

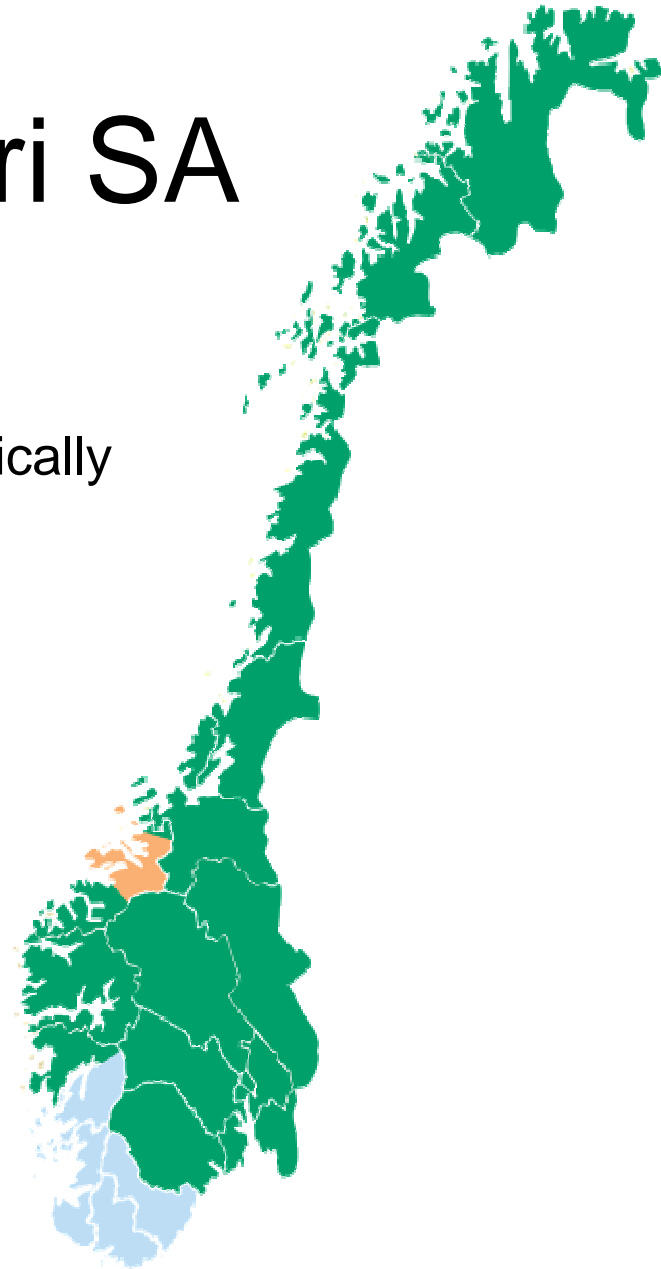
Dealing with DON in feedstuff. Testing, sorting and use of oats with different levels of mycotoxins.

Nordic oat days
11.10.2011

Hans Stokke
manager FKA

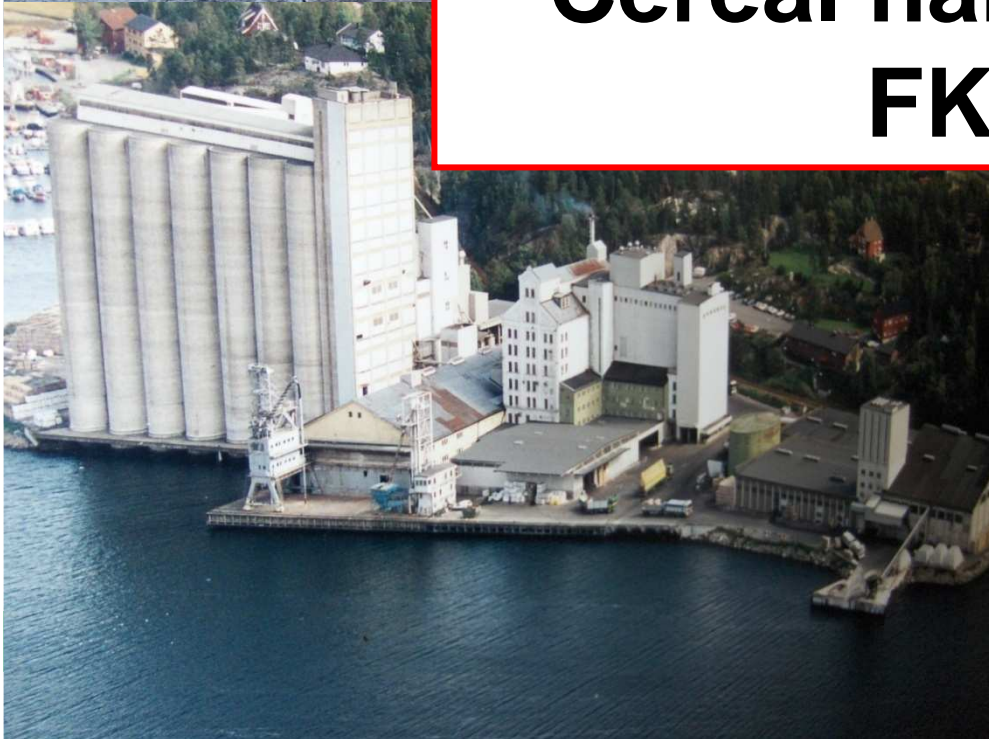
Felleskjøpet Agri SA

- Felleskjøpet Agri is the most geographically dispersed cooperative in the world
- The group operates from north to south in the country
- Owned by 44.000 farmers
- Approximately 2 300 employers
- Market share of 60 – 70 % for fertilizer, seed, cereals and feed.





Cereal handling in FKA

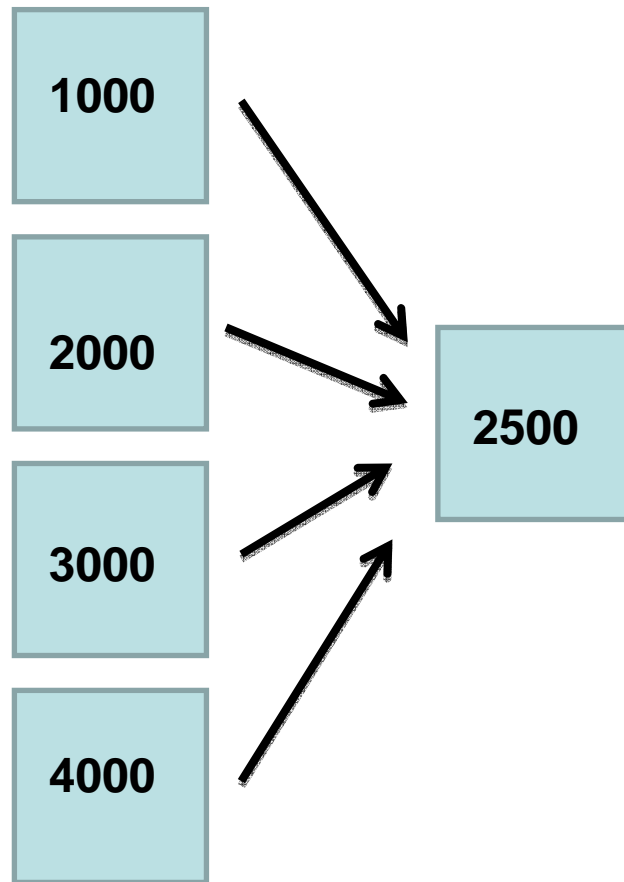


DON i norwegian oat (Veterinærinstituttet)

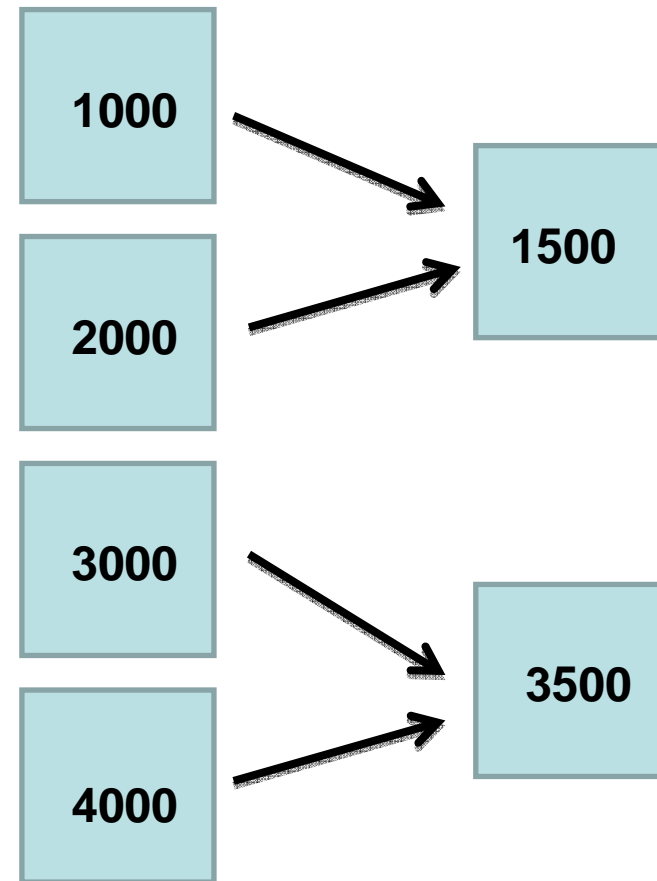


Sorting of oats according to quantity of DON in FKA

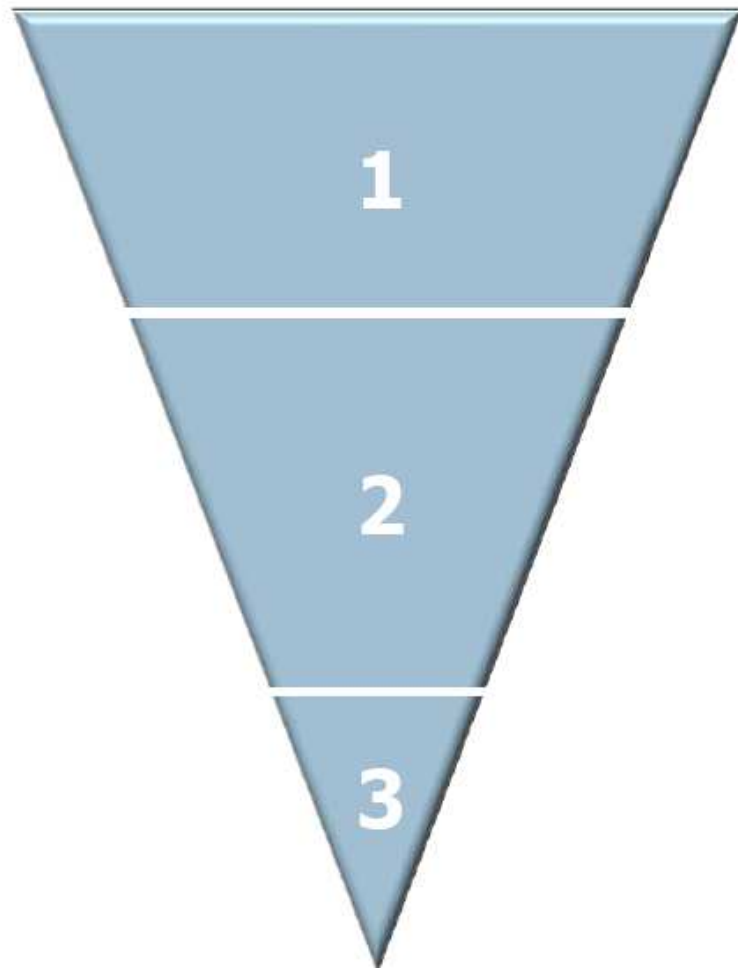
2009 and earlier



From 2010



Method of sorting oats after DON-level in FKA



- 1: Risk model of DON production in oats (used only in season 2010).
- 2: Don-testing at the reception point (Rida Quick lateral flow test)
- 3: Screening analysis at laboratorium.

Beregning av DON-innhold i HAVRE

Utskrift for levering av havre

DON-innholdet i havre fra det oppgitte skiftet 1 på gården Valmestad i Re kommune er på grunnlag av de oppgitte opplysninger og værdata fra klimastasjonen Ramnes beregnet til **1500 µg/kg**

Vi gjør oppmerksom på at beregningen DON-innhold i havre basert på en foreløpig modell som gir en forholdsvis stor usikkerhet. Det virkelige DON-innholdet i kornet antas derfor å ligge i området **500-2500 µg/kg**.

Oppgitte data

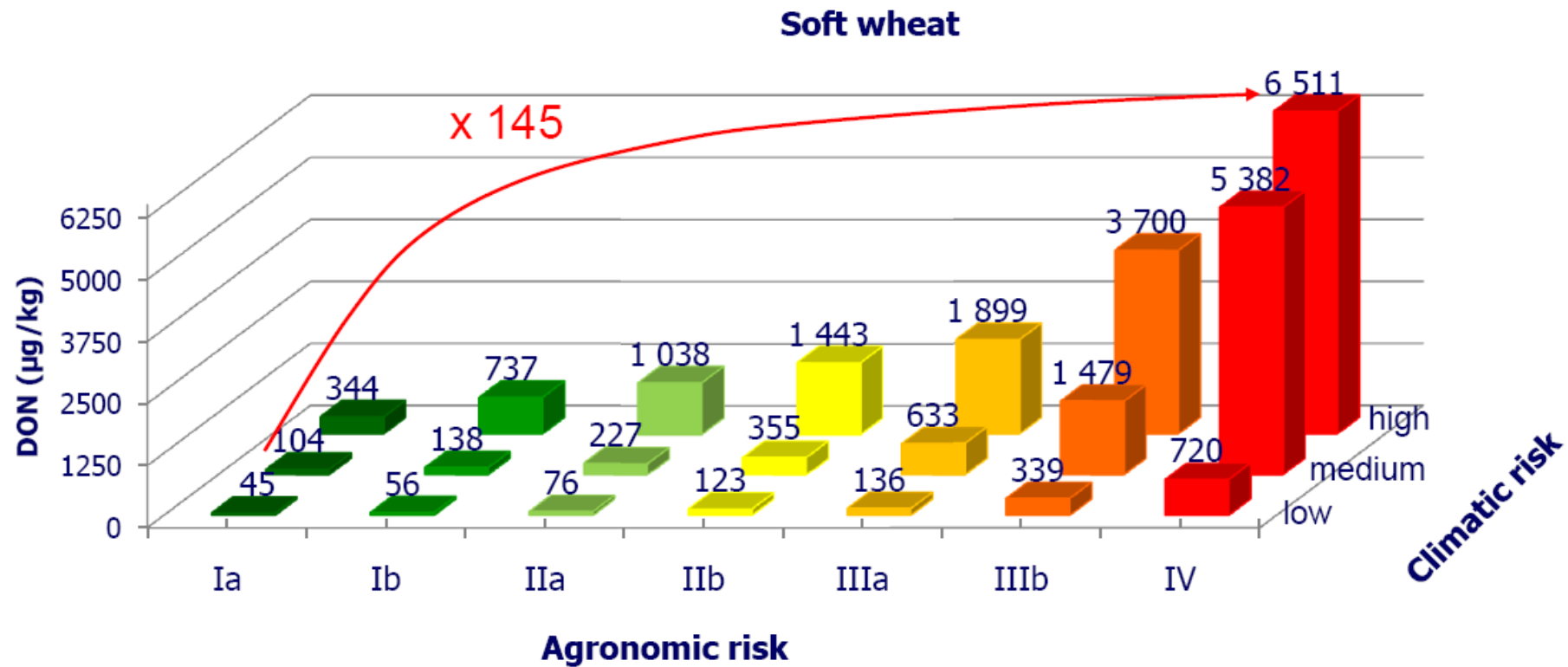
- Sådato = 02.05.2009
- Høstedata = 25.08.2009
- Havresort: Belinda
- Forgrøde året før: Havre
- Forgrøde 2 år før: Havre
- Jordarbeiding: Vårpløying
- Jordtype: Lettleire
- % legde: 80
- Ikke sprøytet

30.07.2010

Hans Stokke

**Norwegian risk model
to estimate DON in
oats (Bioforsk)**

Climatic impact and DON level in soft wheat by agronomic ranking



RIDA® QUICK Mycotoxin-Tester: Lateral flow tester for hurtig mykotoksin deteksjon.



Testprosedyre RIDA®QUICK DON

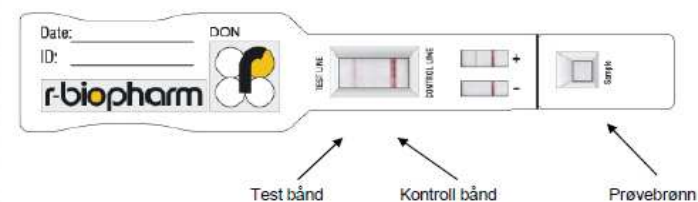
Prøvepreparering:

- Oppmaling og utveiing.
- 1 g prøve + 15 ml ekstraksjonsbuffer.
- Rist kraftig i 3 minutter (Benytt evt. rotator).
- La prøven sedimentere i 3 min.

Test implementering:

- Ta ut 100 mikroliter væske med en pipette og legg i prøvebrønnen.
- Inkuber på benkeflaten i 5 minutter.
- Sett testen inn i et Quick Scan instrument og start avlesning.

RIDA®QUICK Lateral Flow test: Positiv prøve



Simulating different DON – levels.

Simulating 5.000 ppm

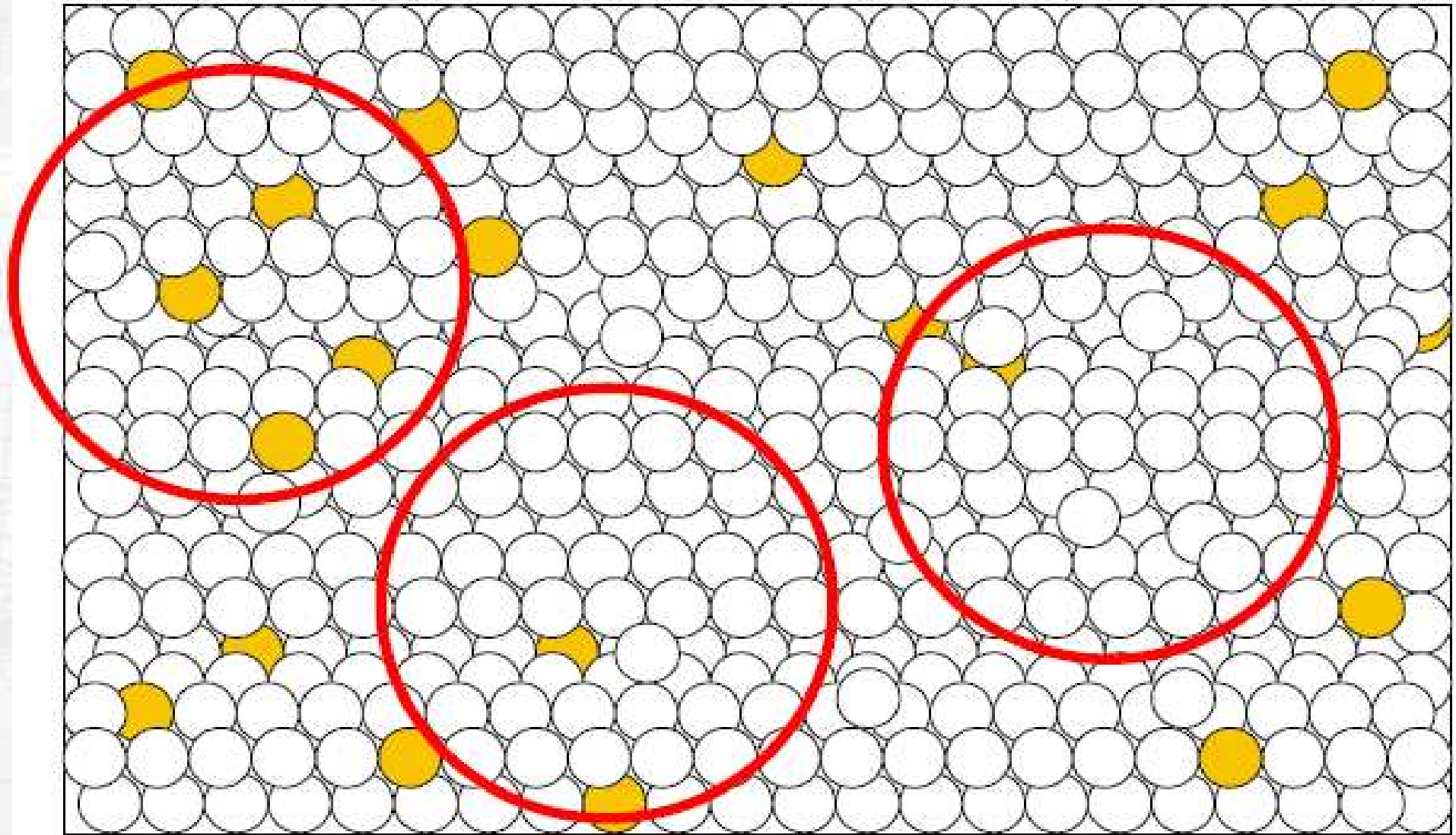


Simulating 500 ppm



Pictures: Kim H. Esbensen, Applied Biotechnology, Bioenergy & Sampling research group, University of Aalborg Esbjerg, Denmark

Analyzing small quantities gives variation!



Correct sampling is a challenge !!

EC/401/2006 – method of sampling for cereals and cereal products

Number of incremental samples to be taken depending on the weight of the lot

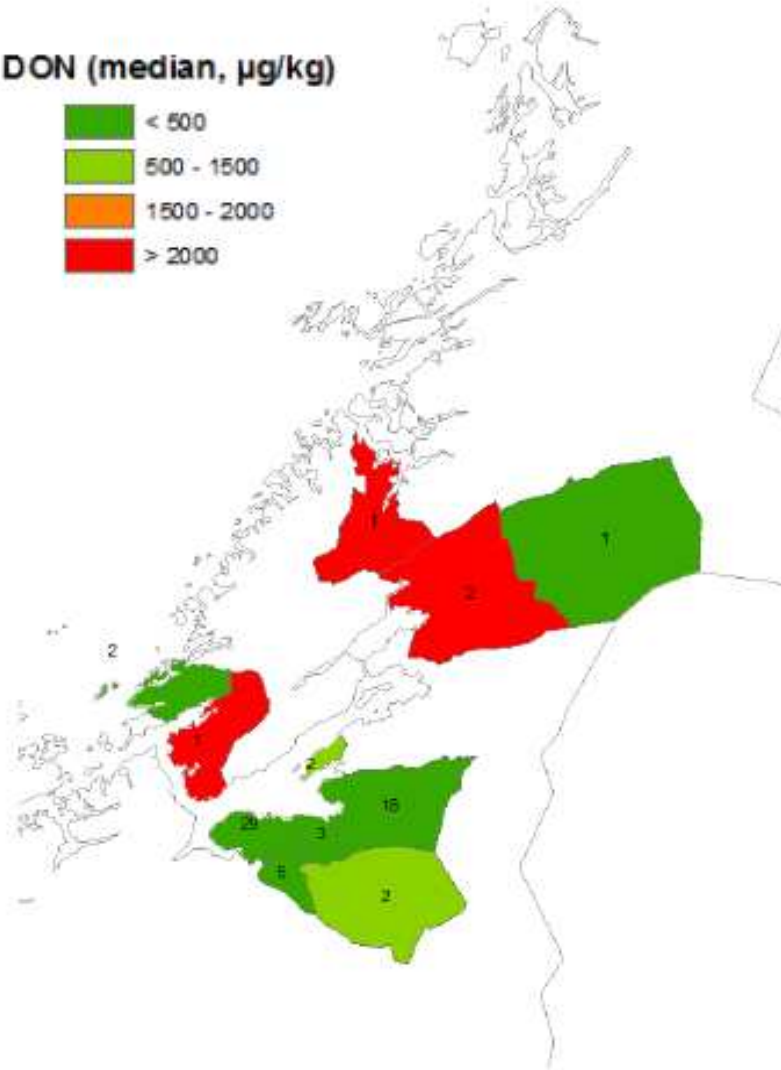
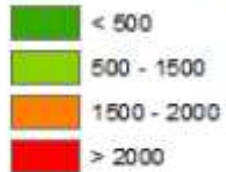
Lot weight (tonnes)	Number of incremental samples	Aggregate sample weight (kg) kg
$\leq 0,05$	3	1
$> 0,05 - \leq 0,5$	5	1
$> 0,5 - \leq 1$	10	1
$> 1 - \leq 3$	20	2
$> 3 - \leq 10$	40	4
$> 10 - \leq 20$	60	6
$> 20 - \leq 50$	100	10

Geografic distribution of DON in oat

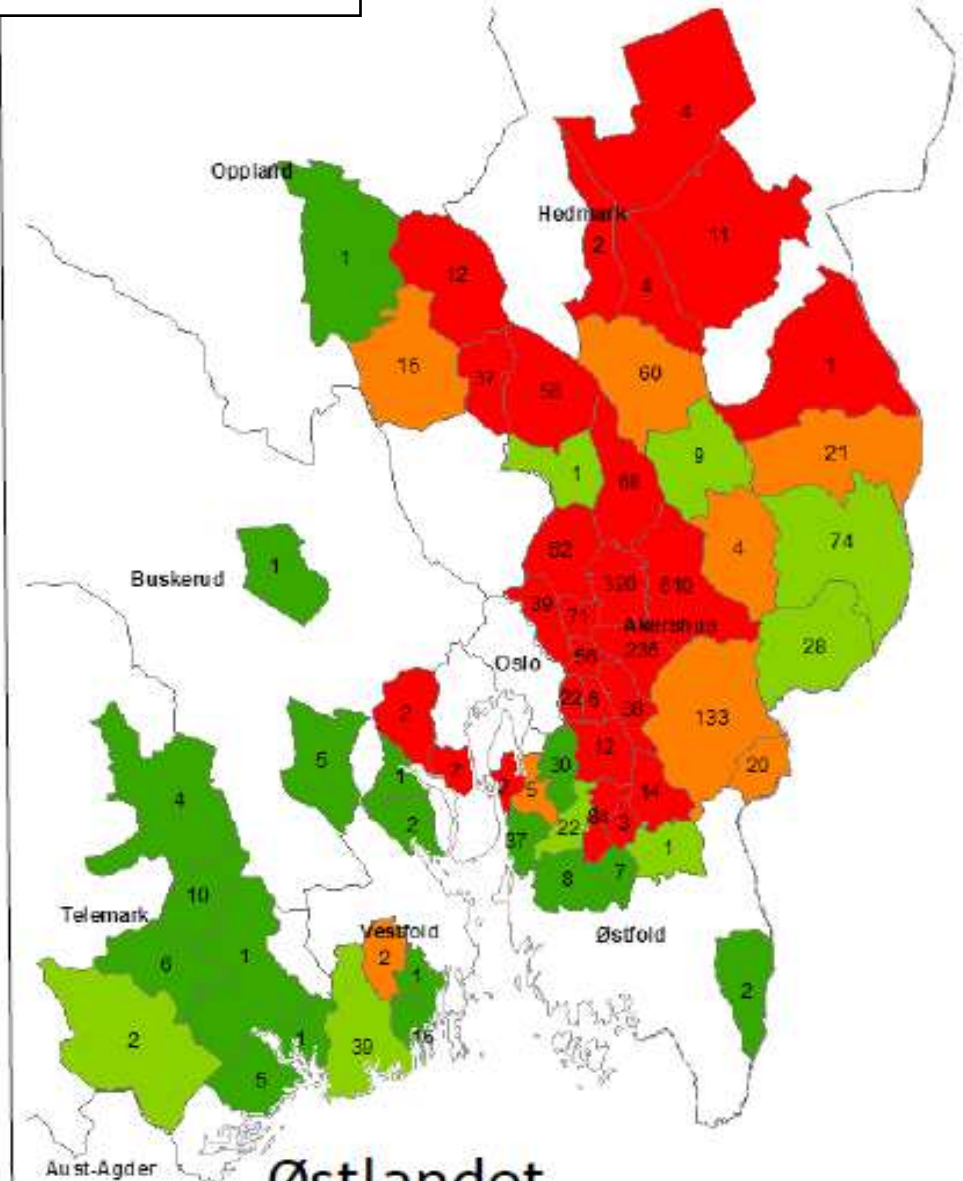
FKA 2010

(median, $\mu\text{g}/\text{kg}$)

DON (median, $\mu\text{g}/\text{kg}$)

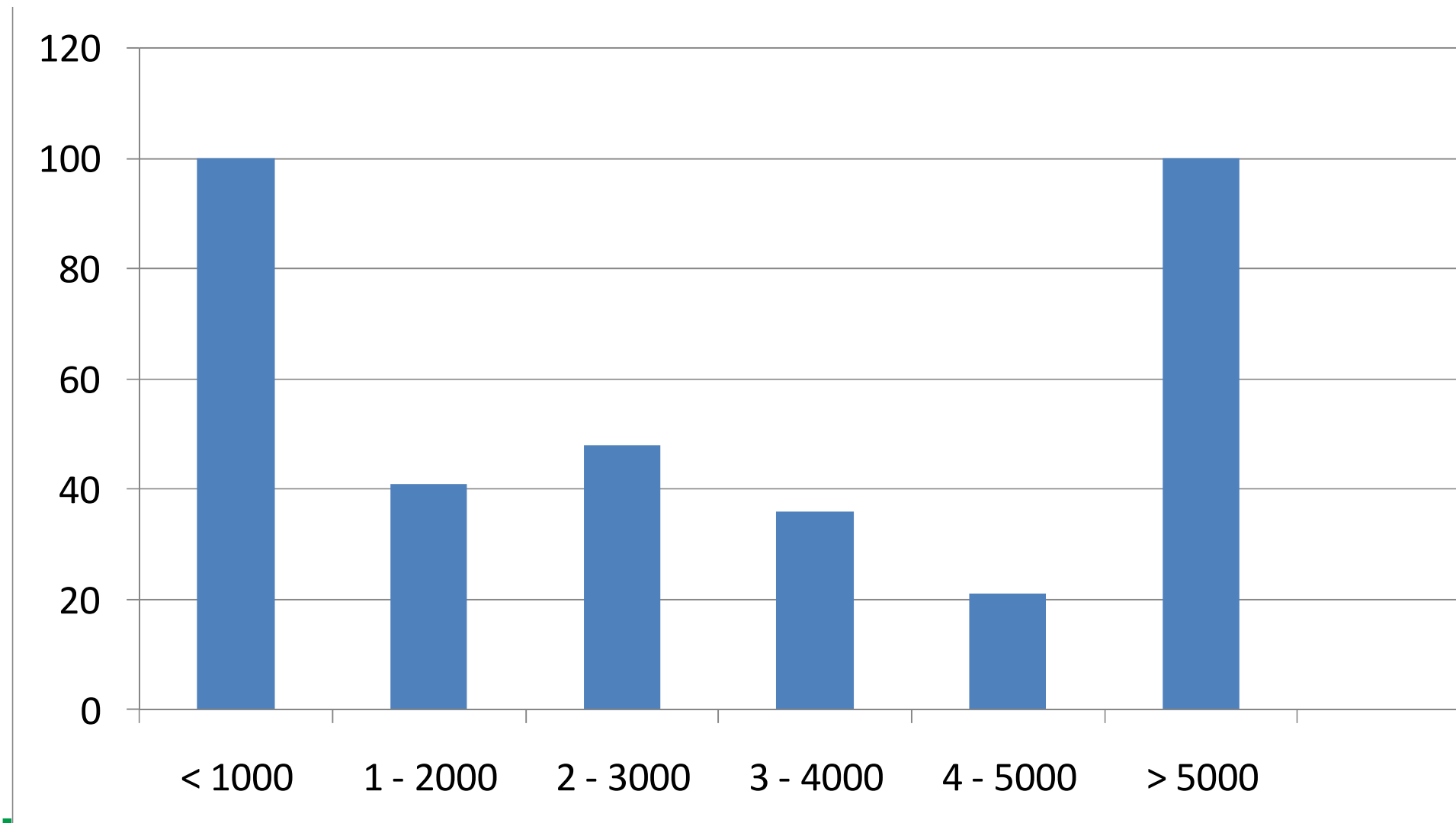


Trøndelag



Østlandet

Number of lots with different DON in a geographical area (Årnes)



Results of sorting 2010-harvest

Raw materiell:

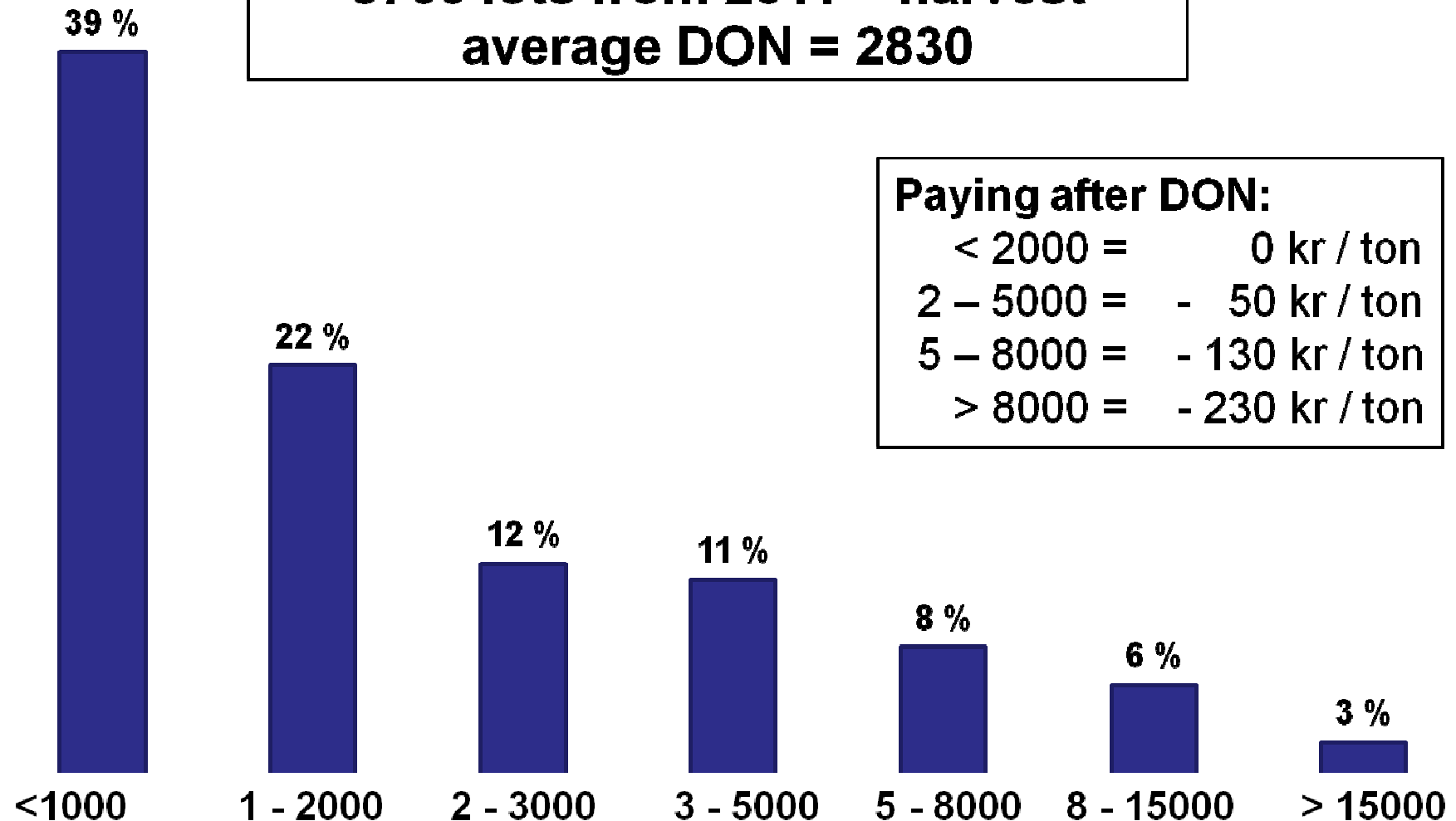
	Average DON
Barley	347
Wheat	1 119
Oat	1 894

Result feed:

	FKA average	Max level DON
Pig-feed	386	500
Egg-producers	1 260	2 000
Poultry	887	5 000
Ruminant (few analyses)		5 000

DON in oat at farmers level.

8709 lots from 2011 – harvest
average DON = 2830



Paying after DON:

< 2000 = 0 kr / ton

2 – 5000 = - 50 kr / ton

5 – 8000 = - 130 kr / ton

> 8000 = - 230 kr / ton

Effectivity in sorting oat FKA, 2011-harvest

DON level	Theoretical based on lab. test		Practice based on lateral flow test	
	Quantity	DON level	Quantity	DON level
< 2000	61 %	900	70 %	1800
> 2000	39 %	5900	30 %	4900

Correct sorting with lateral flow:

< 2000 DON = 76 %

> 2000 DON = 69 %

Conclusions:

- Possible to sort oat based on mycotoxin DON
- Lateral flow test is quite functional as a rapid test
- Analyzing a representative quantity is essential, but difficult in practice
- Sorting oat gives better possibilities to produce low – DON feed

A photograph of a dense field of green bamboo plants. The bamboo stalks and leaves are vibrant green and fill most of the frame. The background is a clear, bright blue sky. In the center of the image, there is a white rectangular box containing the text "Thank you for your attention!" in a bold, red, sans-serif font.

Thank you for your attention!