Effect of a modified glucomannan fraction from yeast cell extract (Mycosorb) on milk production in dairy herds in Southern Italy

OR

A practical case example of mycotoxins contamination in dairy herds in Southern Italy

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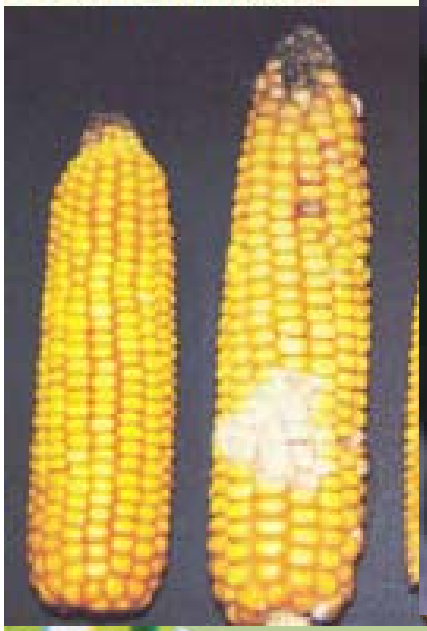
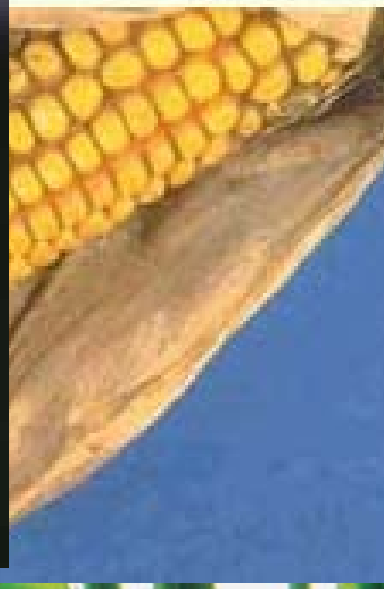
Fusarium mould





Mycotoxins?
Yes, which one?

Toxigenic fungi	Mycotoxins thought to be the most prevalent and the most potentially toxic to dairy cattle
• **Aspergillus**	• **Aflatoxin, Ochratoxin**, Sterigmatocytsin, Fumitremorgens, Fumitoxins, Fumigaclavines, Cyclopiazonoic Acid, Gliotoxin
• **Fusarium**	• **Deoxynivalenol, Zearalenone, T-2 Toxin, Fumonisin**, Moniliformin, Nivalenol, Diacetoxyscirpenol, Butenolide, Neosolaniol, Fusaric Acid, Fusarochromanone, Wortmannin, Fusarin C, Fusaproliferin
• **Penicillium**	• **Ochratoxin**, PR Toxin, Patulin, Penicillic Acid, Citrinin, Penetrem, Cyclopiazonic Acid, Roquefortine, Isofumigaclavines A and B, Mycophenolic Acid
• Claviceps	• Ergot alkaloids in seed/grains of small grains, sorghum, grasses
• Epichloe & Neotyphodium	• Ergot alkaloids in fescue grass
• Stachybotrys	• Stachybotryotoxins, **trichothecenes**

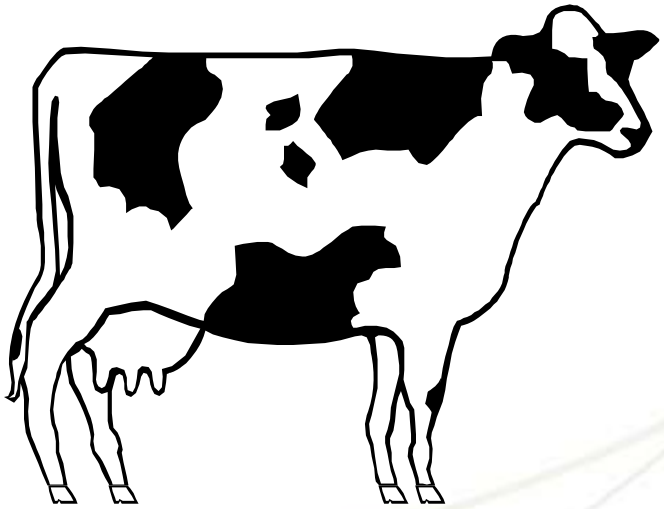
Mycotoxin Synergy

- Natural versus pure mycotoxin : different results
- Synergy :i.e Penicillic acid and citrinin
  - No effect is fed separately
  - Death if combined
- Cows: 75 ppb DON + 0.25 ppm zerealenone = feed refusal. Toxic doses (alone): 300 ppb DON; 1 ppm zearalenone
- Conjugated mycotoxins

Mycotoxin Rumen Metabolism

Zearalenone
(0-40%)

Aflatoxin
(0-30%)



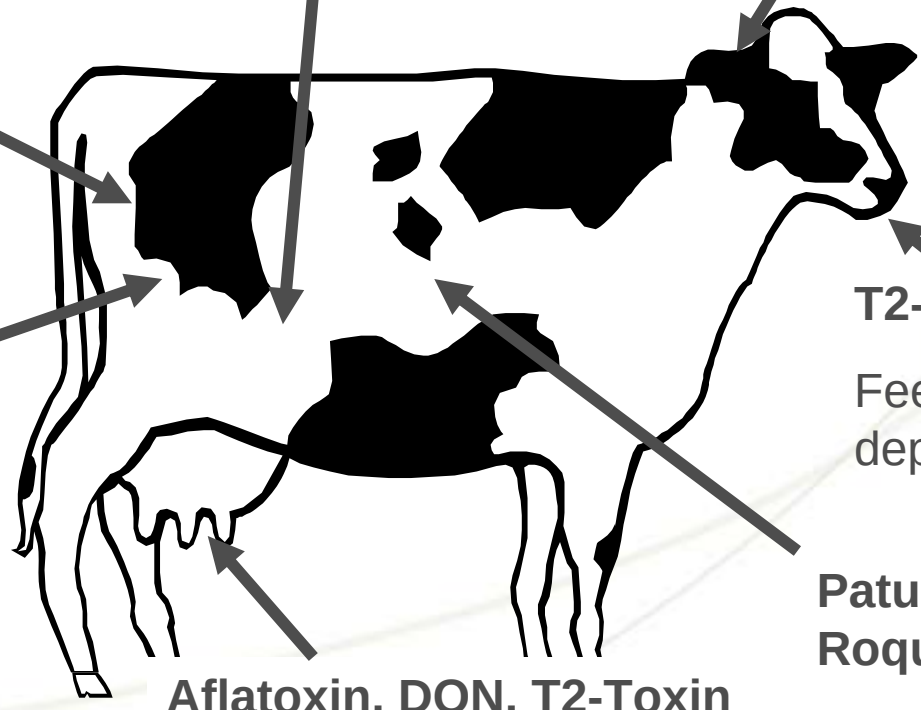
Ochratoxin
(50-100%)

DON
(0-50%)

Fumonisin
(0-35%)

T-2 Toxin
(0-70%)

Mycotoxin effect in cattle



T2- Toxin

Gastro-enteritidis

Intestinal hemorrhage

T2-Toxin, ZEA, DON

Immune suppression

ZEA

Vulvovaginitis

Prolapse

Embryo mortality

T2-Toxin, DON

Feed intake depression

DON

Cystic ovaries

Patulin, PR toxin, Roquefortin

Antibiotic effect

Aflatoxin, DON, T2-Toxin

Lower milk production

Suspecting mycotoxins?

Criteria for alert

- Documented symptoms
- Damaged target ti
- Post-m

In practice
When everything else seems OK
and you still see problems

me feedstuff

MY losses, increased

- ence of disease, atypical disease

Sampling in non uniform batches

Protein

12	12	11	13
12	13	12	13
12	13	11	12
12	11	12	13
13	12	11	12

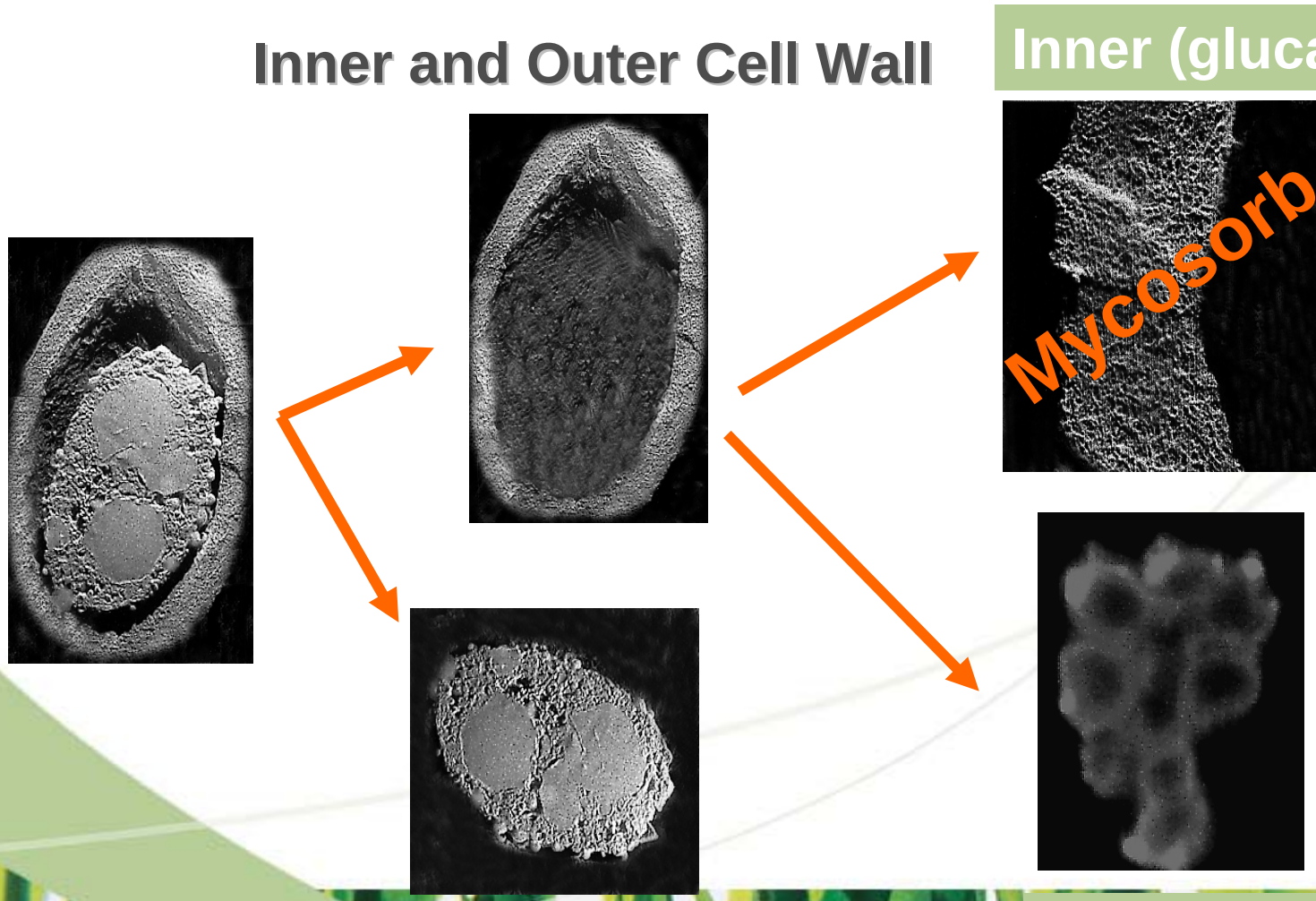
Average = 12

Aflatoxin

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	8000	0	0
0	0	0	0	0

Average = 400

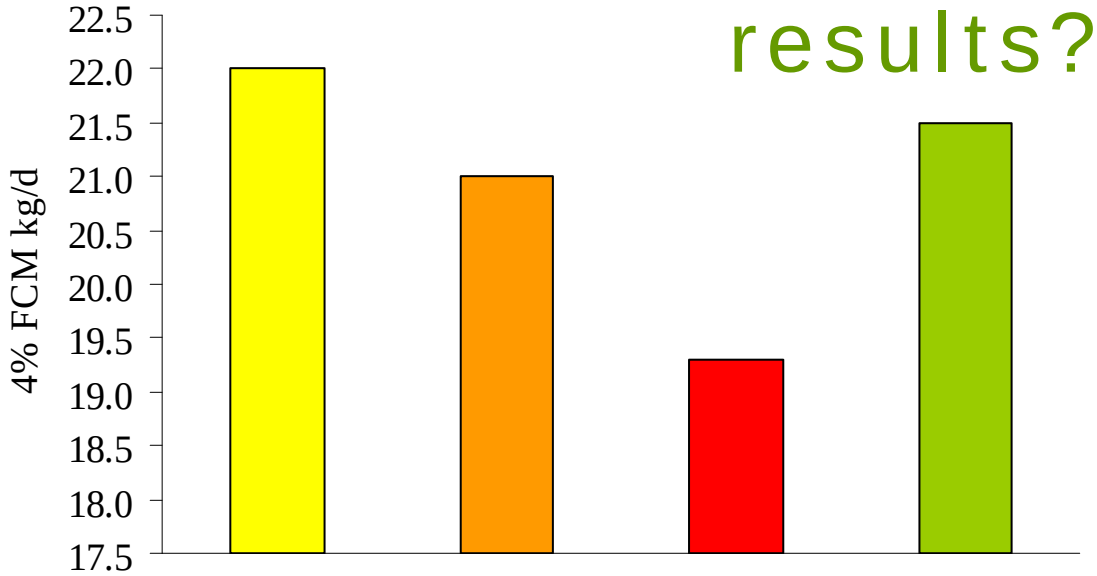
Products from the yeast cell – Mycosorb™

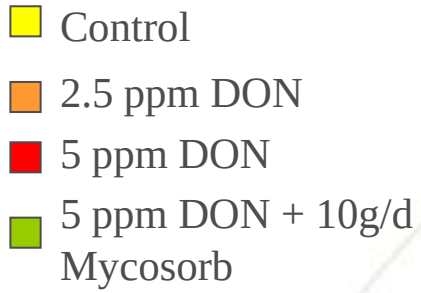


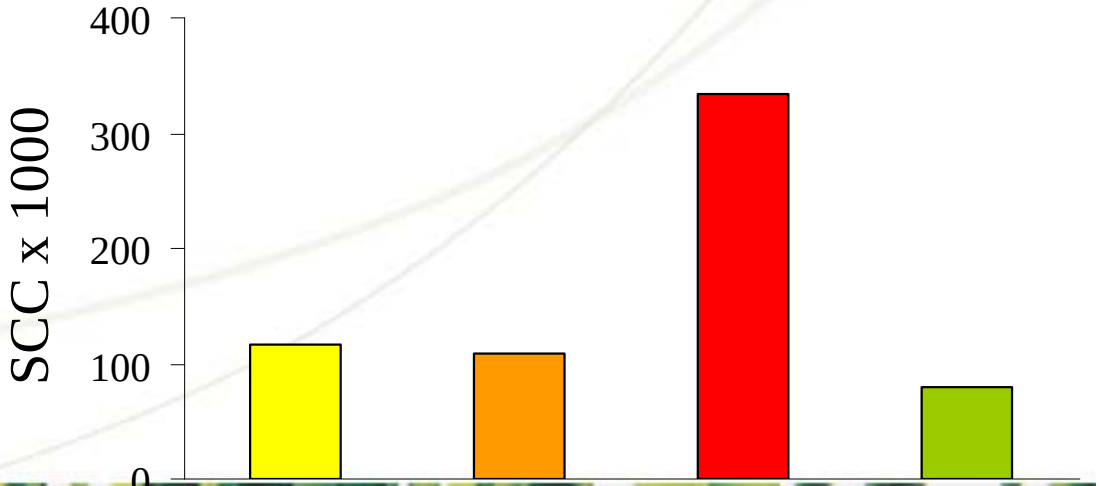
Effect of Feeding *Fusarium*-mycotoxin Contaminated Feeds to Serum Composition of Lactating Dairy Cows

Diet	IgA (g/L)	Urea (mmol/L)	Globulins (g/L)
Control	0.35[a]	5.3[a]	40[a]
Contaminated	0.16[b]	6.3[b]	48[b]
Contaminated + 0.2% Mycosorb	0.27[a]	5.5[a]	45[a,b]

What can be seen on production results?







Farms description- Southern Italy

Farm 1

84 Holstein cows

Good management

TMR feeding based on corn silage

Main issue: Fiber in feces, irregular intake- Non responsive to buffers- high SCC

Silage management:

- Mouldy sidewalls
- Red coloured moulds
- Areas of heating in silage
- Mouldy smell
- No silage inoculant

Farm 2

74 Holstein cows

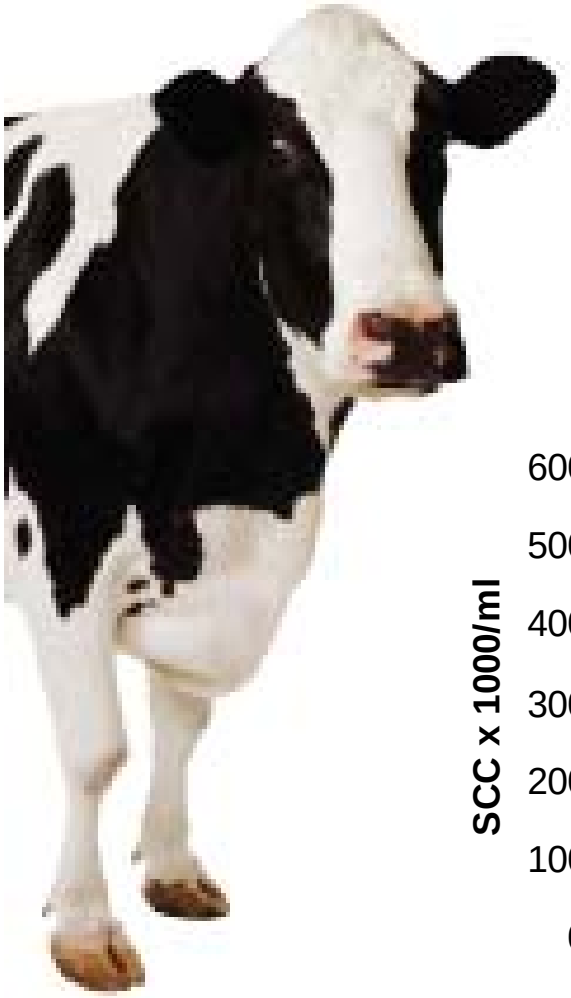
Well-managed farm

TMR feeding based on corn silage + alfalfa hay

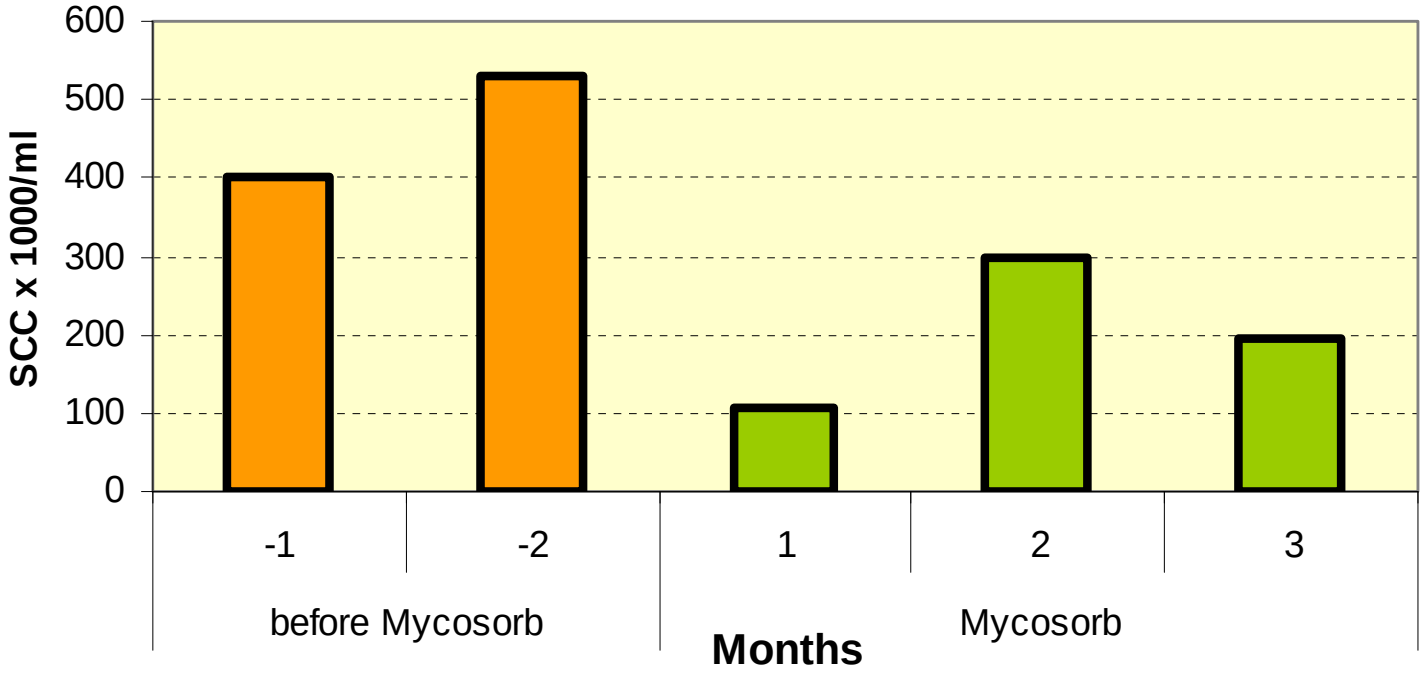
Main issue: Poorer lactation performance than previous year, some diarrhea cases

Silage management:

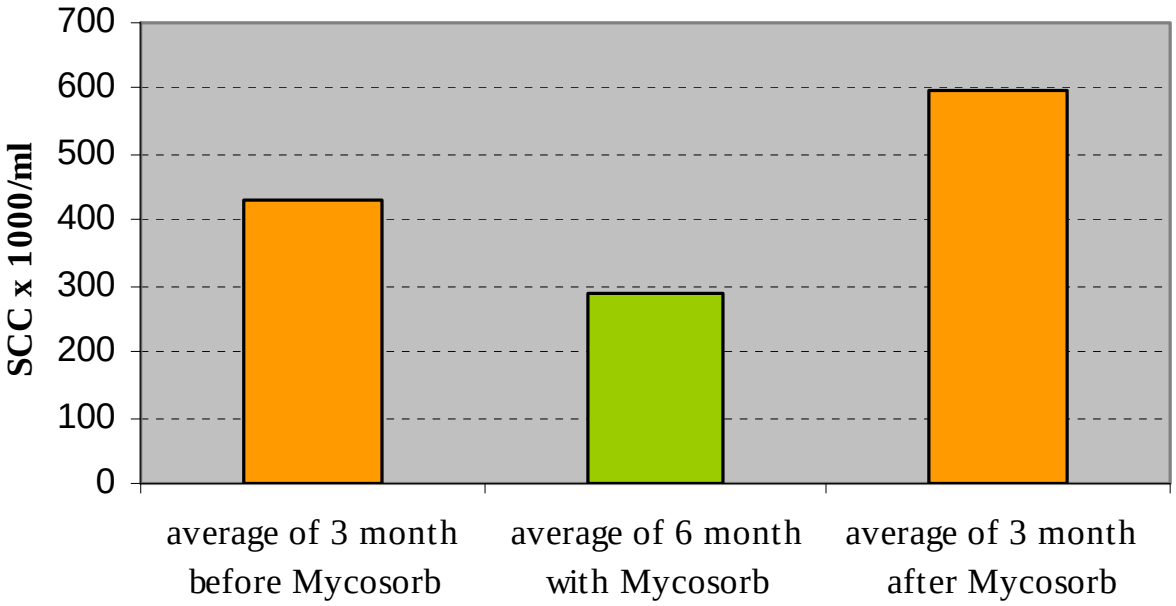
- Very dry silage
- TMR hot in feeding bunk
- Acid smell
- No silage inoculant



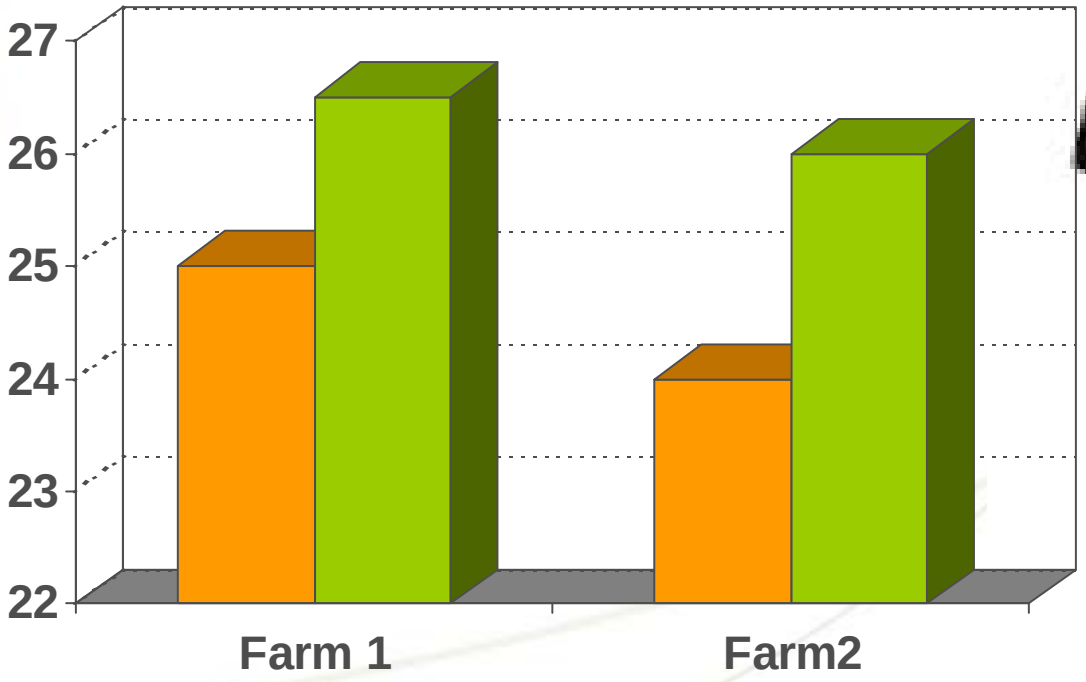
SCC results- Farm1



SCC results- Farm2

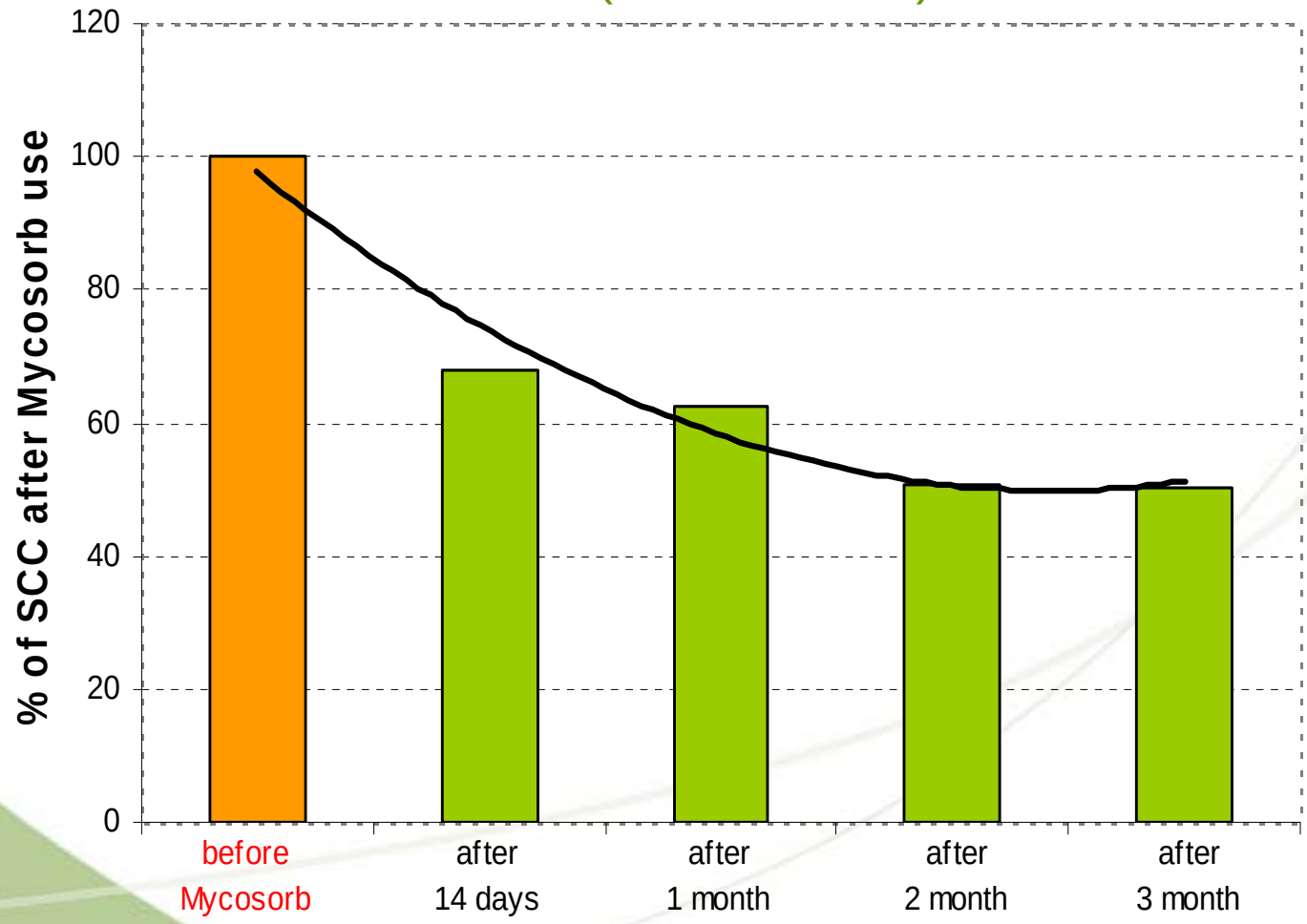


Milk production



Similar results obtained in CZ farms where mycotoxins contamination were analyzed

(4840 cows)



J.Kratky, 2005

Thank you for your attention