

Implications for high temperature climate zones

 **Paul Koolen**
Nutreco



Lowering cost in the feed mill: A strategy full of pitfalls



“Evaluate macro & micro ingredients before removal!”



Feed millers should have a strategy in place how to:



Control quality
of
raw material



Effectively
store raw
materials



Compensate
moisture
losses



Validate
beneficial
feed additives

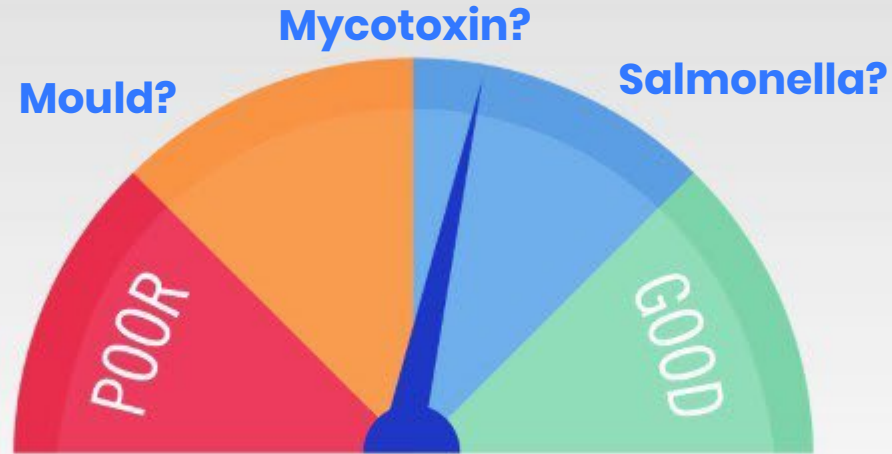


Do you really know what is your incoming quality?



Availability

X



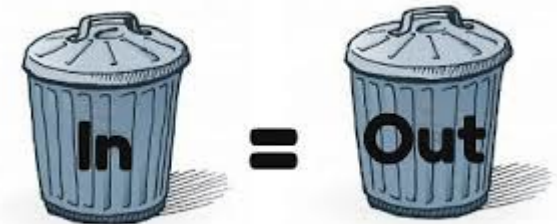
Performance

X

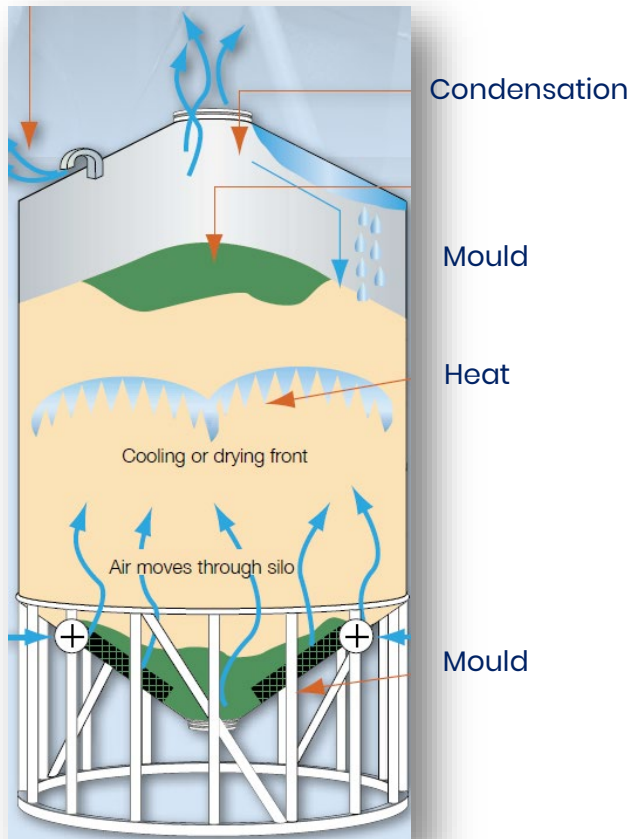


Quality

		No action	Low risk	Medium risk	High risk	
Poultry feed	AFB1	≤5	≤10	≤20	>20	PPB
	DON	≤450	≤900	≤1350	>1350	PPB
	OCHRA	≤7	≤14	≤21	>21	PPB
	FUM	≤1800	≤3600	≤5400	>5400	PPB
Mycotoxins	T2HT2	≤16	≤32	≤48	>48	PPB
	Moulds	<5.000	10.000	100.000	1.000.000	CFU
Enterobacteria		<1.000	5.000	10.000	>10.000	CFU



Determine if your corn is stored is a safe way?



Number of days represent safe storage (unaerated and untreated corn), without spoilage of moulds / mycotoxins

	Moisture %		
Temp (C°)	13.0	14.0	15.0
20	100	41	20
25	59	24	12
30	35	15	7
35	21	9	4

Source: USGC U.S. Corn Storage in Tropical Conditions, 2001

Nutritional degradation of raw material

Material	ME (Kcal/Kg)	CP (%)	Fat (%)
Good Corn	3.410	8.9	4.0
Mouldy Corn	3.252	8.3	1.5
Nutrient loss	158	0.6	2.5
Nutrient loss (%)	4.6	6.7	62.5

ME = Metabolizable Energy
CP = Crude protein
O'Keeffe (2003)



...At current price levels: **15 USD** loss / tonne!



Moulds significantly reduce the quality of raw materials.

- Average loss of nutritional value **in corn: 6%**
- Average loss of nutritional value **in wheat: 7%**
- Average loss of nutritional value **in barley: 7%**

Useful analysis for feed mill

- Moisture / dry matter
- pH value Feed
- PDI (Pellet durability index)
- NIR (Nutritional Analysis)
- Mould / Entero / *Salmonella* count
- On site mycotoxin analysis
- aW value (water activity)
- Propionic / Formic acid retention / Dosing response (EU lab)



Using organic acids in the process requires utilisation of good equipment

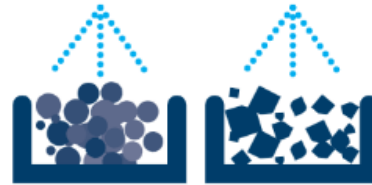
Key advantages

Safe dosing



of liquid products

Optimum dividing



of products on raw materials

Controlled & measured dosage

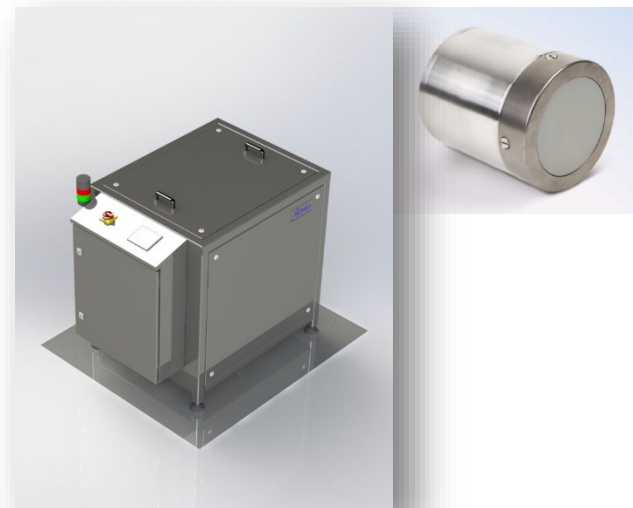


with data history record

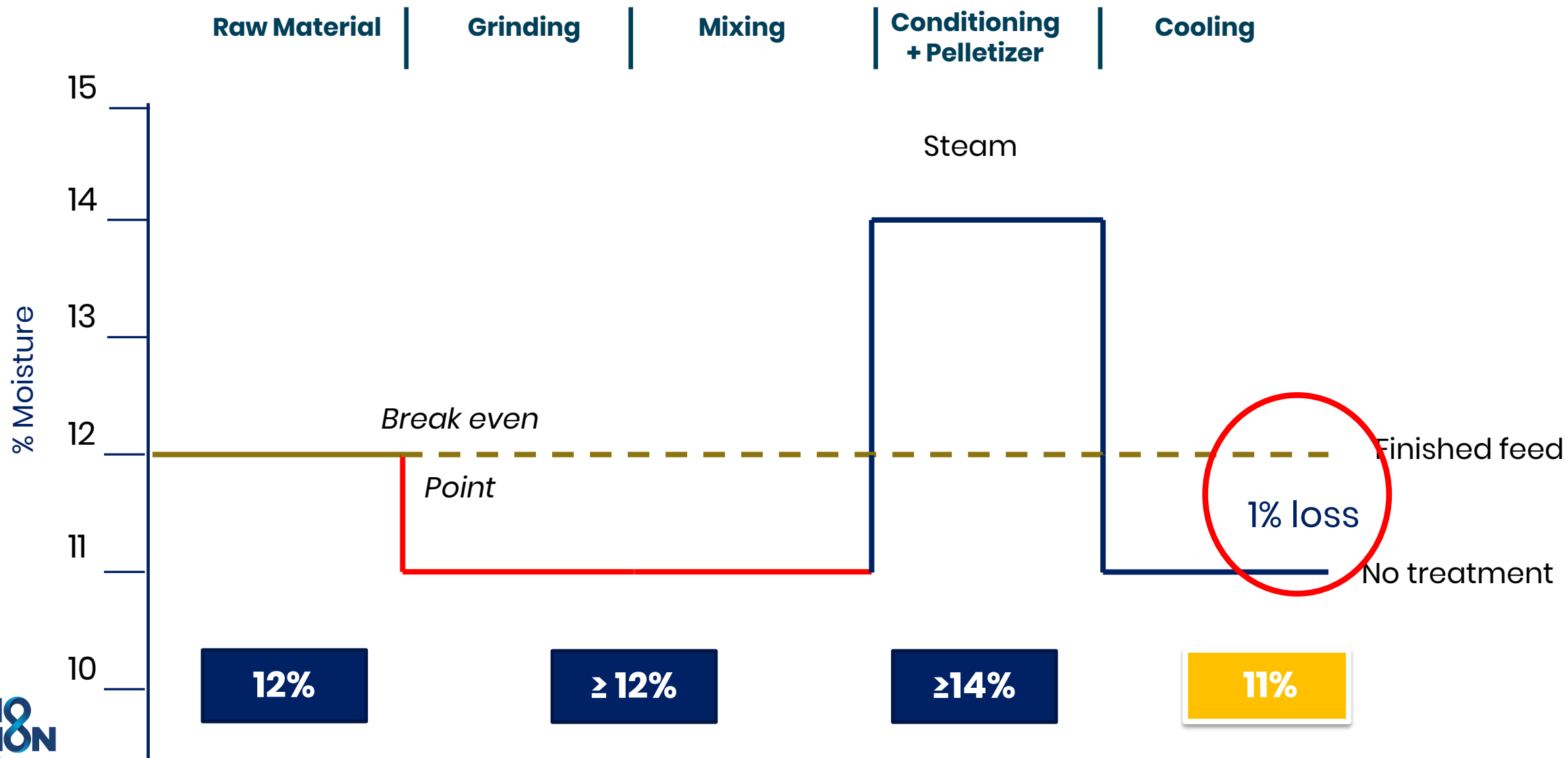
Option for full automatic dosage module



dosage module

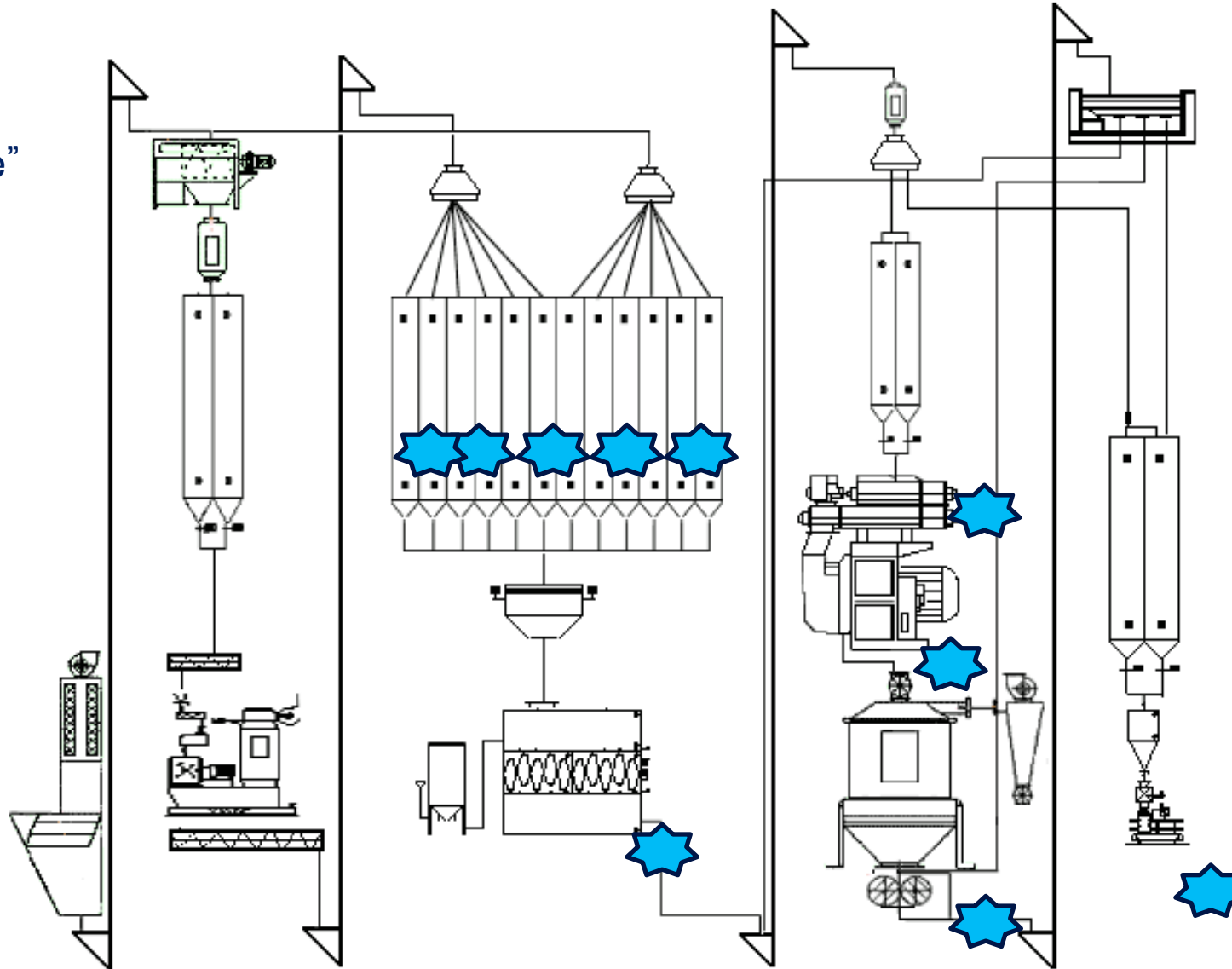


Profitable gain: compensate moisture losses in the pelleting process



First, know where you lose your moisture

“First create your own moisture profile”



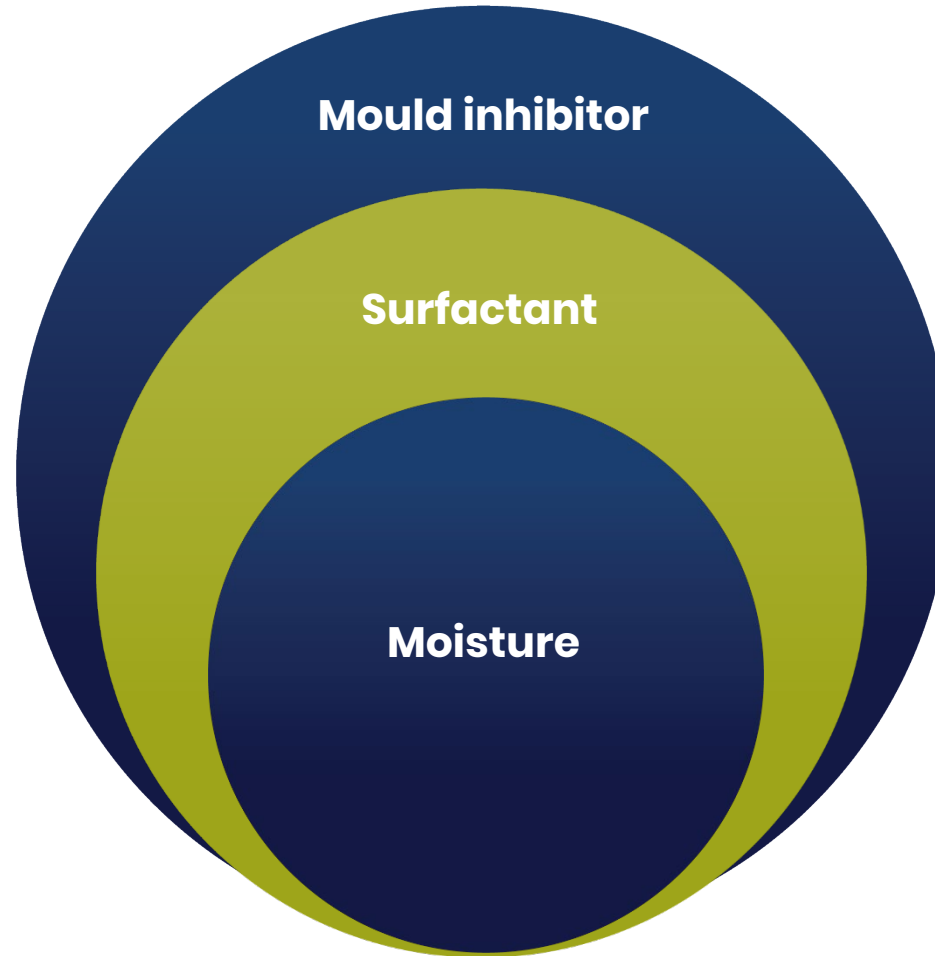
Example:
Calculate steam
quality in conditioner:

Temp:
 $80\text{ C} - 30\text{ C} =$
 $50\text{ C} / 16 =$
3% moisture added
via steam.

Would mean good
quality steam used!

How much % you
will loose after
cooling?

Know the impact of adding free water to feed!



Avoid claims

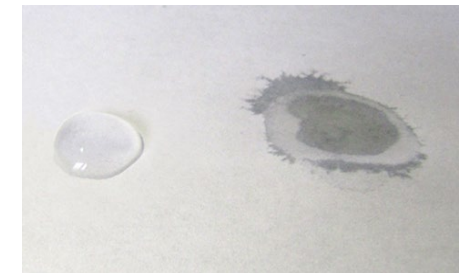


Optimize distribution in process

moisture management agent:

No

Yes

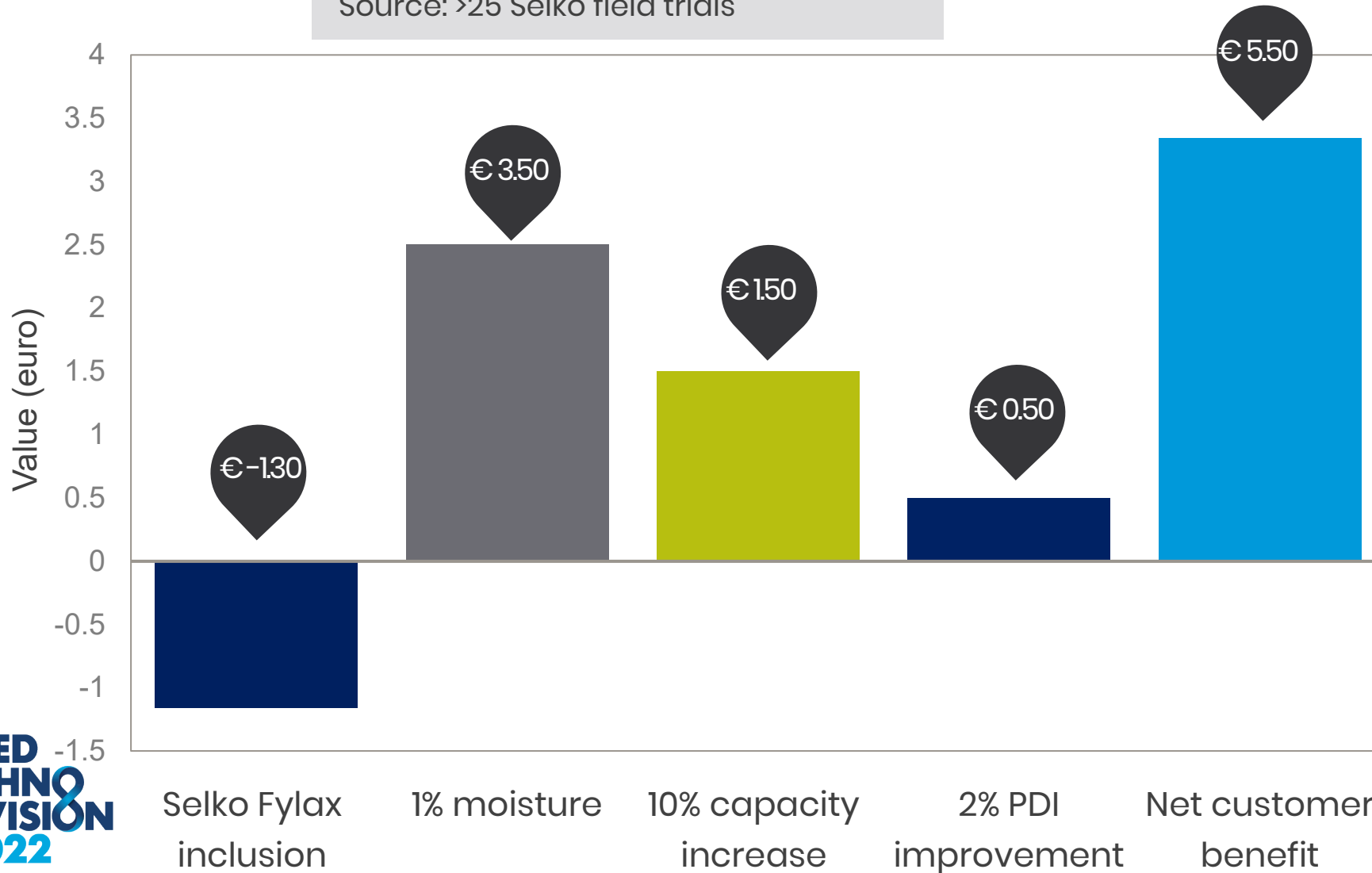


Combine moisture + moisture management agent + mould inhibitor in the mixer

Example value to feed mill: process moisture management



Dosage Fylax Forte-HC: 0.50 – 1.00 kg/t
Source: >25 Selko field trials



Recap:

- Have your quality parameters lined up right at the feed mill entrance
- Safely store raw materials in case storage time will be increased
- Think about internal optimisation of your process (moisture management)

Remember:

- Farmers will validate your feed by simple calculation:
Price of feed x FCR (Feed Conversion Ratio)
- So, utilize feed additives which show proof to $<$ FCR or are beneficial to your production process.

Yes, it has a cost, thus these micro ingredients will increase your ROI

How can we help?