

1st European Turfgrass Society Conference

Bermudagrass overseeding with 13 cool season turfgrasses in Spain

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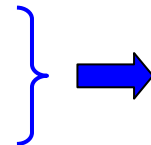
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Mediterranean climatic conditions

- * Mild winter season.
- * Hot and dry summer season.



Bermudagrass
(*Cynodon dactylon*)

Bermudagrass

(*Cynodon dactylon* (L.) Pers.)

Advantages

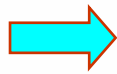
- Vigorous, dense and dark turfgrass.
- Good drought tolerance. —————> Uses 68% less water than C3 turfgrasses
McCarthy and Miller, 2002)
- Good soil salinity tolerance. —————> 50% growth reduction at
EC_e levels of 22 dS/m (average)
(Duncan and Carrow, 2000)

Main disadvantage

- It becomes dormant and turns brown when temperatures drop from 10 °C

In most golf courses of south east Spain
fairways are overseeded with C3 turfgrass species

Bermudagrass
sod production field




10 km south from Valencia city
(29th of November 2007)



¿Which turfgrass specie should I use for overseeding purposes?

- * Rápíd germination and emergence.
- * Low growth rate.
- * Good aspect (dark green colour, density, texture)
- * Good spring transition.



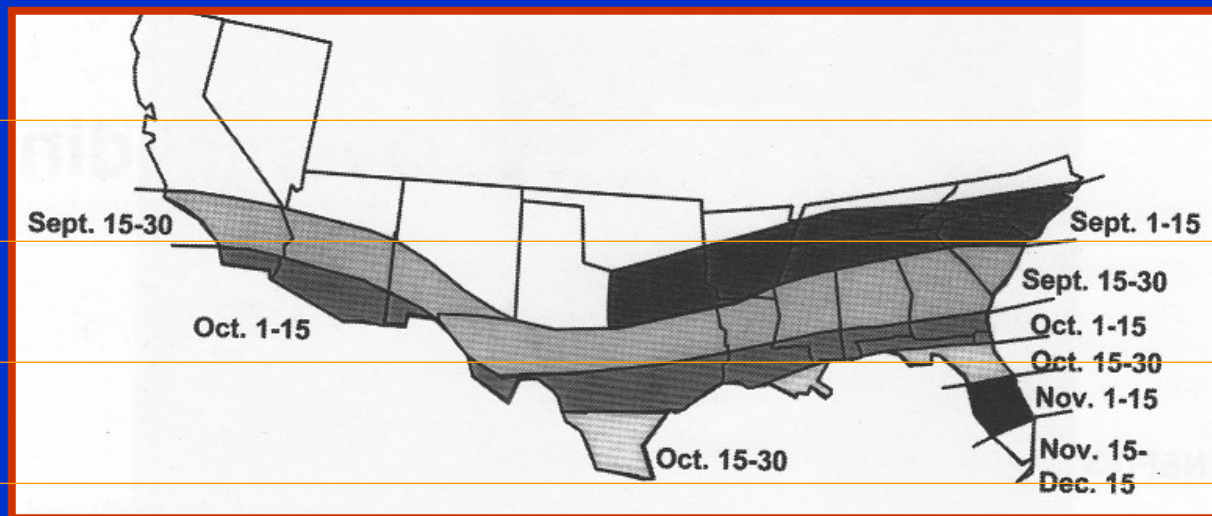
There is not a single specie that combines all the mentioned aspects

L. perenne, L. multiflorum, L. rigidum, P. trivialis

¿Which commercial variety/ies should I use?

Objective

- 1.- To determine which of the tested commercial variety/ies is/are the most suitable for overseeding purposes in Valencia (Spain).
- 2.- To determine the optimum overseeding date.



Latitude 40°

Latitude 35°

Latitude 30°

Latitude 25°

Material and methods

Lolium multiflorum

Tena

Lolium rigidum

Wimera

Lolium perenne

Belida

Grand Slam

Paragon

Paragon GLR

Pizzazz

Platinum

Ritmo

Verdi

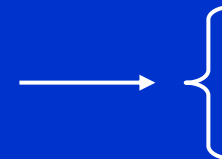
Poa trivialis

Dasas

Solo

Starlite

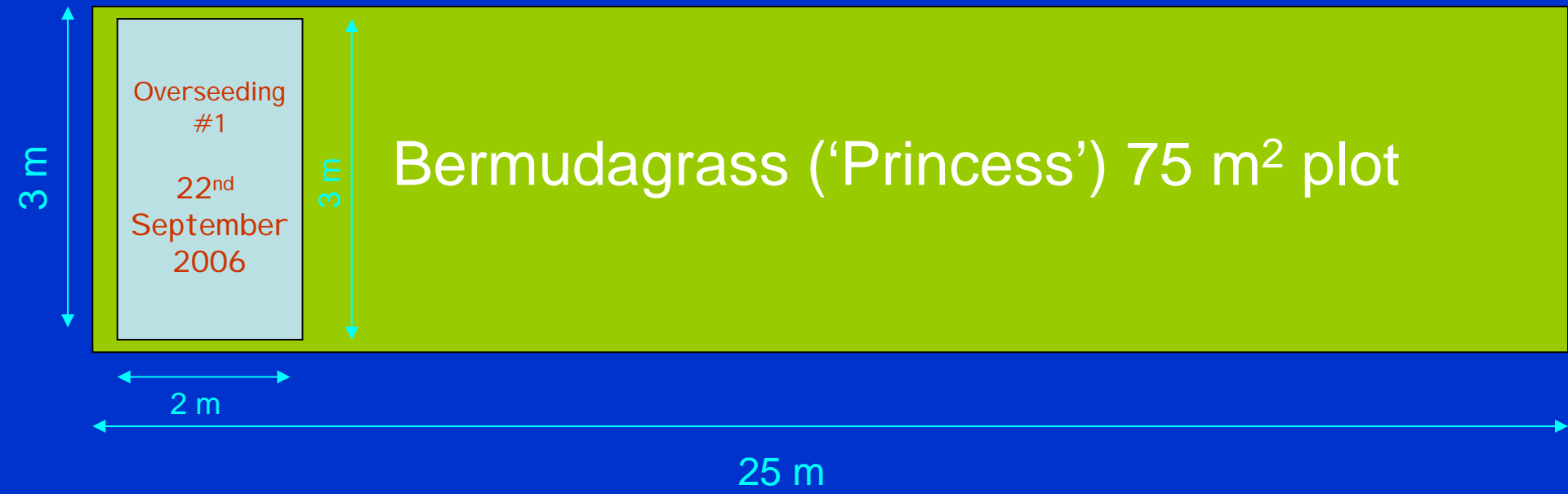
American
origin

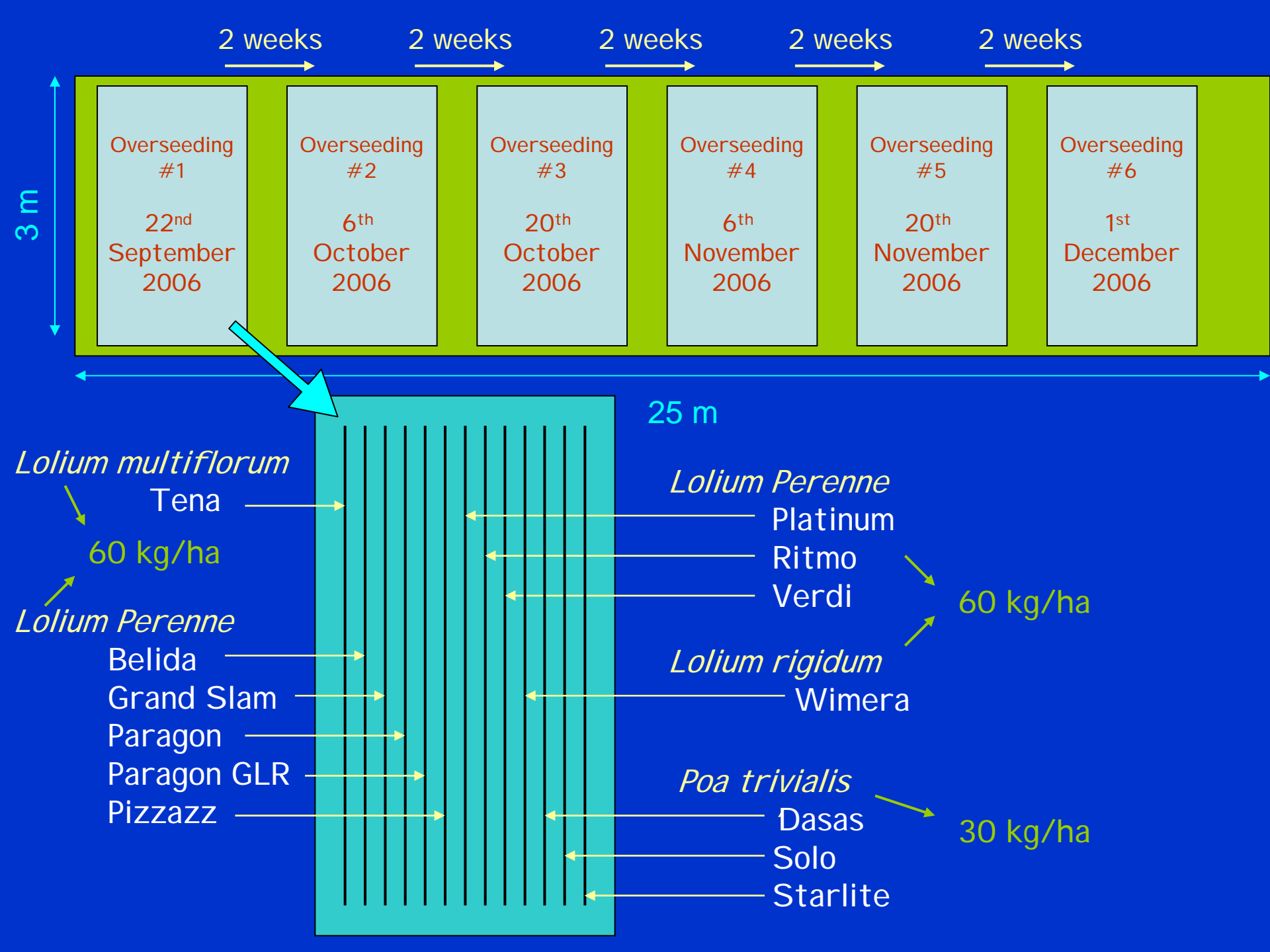


High growth rate

Endophyte Infection
Modern varieties
Low growth rate

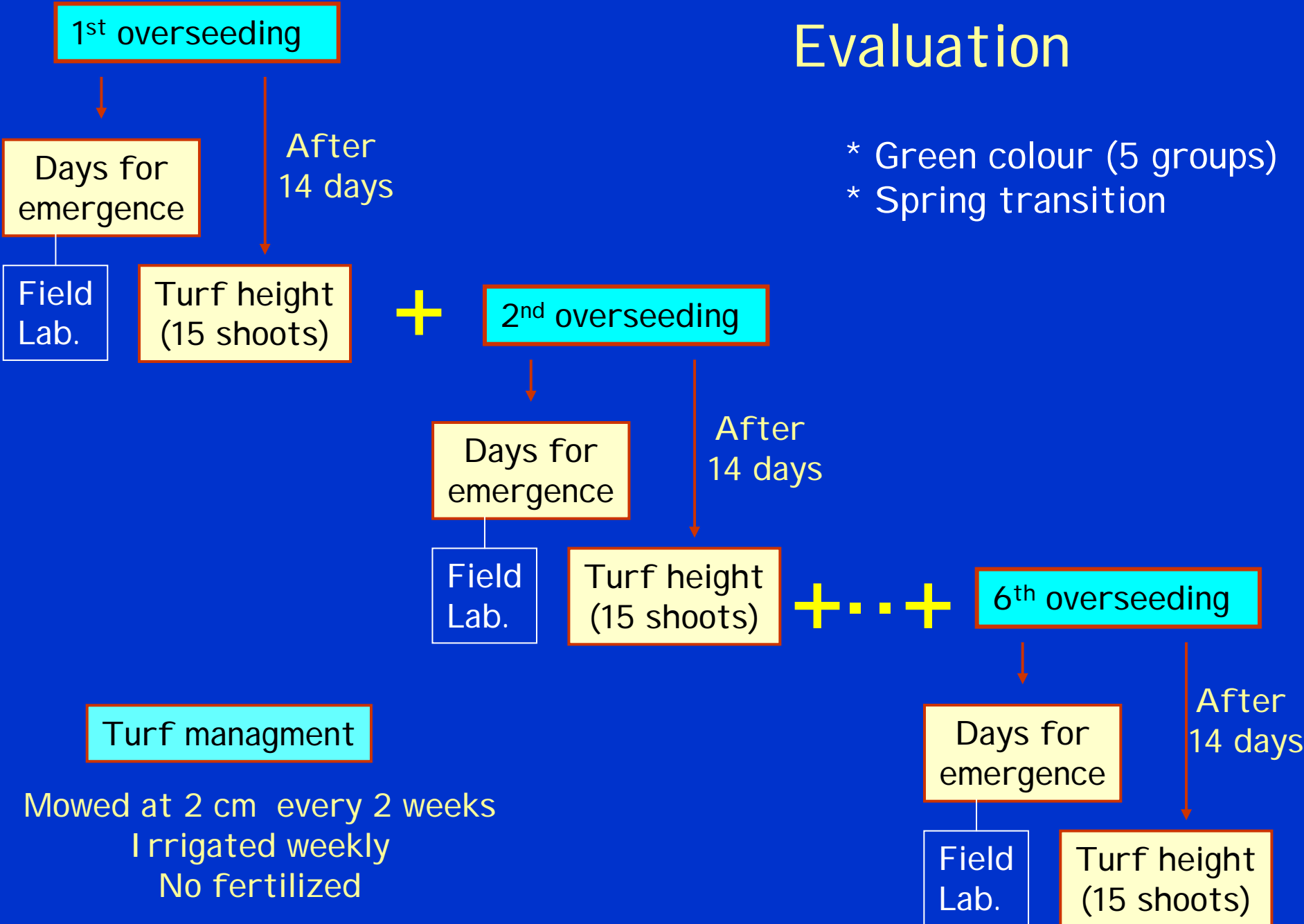
No endophyte Infection
Older varieties than above ones
Low growth rate





Evaluation

- * Green colour (5 groups)
- * Spring transition



Turf managment

Mowed at 2 cm every 2 weeks
Irrigated weekly
No fertilized

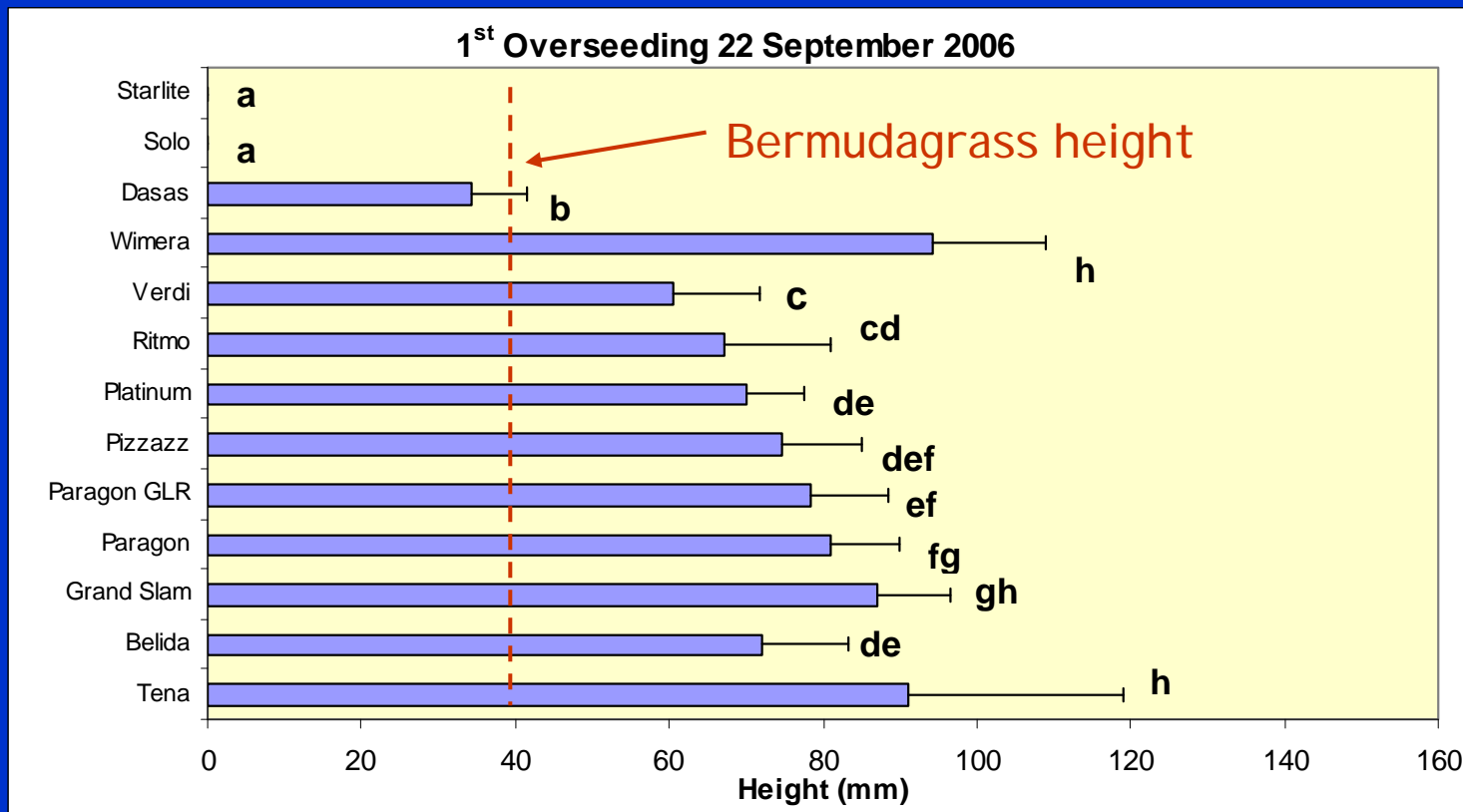
Days for emergence	1 st Overs.	2 nd Overs.	3 rd Overs.	4 th Overs.	5 th Overs.	6 th Overs.
Mean T ^a (°C) (max.-min.)	22 nd Sep.	6 th Oct.	20 th Oct.	6 th Nov.	20 th Nov.	1 st Dec.
	23,1 (34,9-13,7)	21,4 (34,0-12,6)	21,1 (31,1-15,6)	16,7 (24,8-9,4)	17,1 (24,8-9,4)	15,5 (24,8-8,8)
<i>P. trivialis</i>						
Starlite	5	5	6	8	8	7
Solo	5	5	6	8	8	7
Dasas	4	4	5	7	7	6
<i>L. rigidum</i> (Wimera)	4	3	5	6	7	6
<i>L. perenne</i>						
Verdi	4	3	5	5	6	6
Ritmo	4	3	5	5	7	5
Platinum	4	3	5	5	7	6
Pizzazz	4	3	5	5	7	5
Paragon GLR	4	3	5	6	6	6
Paragon	4	3	5	5	6	6
Grand Slam	4	3	5	6	7	5
Belida	3	3	4	5	6	5
<i>L. multiflorum</i> (Tena)	3	3	4	5	6	5

Days for emergence	1 st Overs.	2 nd Overs.	3 rd Overs.	4 th Overs.	5 th Overs.	6 th Overs.
Mean T ^a (°C) (max.-min.)	22 nd Sep.	6 th Oct.	20 th Oct.	6 th Nov.	20 th Nov.	1 st Dec.
	23,1 (34,9-13,7)	21,4 (34,0-12,6)	21,1 (31,1-15,6)	16,7 (24,8-9,4)	17,1 (24,8-9,4)	15,5 (24,8-8,8)
<i>P. trivialis</i>						
Starlite	5/5	5/5	6/6	8/6	8/6	7/6
Solo	5/5	5/5	6/6	8/6	8/6	7/6
Dasas	4/4	4/4	5/5	7/5	7/5	6/6
<i>L. rigidum</i> (Wimera)	4/4	3/4	5/4	6/5	7/5	6/5
<i>L. perenne</i>						
Verdi	4/4	3/3	5/3	5/5	6/4	6/5
Ritmo	4/4	3/3	5/3	5/5	7/5	5/5
Platinum	4/4	3/4	5/3	5/5	7/4	6/5
Pizzazz	4/3	3/4	5/3	5/5	7/5	5/5
Paragon GLR	4/4	3/4	5/4	6/5	6/4	6/5
Paragon	4/4	3/4	5/3	5/5	6/4	6/5
Grand Slam	4/4	3/4	5/4	6/5	7/5	5/5
Belida	3/3	3/3	4/3	5/4	6/4	5/4
<i>L. multiflorum</i> (Tena)	3/3	3/3	4/3	5/5	6/4	5/4

Growth rate

Mean of 15 shoots height
14 days after sowing

Temperature (°C)	
Maximum	34.9
Mean	23.1
Minimum	13.7

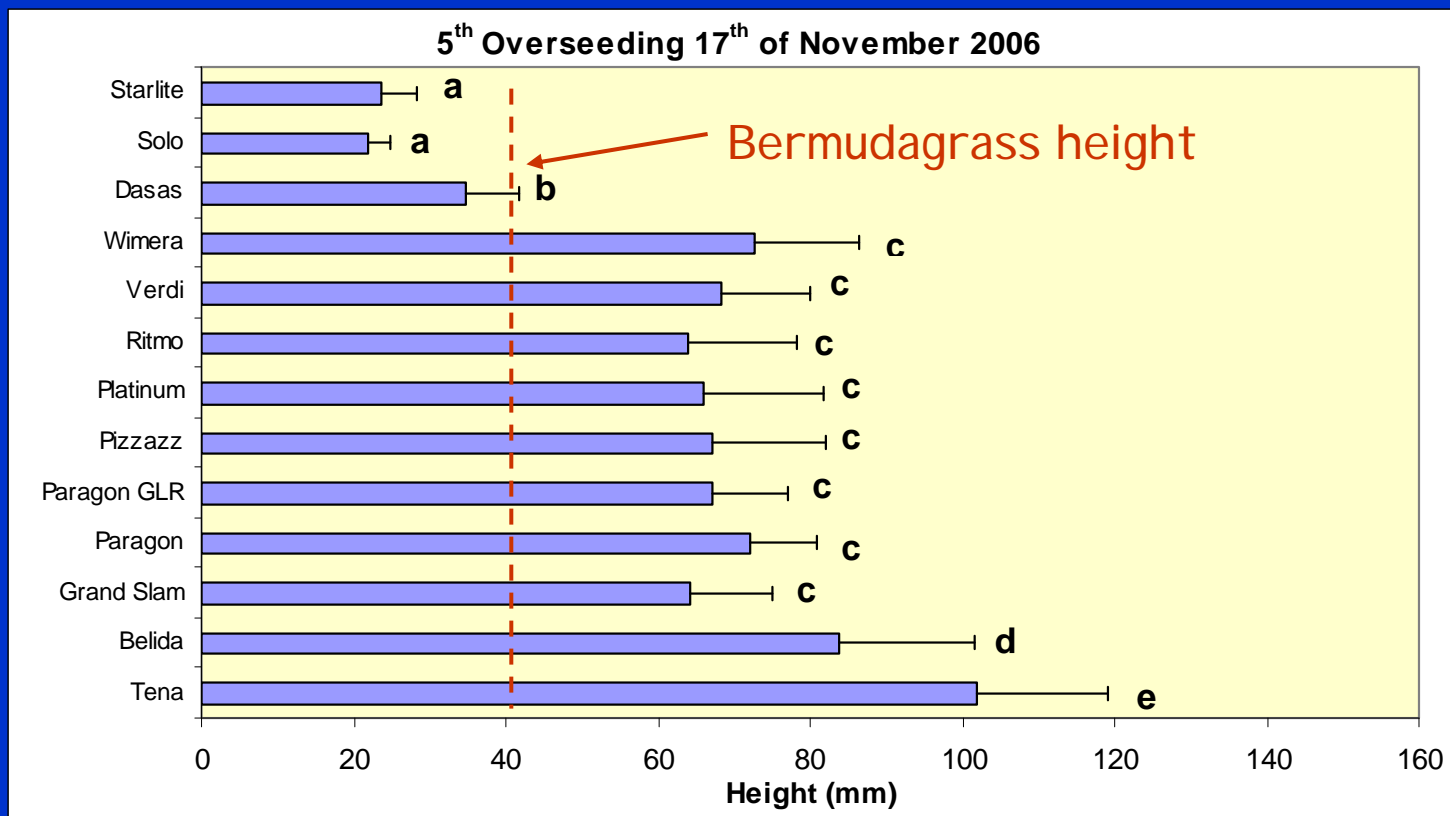


Anova at 95% of confidence limit

Growth rate

Mean of 15 shoots height
14 days after sowing

Temperature (°C)	
Maximum	24.8
Mean	17.1
Minimum	9.9

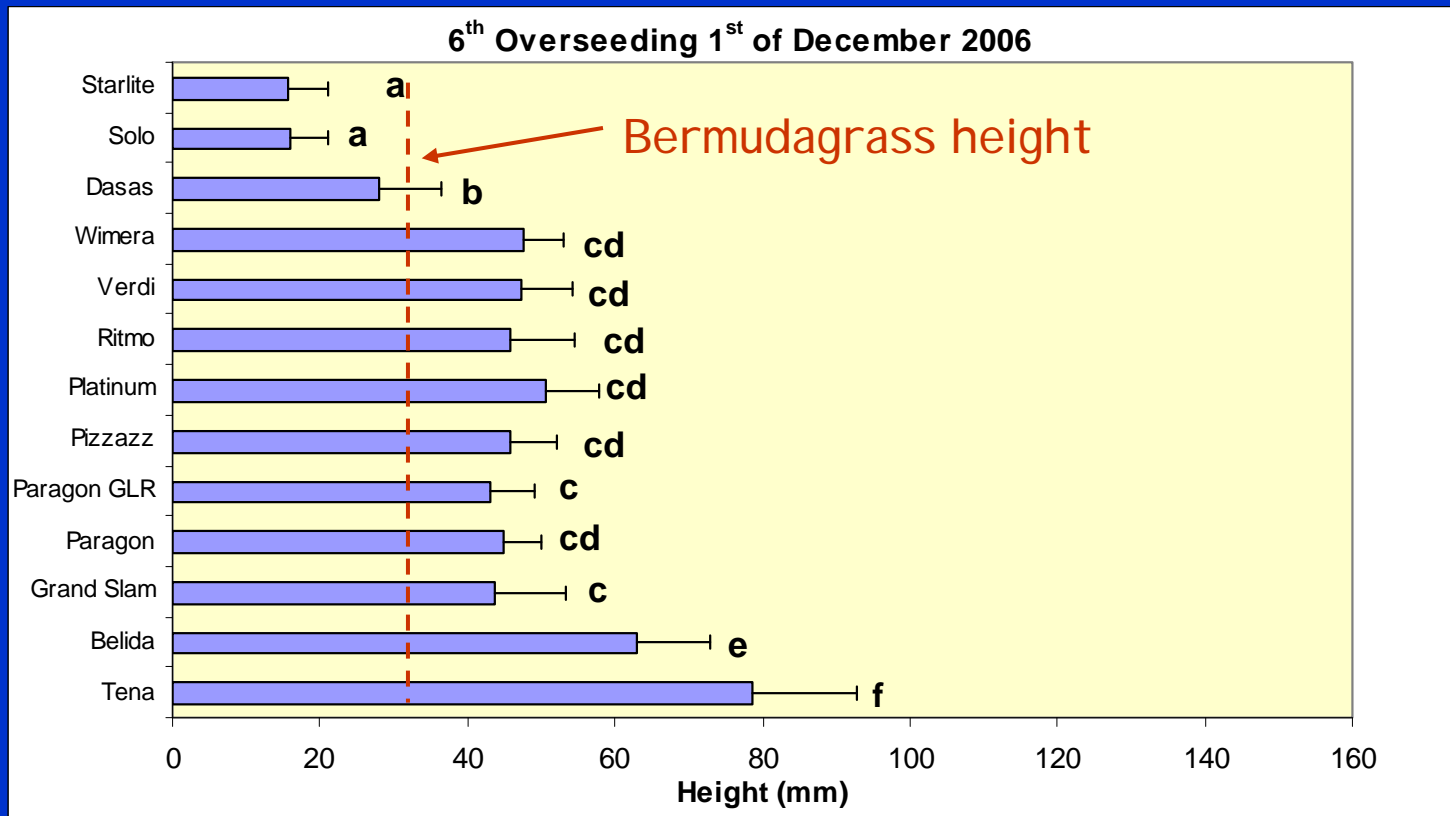


Anova at 95% of confidence limit

Growth rate

Mean of 15 shoots height
14 days after sowing

Temperature (°C)	
Maximum	24.8
Mean	15.5
Minimum	8.8



Anova at 95% of confidence limit

L. multiflorum

L. perenne

L. rigidum

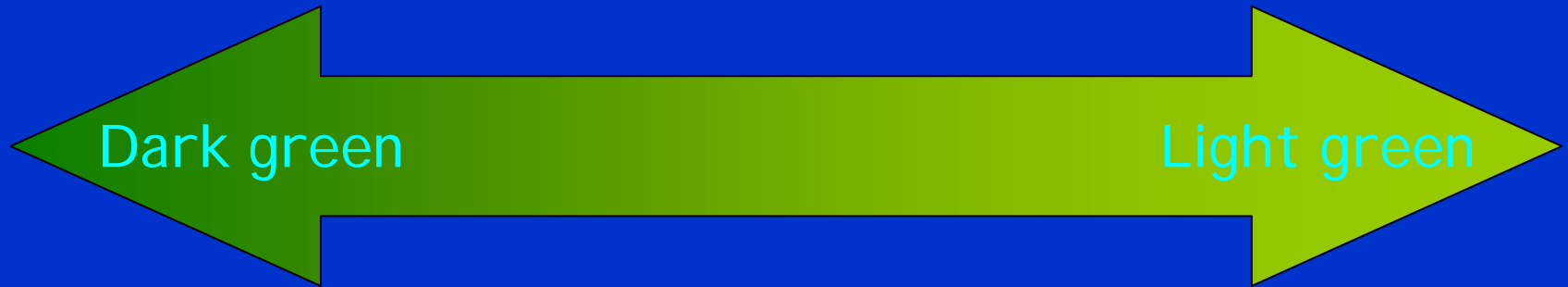
P. trivialis



"Overseeding" on *Cynodon dactylon* (Princess)

Results

3.- Turfgrass colour



1	2	3	4	5
Grand Slam Paragon Paragon GLR Pizzazz	Ritmo	Platinum Verdi	Belida Tena Wimera	Dasas Solo Starlite

L. multiflorum

L. perenne

L. rigidum

P. trivialis



Grand
Slam

Pizzazz

Paragon

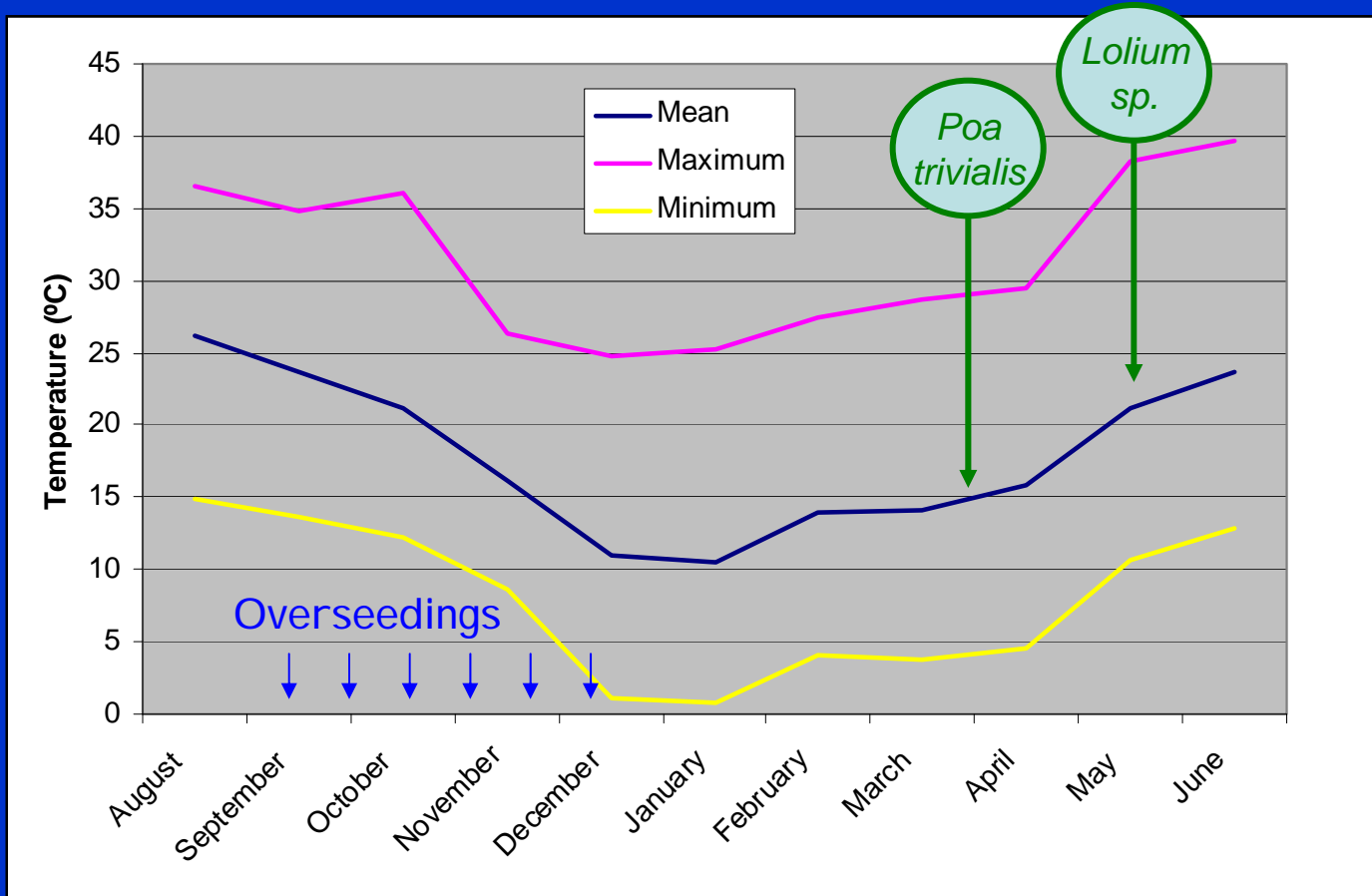
Paragon GLR



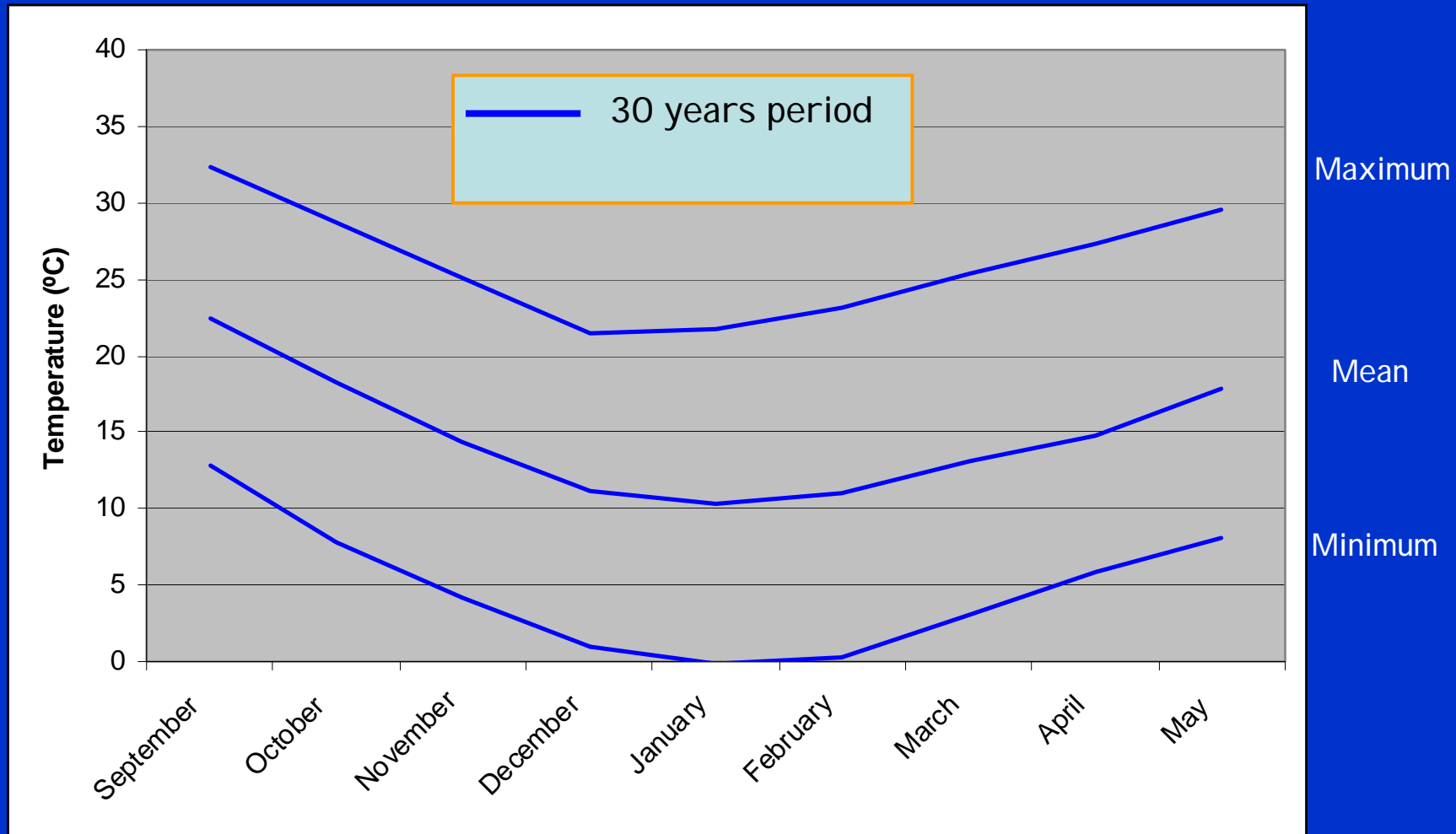
"Overseeding" on *Cynodon dactylon* (Princess)

Results

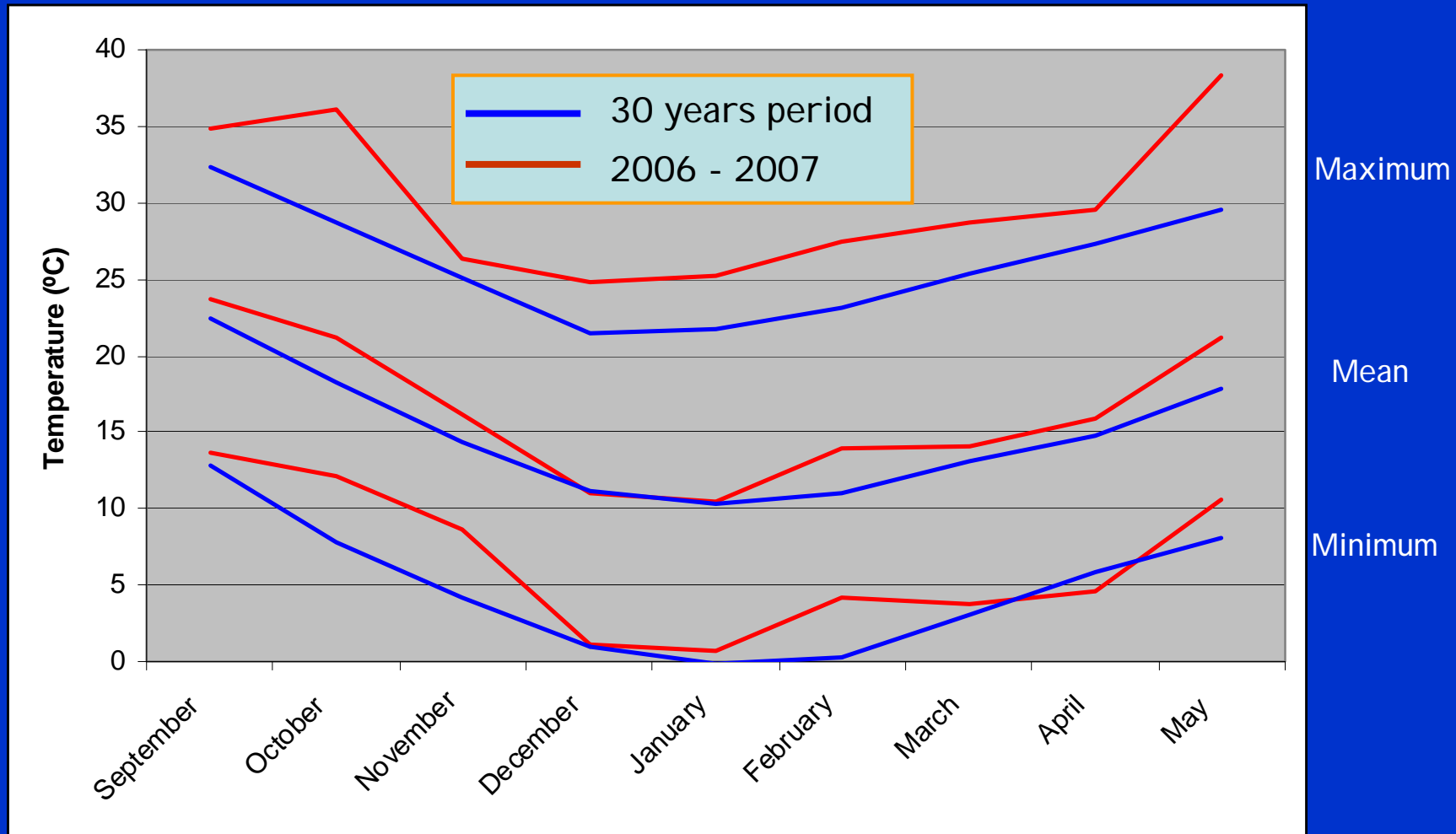
3.- Spring transition



¿Which was the best date for overseeding?



¿Which was the best date for overseeding?



Conclusions

* Rapid emergence: —————→ 1.- Tena (*L. multiflorum*)
2.- Belida (*L. perenne*)

* Growth rate: —————→ 1.- *L. perenne* varieties
except Belida.
2.- Dasas (*P. trivialis*) on
low mowed turf.

* Colour: —————→ 1.- Grand Slam
2.- Paragon
3.- Paragon GLR
4.- Pizzazz } —————→ *L. perenne*

* Spring transition: —————→ 1.- Dasas
2.- Solo
3.- Starlite } —————→ *P. trivialis*

Conclusions

* Rapid emergence: —————→ 1.- Tena (*L. multiflorum*)
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* Colour: —————→ 1.- Grand Slam
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4.- Pizzazz } —————→ *L. perenne*

* Spring transition: —————→ 1.- Dasas
2.- Solo
3.- Starlite } —————→ *P. trivialis*

Thank you
for your attention

¿Any question?

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