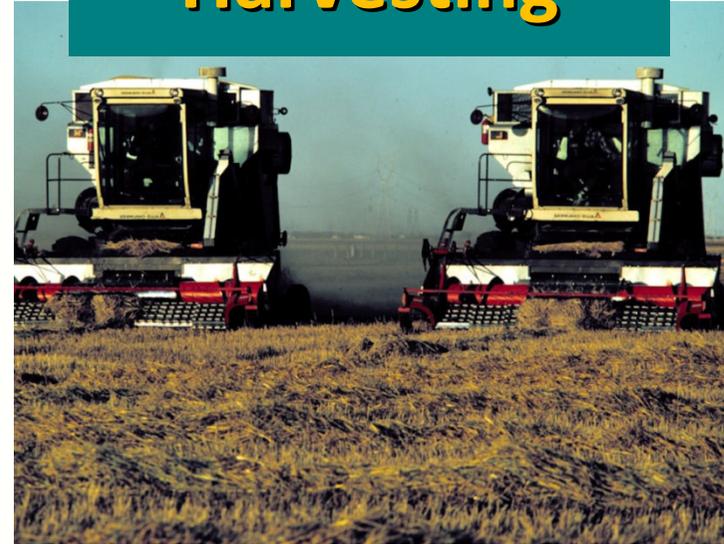
Characteristics of bulk commodity trading systems

- Collection, storage, trade, transport & processing of commodities are characterized by **aggregation of many small consignments into large, uniform bulk shipments**
- **Economies of scale are most important**
- Time is always running as customers are often working with zero or limited stocks
- Transport in large sea vessels (25,000 to 100,000 metric tons) implies quick and efficient handling capacities in order to reduce impact of demurrage costs and to avoid delays
- **Not many storage capacities in port for small segregated parcels**
- When a vessel is delayed, operators often swap/switch equivalent cargoes with other operators in order to deliver in time goods to their customers, who usually work on a zero or limited stocks basis
- **Importance of having EU harmonised sampling rules for controls consistent with international recognized standards**

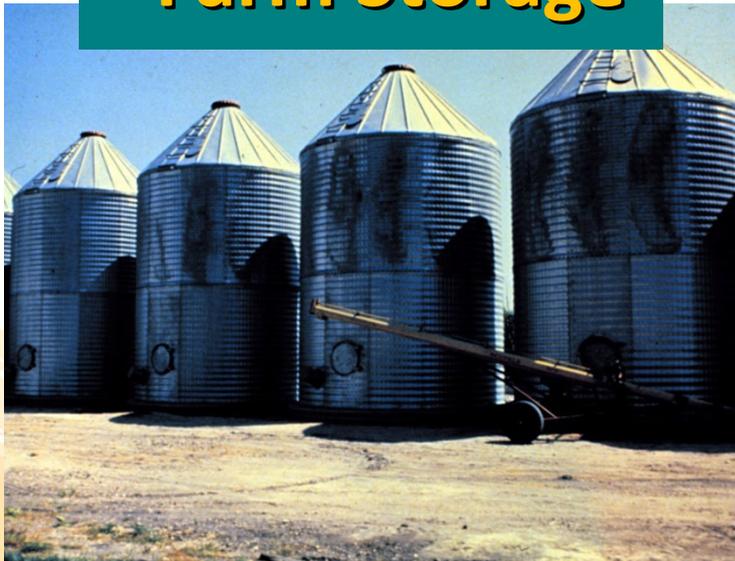
Seeding



Harvesting



Farm Storage



Primary elevator



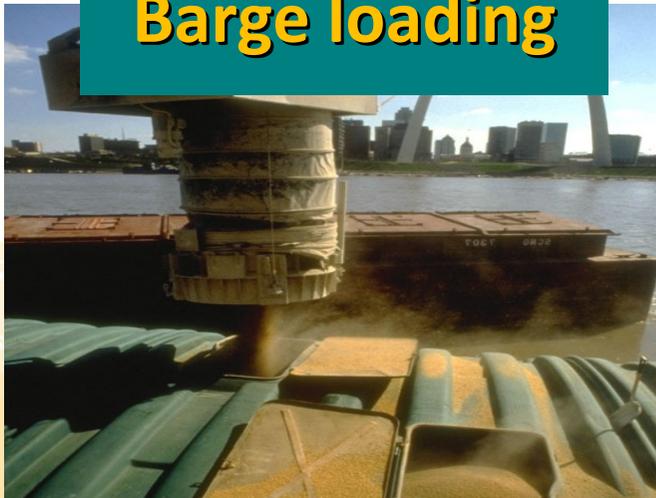
Rail loading



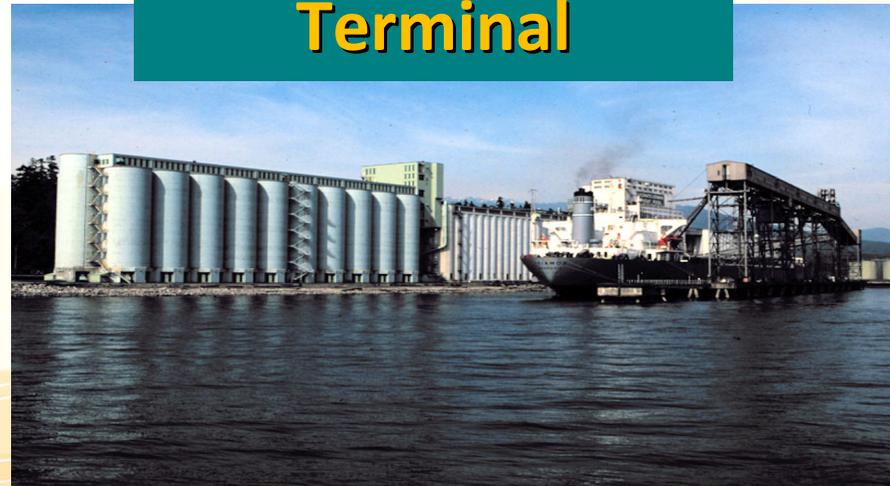
Truck loading



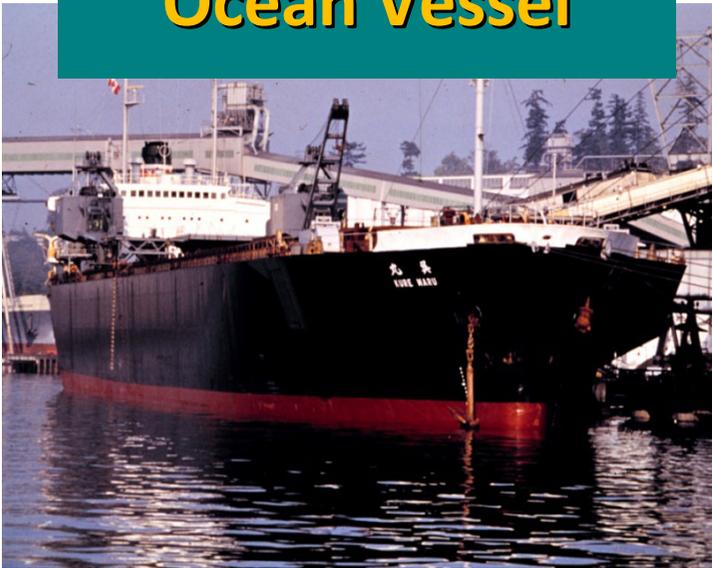
Barge loading



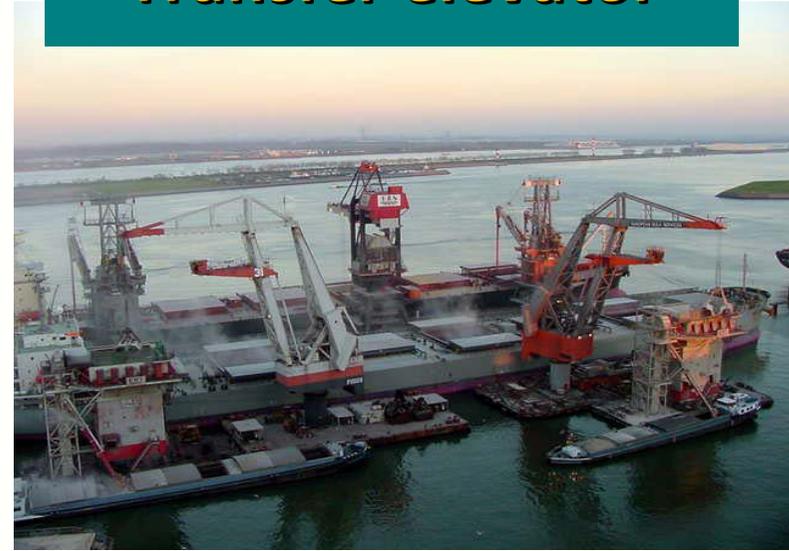
Terminal



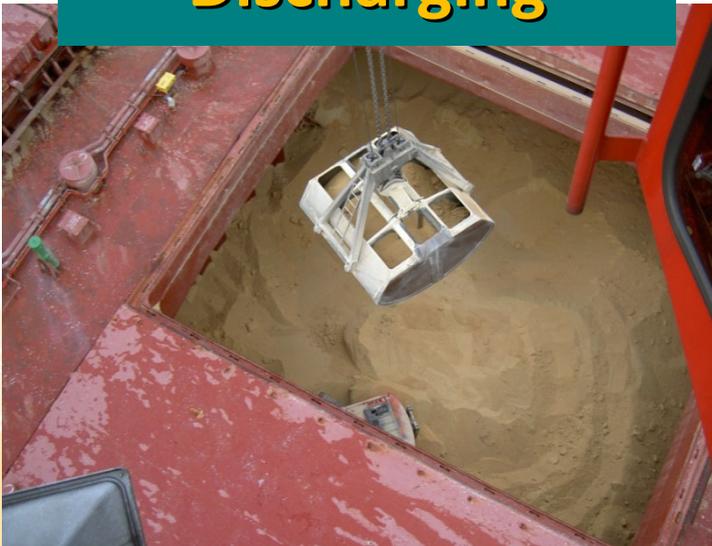
Ocean Vessel



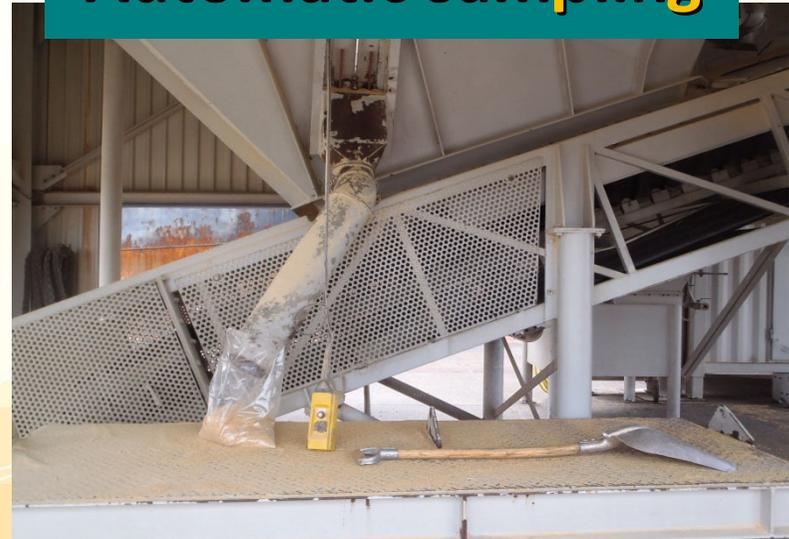
Transfer elevator



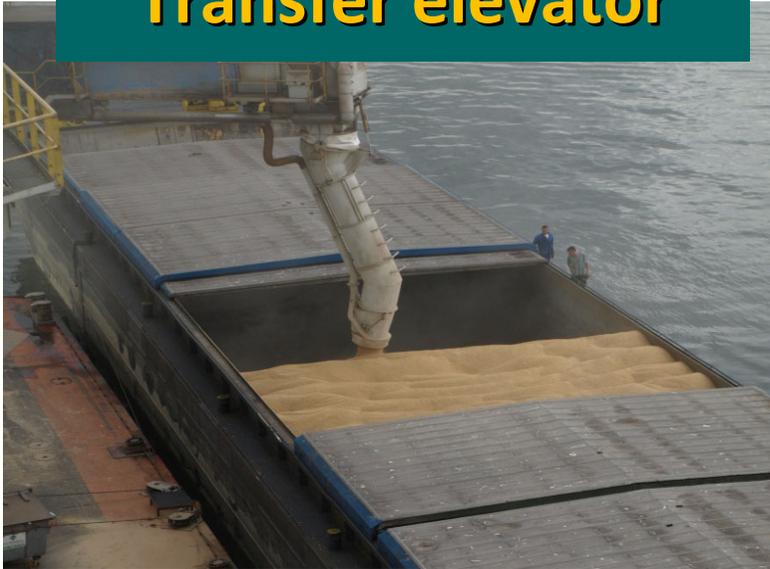
Discharging



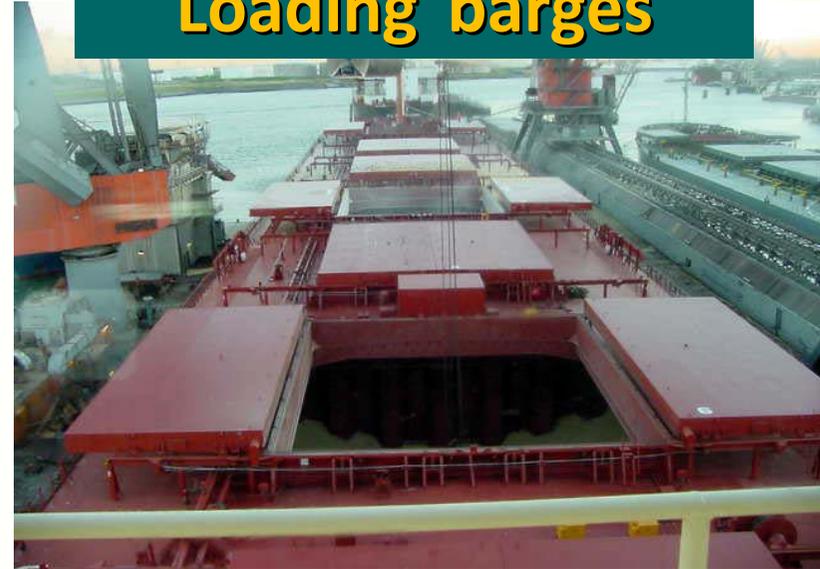
Automatic sampling



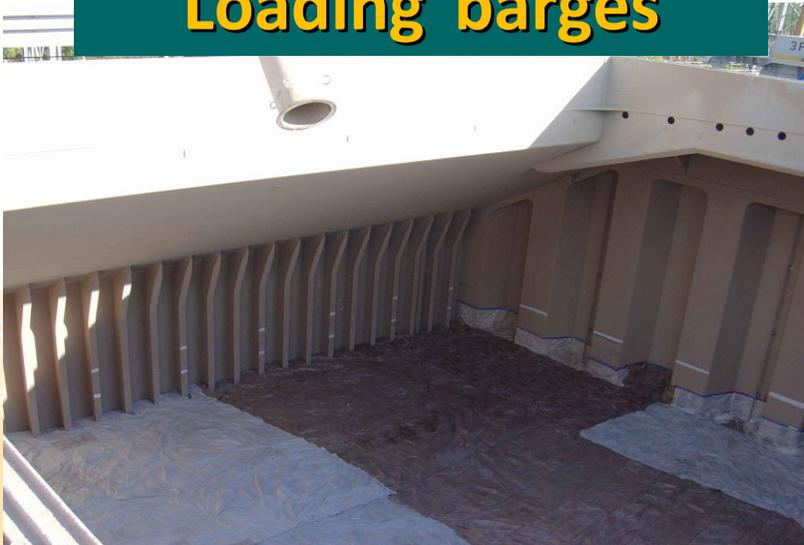
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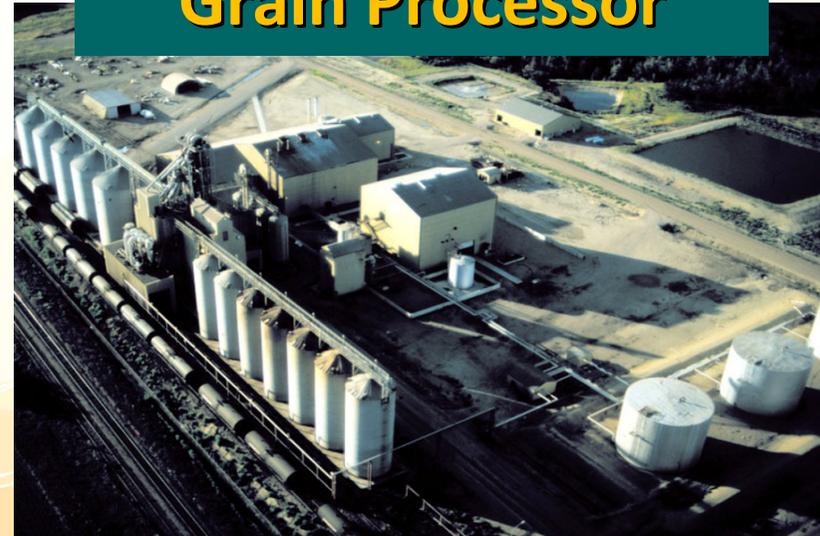
Loading barges



Loading barges



Grain Processor





Mycotoxins management



Mycotoxins

- **Toxic compounds produced by different types of fungus** → mainly *Aspergillus*, *Penicillium* and *Fusarium*
 - fungi proliferate and produce mycotoxins **under favourable environmental conditions** – temperature and moisture are conducive conditions
 - able to infect a multitude of hosts, including cereals
- **Field infestation**, but the accumulation of mycotoxins can take place in the field and also during storage, processing or even on final food and feed products.
- **Limits for mycotoxins in food and feed are set at EU level**
 - Maximum and/or guidance levels set by EU Regulations and Recommendations
 - Sampling and testing methods for official controls of mycotoxins in food and feed



Controls systems implemented by traders

The European Guide for the collection, storage, trading and transport of cereals, oilseeds and protein crops

- Applied by COCERAL members on a **voluntary basis**
- Proposes **good hygiene practices** for operators
- Fully endorsed by the European Commission and Member States

Quality management system

- **Strict control system** put in place
- Checks and analysis are carried out regularly according to risk analysis based on the Hazard Analysis Critical Control Points (HACCP) principles



Controls systems implemented by traders

Food and feed safety certification schemes

- **Commercial requirements – not to be mixed up with regulatory obligations**
- Include specific monitoring systems based on risk analysis
- Compliance with the requirements monitored by independent certification companies and examined through regular audits



Management of mycotoxins Sampling methods

Sampling and testing protocols are integrated part of the traders' routine in view of ensuring the safety of raw materials

- **International recognised standards for sampling** are followed as a general practice together with the EU legislation and other internal/contractual methods

- drafted in collaboration with multiple organizations in order to be **consistent with the worldwide, EU included, operators' practices**
- recognised by third countries' partners.
- *examples: ISO/CEN standard 24333:2009, FOSFA, GAFTA*

- **Particular years of incidence → strengthened monitoring**

- Increased frequency of analysis
- Discussion at sector level aiming at a coordinated and harmonized approach for crisis situations.



Management of mycotoxins Sampling methods

Mycotoxins are not uniformly distributed, neither within the content of the cargoes nor in the collected samples

- to ensure homogeneity and representativeness of the samples taken a number of points of attention are to be followed up:
 - Consignments are divided in (sub)lots
 - The contractual amount of incremental samples is taken in line with the size of the consignment
 - Laboratory samples of 3 to 10 kg are taken – especially with respect to aflatoxins

•Laboratories are requested to grind the full amount of samples to ensure that the average level of the mycotoxin tested is found



Management of mycotoxins International sampling standards

- **Uniform rules** on dynamic sampling in oceanic vessels, barges, silos and warehouses.
 - **Increments taken from the whole lot:** crucial for non-uniform distributed constituents
 - **Number of increments linked to the size of the lot:** crucial for the sampling representativity of the lot
- When dynamic sampling is not possible, the majority of these standards provide also for static sampling done with the aid of sampling devises (e.g. shovel, hand-scoop)
 - Number of increments linked to the size of the lot; samples taken from different points of the lot



Management of mycotoxins: Testing methodology

Analyses are generally carried out by external accredited laboratories following ISO or CEN certified methods

- In the case of small cargoes (e.g.: trucks), rapid kits analyses can be used
- Tests carried out in internal laboratories when the trade environment requires quick analyses results as basis of business decisions
 - Following validated methods of analysis

Mycotoxins are generally not uniformly distributed → trade operators require laboratories to grind the full amount of samples



COCERAL mycotoxin survey

COCERAL carries out regularly a biennial mycotoxin survey

- Highlights the tools and actions put in place by grain trade operators to manage the risk of mycotoxins
- Last survey published in October 2012 shows the following general trends :
 - Traders prefer analysing between reception of goods from farmers and before delivery to the customers
 - Analyses are performed both internally (65%) and externally (80%)
 - DON and ZON are the most tested mycotoxins in barley, wheat and maize, while also analysed in oat and other crops.
 - Ochratoxin A is tested for in a proportion of 50 % in maize, barley and oats, as well as in wheat and other crops – lower proportions
 - Aflatoxin and Fumonisin, as well as T-2 and HT-2 Toxin, are tested in proportion of 50% in maize crops.



Conclusions



Conclusions and recommendations

- Grain trading operators contribute to manage and control mycotoxins in the batches traded within EU Member States by means of the control systems they have in place.
- Trade operators adapt their testing regime according to risk: in high risk years the level of testing is increased.
- The grain trading sector welcomes the European Commission view taken and the conclusion reached this year: no amendment to the existing legislation whilst recommending increased vigilance.
- International standards followed by trade operators offer a good assessment of the quality and condition of the lots for the presence of non-homogeneous constituents.