

# Efficiency evaluation of coated urea in controlling the release rate of N

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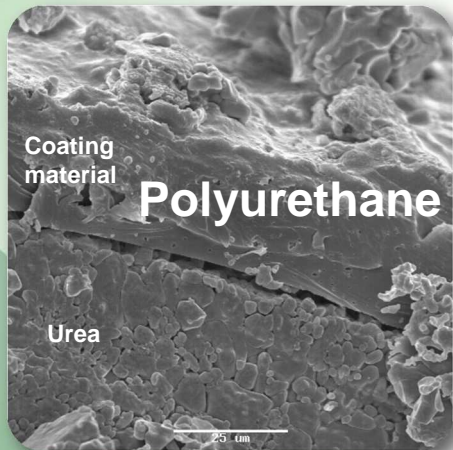
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## Why controlling the release rate?

- ♥ Higher efficiency - applied vs uptake
- ♥ Lower application rates - environment friendly
- ♥ Reduced application costs
- ♥ Lower EC – no damage to the roots
- ♥ Nutrients supply matches plant's needs
- ♥ Better yields

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## CRF – Coating material characteristics



- ♥ Insoluble
- ♥ Permeable
- ♥ Resistant to mechanical injury
- ♥ Biodegradable - long term

## Why evaluate the release rate of CRF?

- ♥ The usage of CRF use is growing substantially in South America
- ♥ A regional trials are important
- ♥ New technology to South America
- ♥ To obtain data from researches and from field usage

## Trials to prove the effectiveness of Polyurethane Coated Urea

Trials performed at IAC – Agronomic Institute of Campinas



Corn trial in greenhouse



Lab test

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## Corn trial - greenhouse

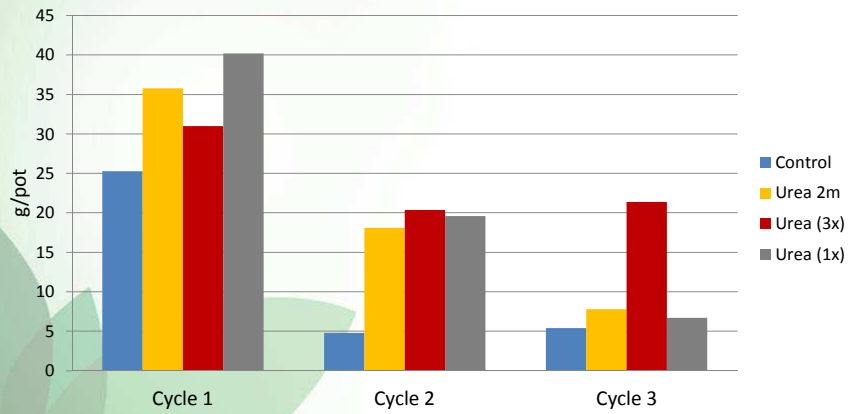
- ♥ 3 plants/pot
- ♥ 3 cycles – 40 days each
- ♥ Constant soil humidity at 70%

Treatments	N (mg/pot)
Control	0
Urea 2m	900
Urea 4m	900
Urea 3x	900
Urea 1x	900

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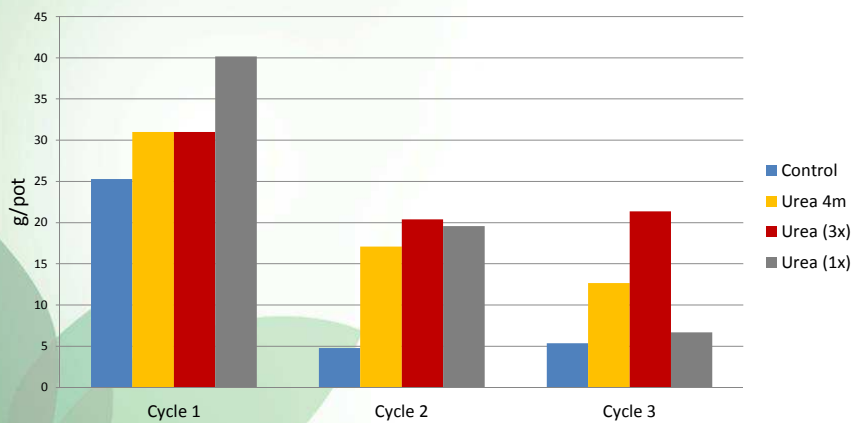
## Corn trial - greenhouse

### Shoots dry mass



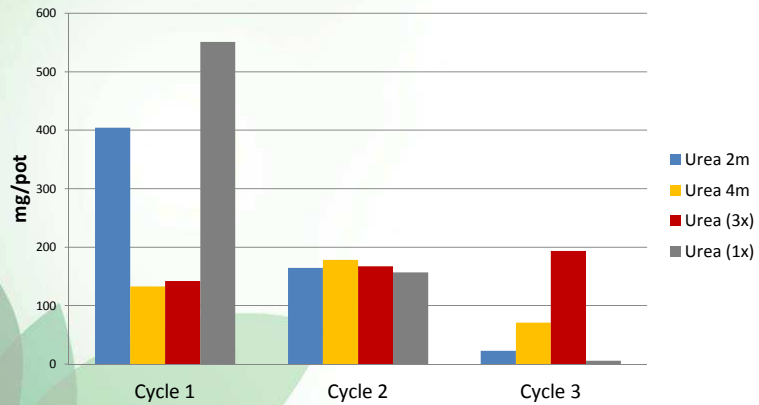
## Corn trial - greenhouse

### Shoots dry mass



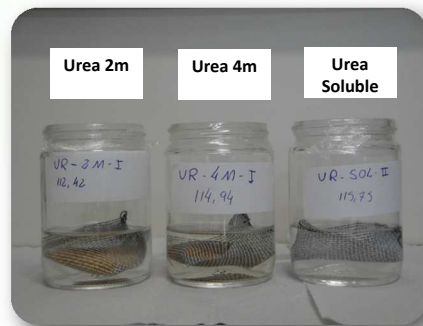
## Corn trial - greenhouse

### N-fertilizer in the shoots

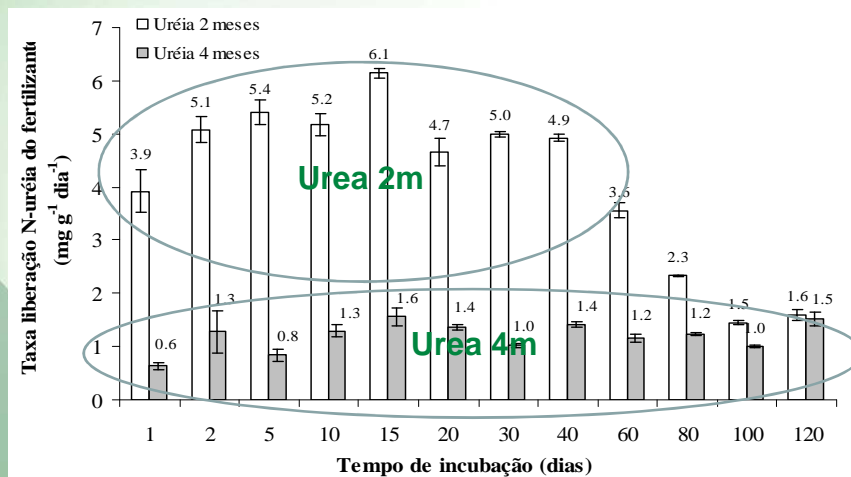


## Lab test

- ♥ 5g/50ml
- ♥ Controlled temp of 21°C
- ♥ Evaluation at 1-2-5-10-15-20-30-40-60-80-100-120 days



## Lab test



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## Field trial - Corn



- ♥ Casa Branca - SP
- ♥ Variety: AG 4051
- ♥ Regular practice vs. CRF all at planting

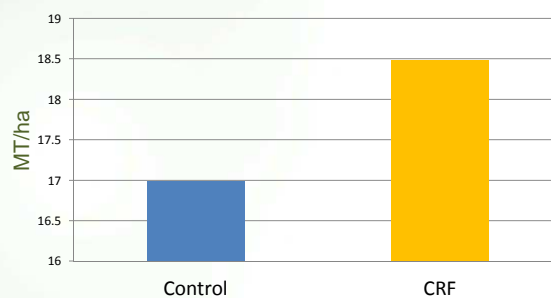
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## Field trial - Corn

Treatments	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Zn
Control	103	66	137	1,2
(4) CRF	73	58	119	1,2
Coating	70%	-	-	-
Reduction	30%	12%	13%	-

## Field trial – Corn

### Yield - spikes

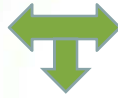


### Treatments cost

- Control: USD307 + 17 (cover dressing) = USD 324/ha
- CRF: USD 327/ha

## Conclusions

- ✔ Polyurethane coated urea is efficient in controlling the release rate
- ✔ It is possible to produce urea with distinct release rates
- ✔ There is a good correlation between lab and field results



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