

Manipulating flowering time of *Protea* 'Pink Ice' in Chile to prevent losses by bud freeze injury

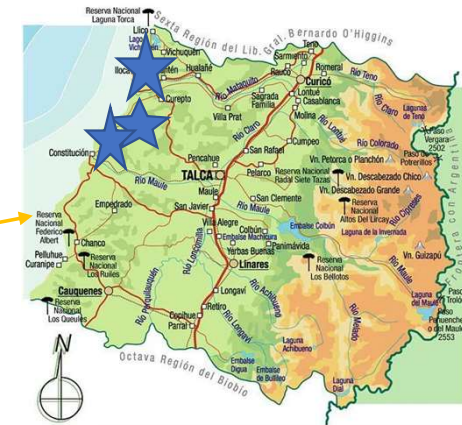
F. Schiappacasse¹, P. Rebolledo¹, L. Valdivia¹ and A. Gerber²

¹Universidad de Talca, Talca, Chile

²International Association of Horticultural Producers, United Kingdom

Previous project

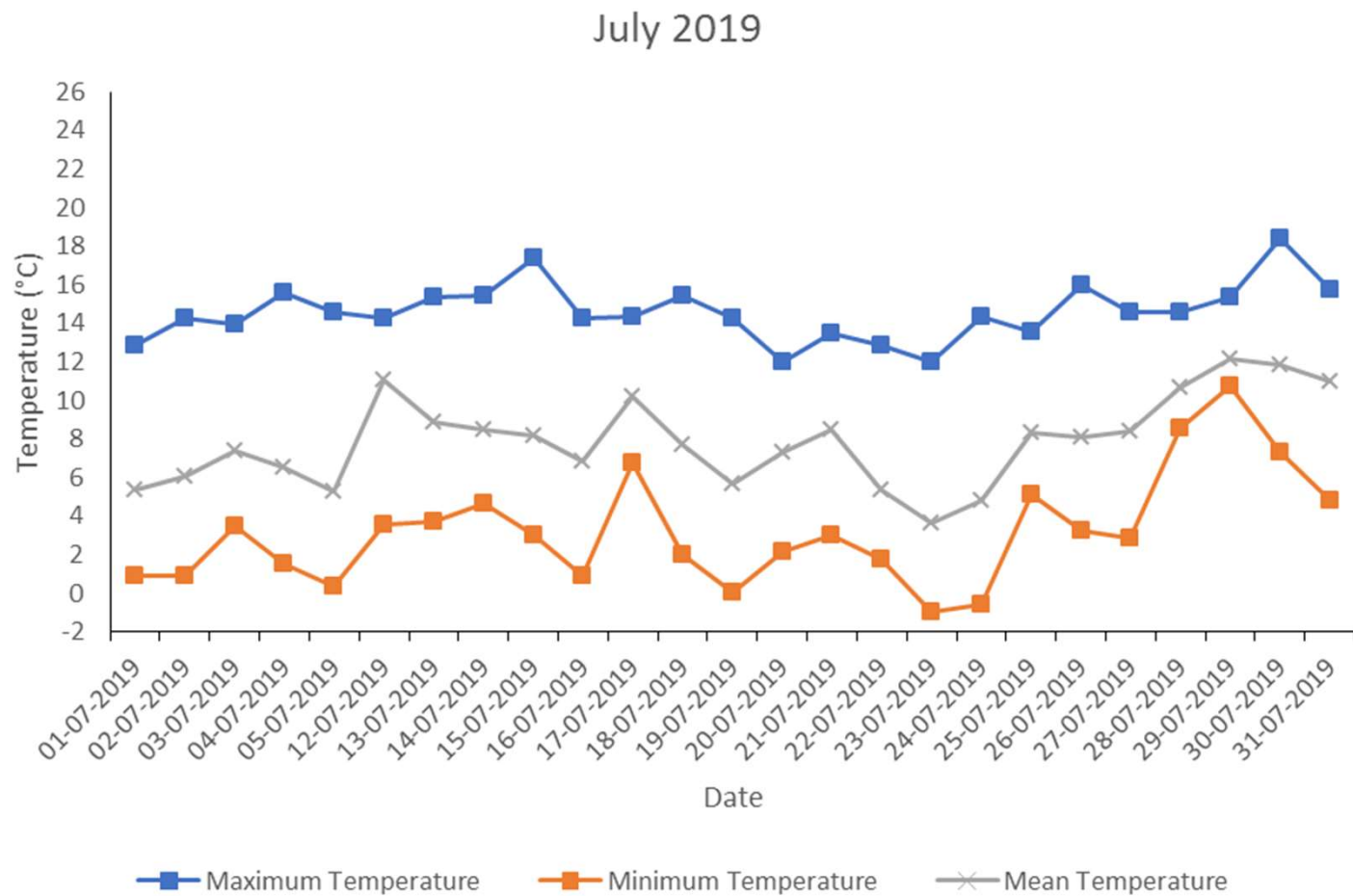
“Commercial growing of
Proteaceae in the dryland
of the Maule Region”



Products involved

- *Leucadendron*, different cvs.
- A few *Leucospermum* cvs.
- *Protea* 'Pink Ice'

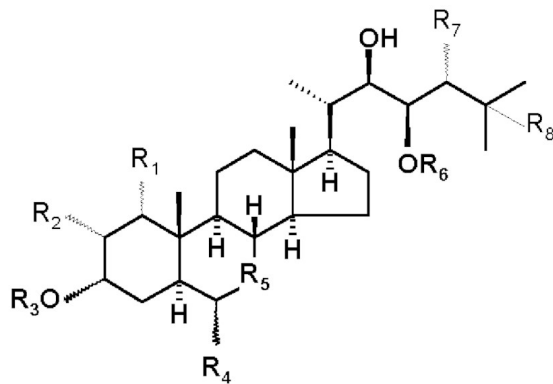




Sometimes temperatures go below 0°C

Prevention of freezing on 'Protea Pink Ice'

Brassinosteroid phytohormones



«Coldkiller», solution with minerals



Paper bags



Salgado, C. 2009. Freeze control methods for floral buds of *Protea* 'Pink Ice' (In Spanish).
Dissertation Universidad de Talca, Talca, Chile.

Consultant Audrey Gerber visited in 2004

She had suggested to test **pruning in November** to have buds formed in the spring flush and so avoid losses and to improve stem length (longer growing time from pruning to harvest)



Our favorite grower was Ms. Juana Concha

- She died in 2016
- Her daughter took over, but no know how
- 334 plants of *P. 'Pink Ice'*, short stems and buds with freezing damage



We decided to test Audrey's idea and so applied for funds to Peter Matthews Scholarship

After 13 years we started this research

Treatments:

- Control; only harvest cuts, grower's normal procedure
- Pruning on 17 November 2017 (heading cuts)
- Pruning on 15 December 2017 (heading cuts)



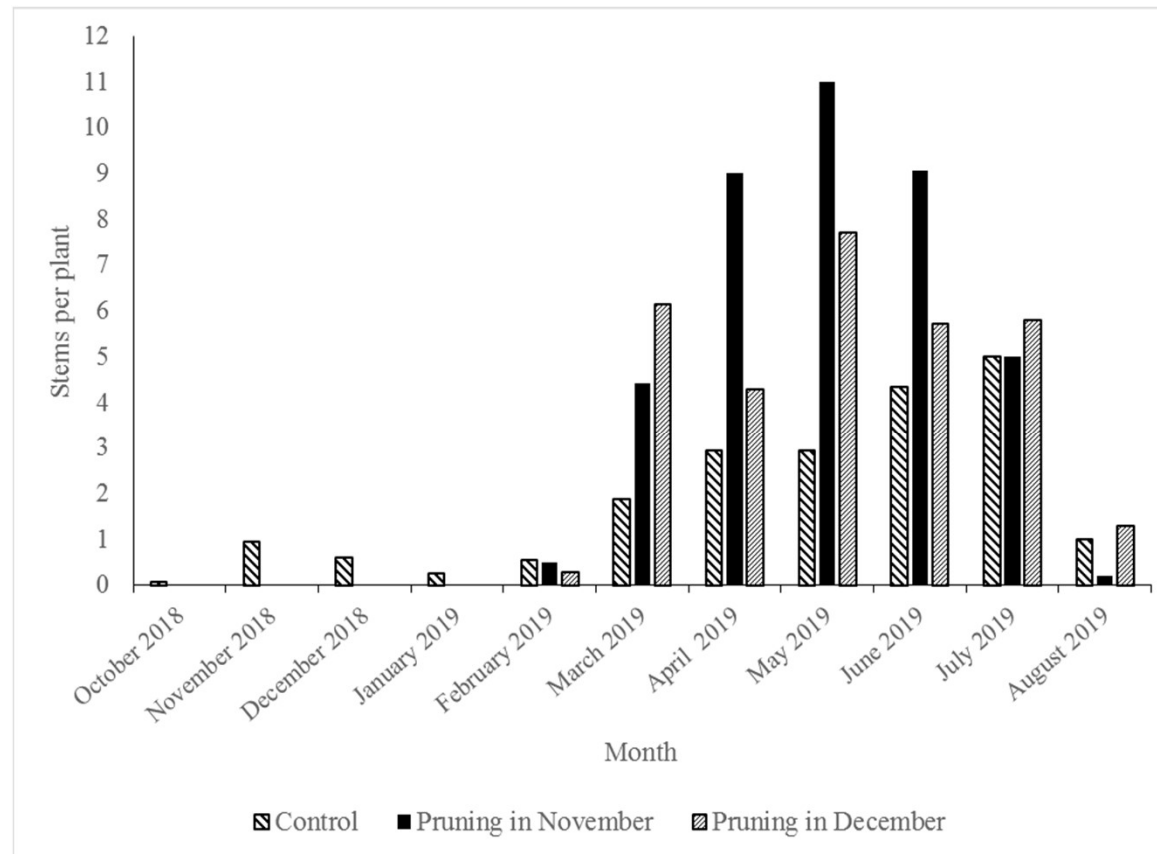


Plants pruned in
December showed
leaf freezing in their
first winter

Flower stems per plant

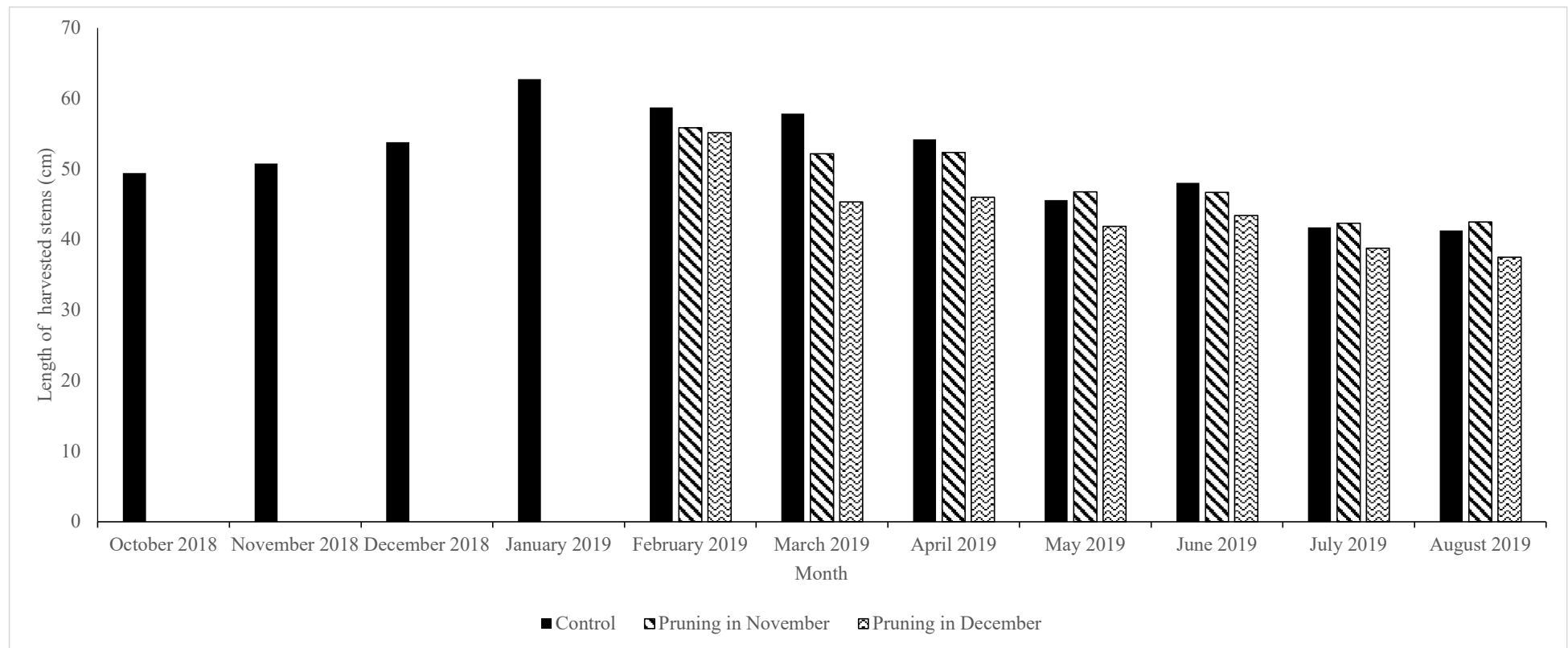
Pruned plants
started
blooming
in February,
peak in May

No statistic
differences



*Stems collected by the growers are not included

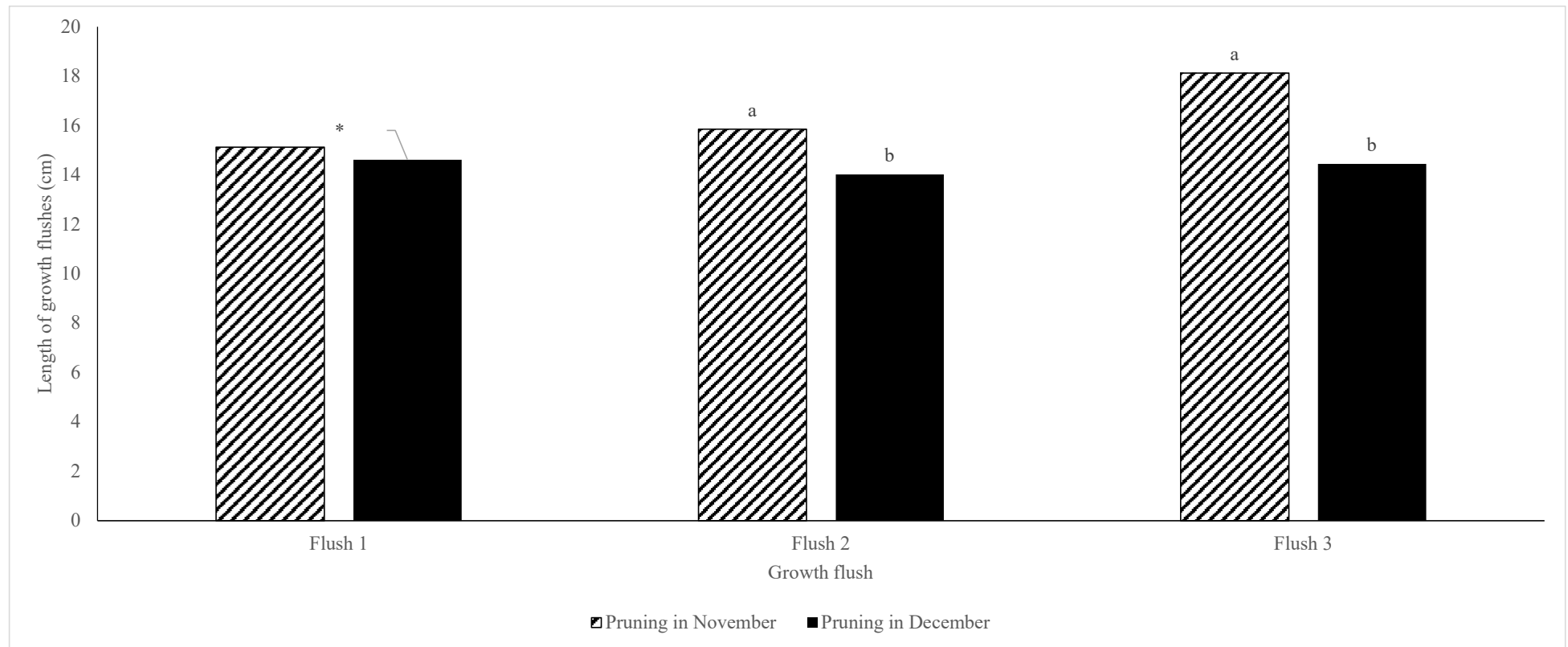
Stem length: no statistical differences within a month





3 flushes per stem in all
treatments (average)

Plants pruned in November had longer flushes



Frozen buds

- 2018 (10 freezing events)
- 2019 (4 freezing events)

Control	2.9
P in November	-
P in December	-

Control	1.9
P in November	7
P in December	6



Conclusions

Biennial pruning in *Protea* 'Pink Ice' does not seem promising for commercial growing conditions in Huapi, Chile.

Production of flowers throughout the year, as occurs in this area, limits the capacity of pruning to shift flowering to a specific time period.

It is not clear, from this study, which factors had a controlling influence on flower induction, shoot growth, or number of growth flushes.

The aim of this study to use biennial pruning to move flower production to avoid freezing damage achieved limited success. The first flowers produced after pruning escaped cold damage, however, with continuous flowering, later flowers suffered notable damage. In addition, stem length was not increased.

AKNOWLEDGEMENTS

We wish to thank the International Protea Association (IPA) Peter Matthews Scholarship for financial support for this study



Pabla Rebolledo - Flavia Schiappacasse - Loreto Valdivia