



# **Sion Williams, Vogelsang UK – SyreN Acidification**





## What is SyreN?



### SyreN:

- The system has been designed to add in sulphuric acid to lower the PH value while applying digestate to land.
- Reduction of ammonia loss of up to 70%.
- Increased availability of available nitrogen.



## Advantages at a glance

### ✓ Retrofitable & Safe

- Working width up to 36 m
- Can replace expensive disc injectors, less crop damage
- More than 150 systems operating safely and successfully in Europe.

### ✓ Higher nutrient efficiency

- More available nitrogen to the crop
- Optimised availability of phosphate and Sulphur
- Increase in yields and quality

### ✓ Reduction of ammonia emissions

- Prepared for future legislative compliance

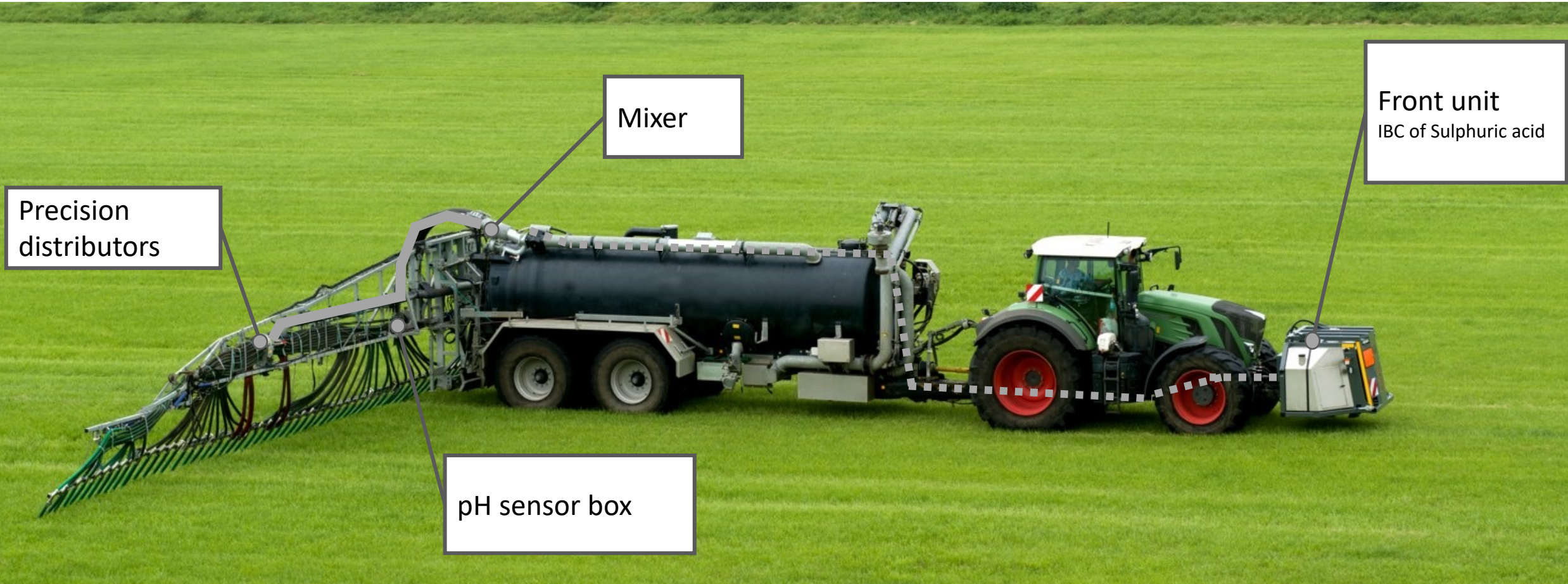
### ✓ Flexibility within the spreading window

- Significant reduction of impact of climate conditions





## The SyreN system.





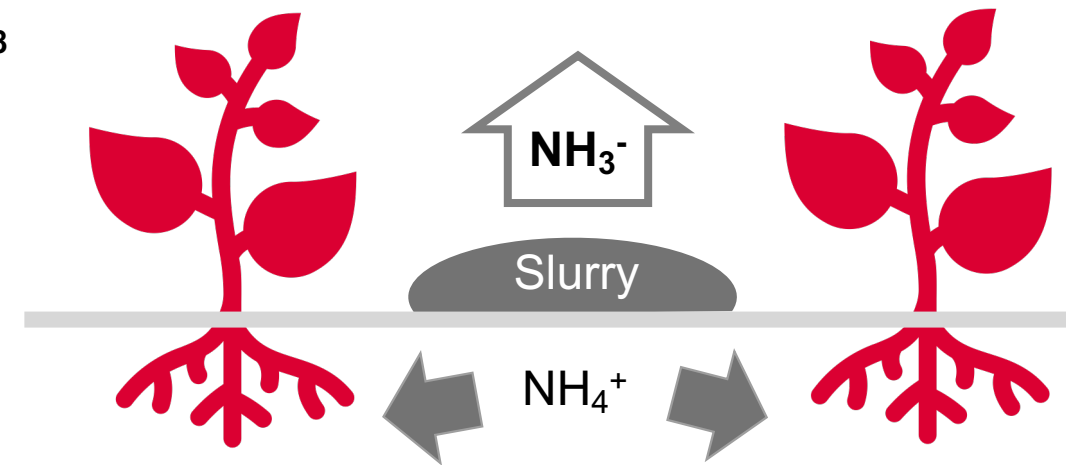
## How does acidification lead to a better nitrogen utilisation

- In addition to ammonium ( $\text{NH}_4^+$ ) nitrogen is also present in the digestate, in the form of ammonia ( $\text{NH}_3^-$ ).

- Both compounds are in a chemical balanced

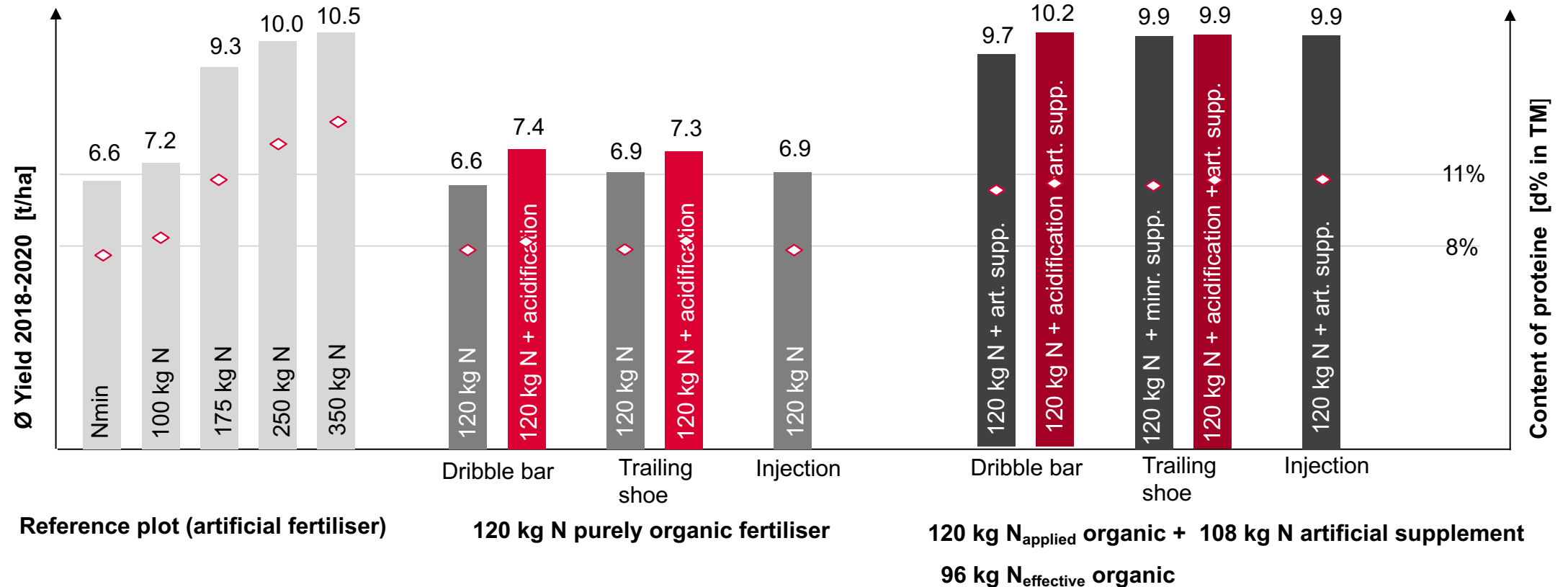


- $\text{NH}_3^-$  Ammonia loss accrues when spreading to land and can cause environmental issues.
- The chemical balance transfers further ammonium to ammonia, resulting in loss of nutrients from the digestate
- To the crop.
- The balance can be influenced by the pH-value and the temperature.
- If the pH-value drops, the balance shifts towards  $\text{NH}_4^+$ .  
→ **Less  $\text{NH}_3^-$  less ammonia loss, the digestate is stabilised.**

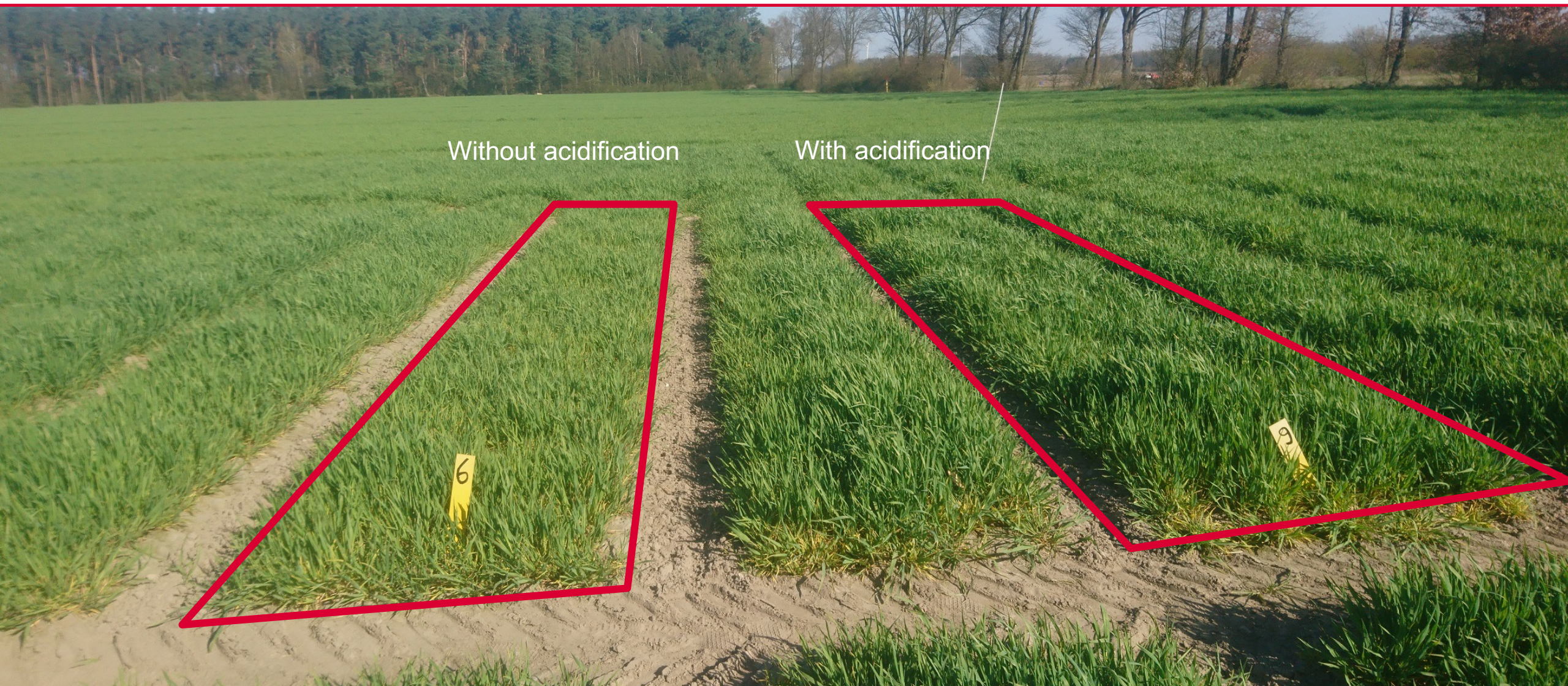


## Practical results from Germany: Lower Saxony Chamber of Agriculture

- Fertilising with digestate in winter wheat and different types of application
- Results from 2019-2021 in Königslutter, Germany









## Case: Contractor Dennis Struss from Germany

### The company

- 25 years of contracting
- 10+ employees
- Fodder harvesting, liquid manure management, precision farming

### Reasons for SyreN

- Less nitrogen emissions and more nutrients for the plants
- Pays off where fertiliser ordinance restricts additional mineral fertilisation
- Save sulphur fertilisation



Picture source: <https://strusstec.de/>



## Case: Contractor Dennis Struss from Germany

### The experiences and costs

- Charges 30 pence per litre of acid
- Around 2 litres of acid are injected per m<sup>3</sup> → roughly reaches pH 6.3 to 6.4
- Total costs: 60 pence for acid + 64 pence / m<sup>3</sup> for technical equipment
- Slurry output of 25 m<sup>3</sup> / ha → customer costs: 31.00 £ / ha
- Includes 29 kg / ha of sulphur „for free“
- Stable demand from his customers
- Stocks develop better with sulphuric acid than without acid and subsequent sulphur fertilisation



Picture source: <https://strusstec.de/>



# Thank you

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