

The effects of the manipulation of water supply on tree – grass interactions



Steven Higgins¹, Ed February² and William Bond²

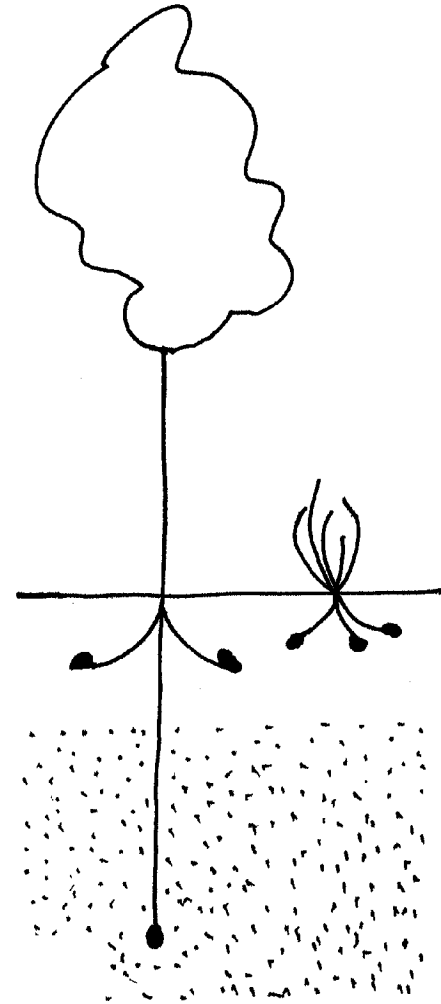
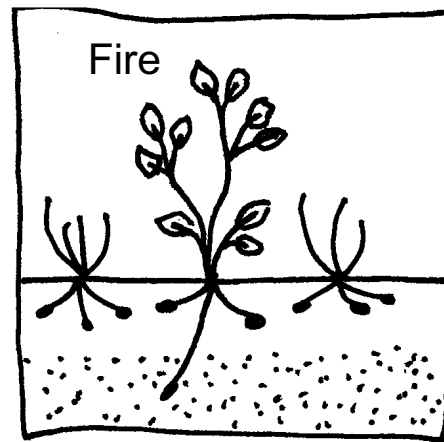
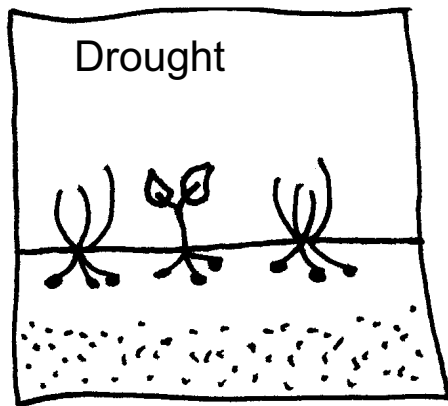
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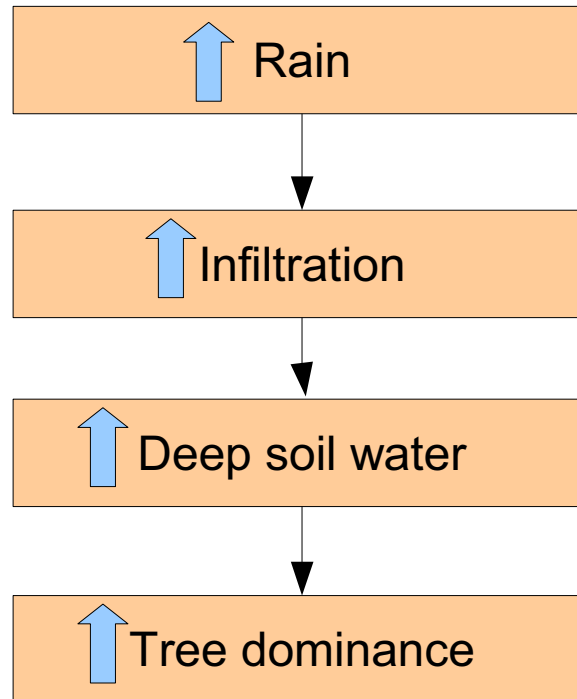
Simple savanna models

1. Rooting-niche model

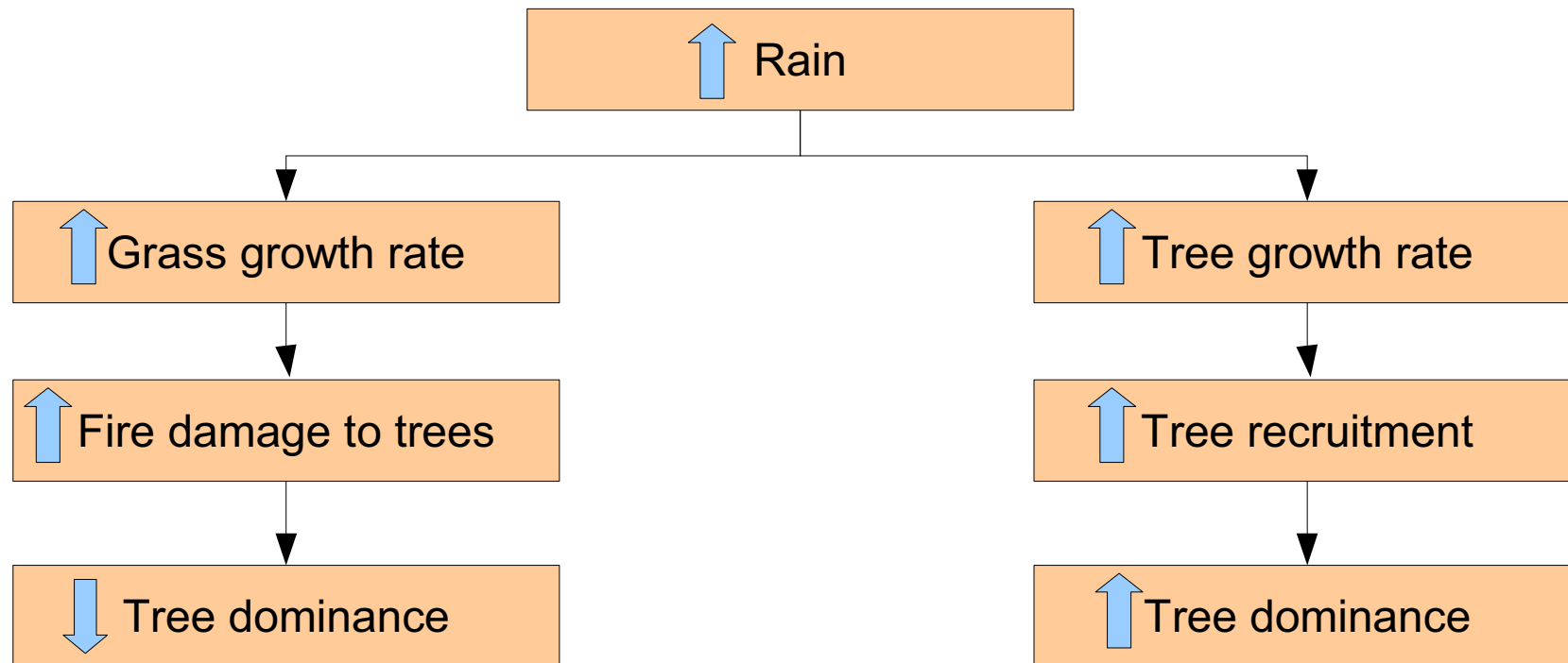
2. Demographic bottleneck model



Rooting niche predictions



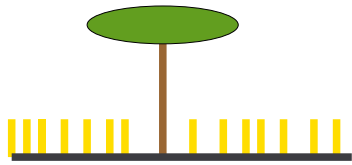
DBM Predictions



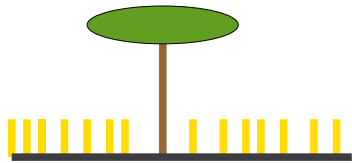
Rainfall manipulation experiment

Tree +

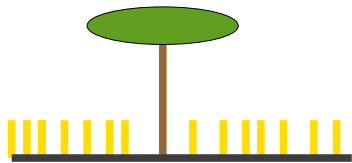
Tree -



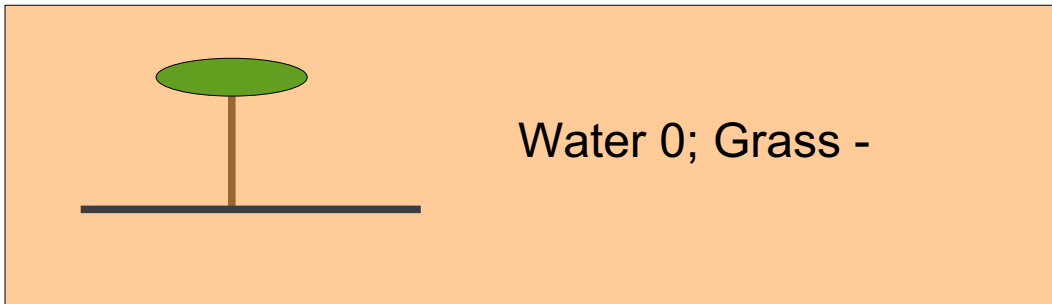
Water 0



Water +



Water -



Water 0; Grass -

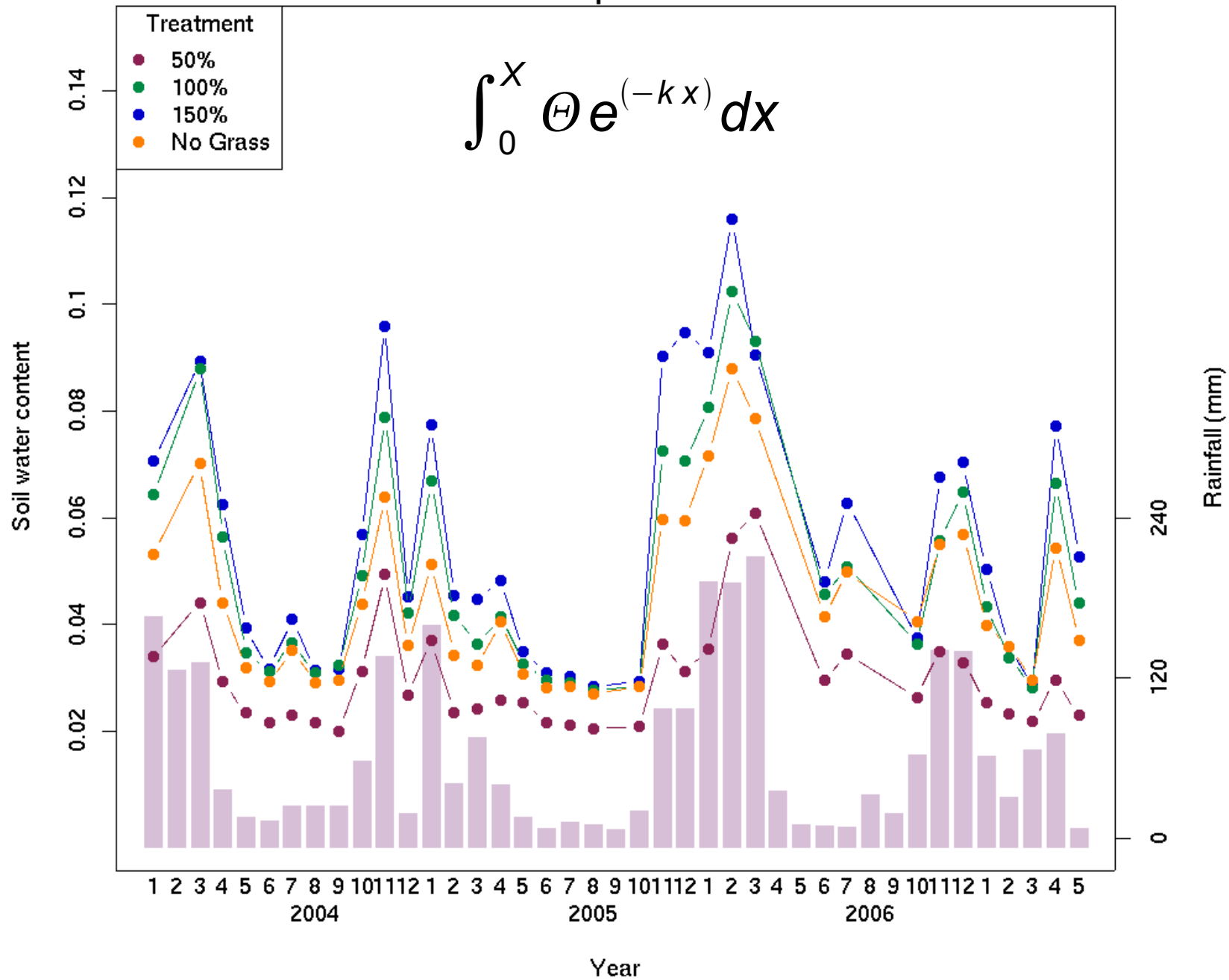
Rainfall manipulation experiment



Monthly survey team



Water content at Pkop (tree plots)



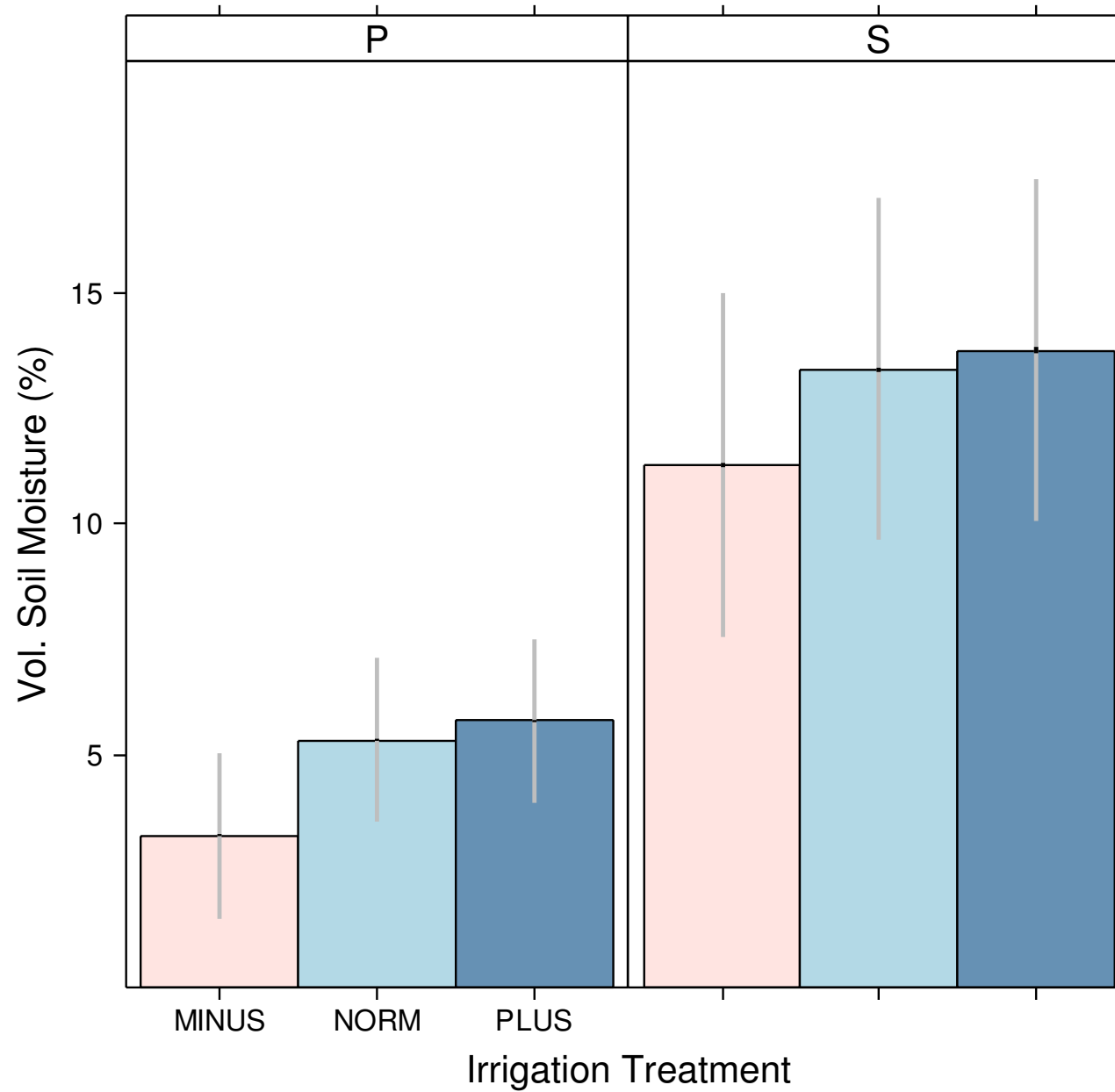
Data analysis

LME : Linear mixed effects modelling:

fixed effects e.g. irrigation treatment, tree presence,....

random effects e.g. plot, site,....

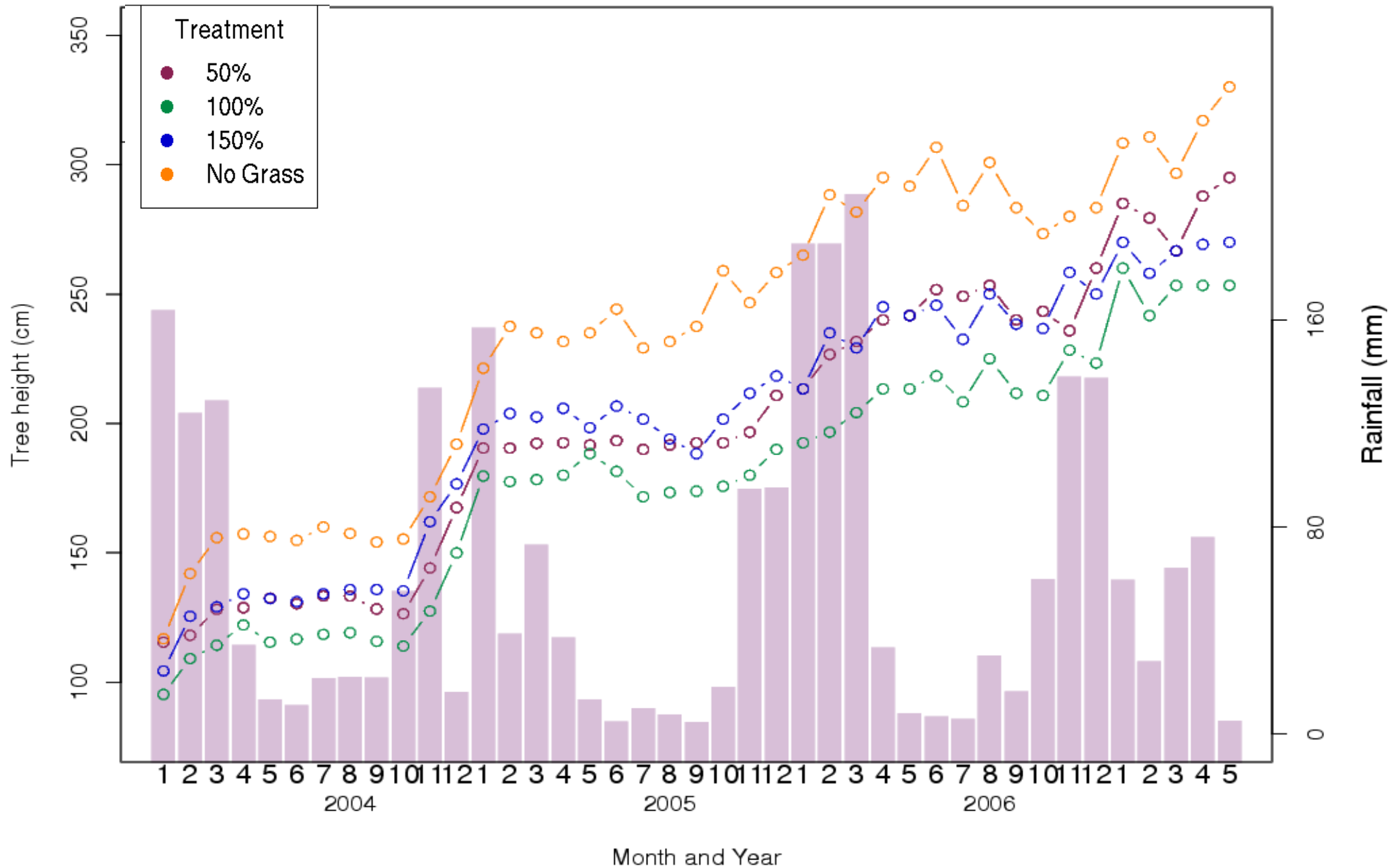
Irrigation treatment effects



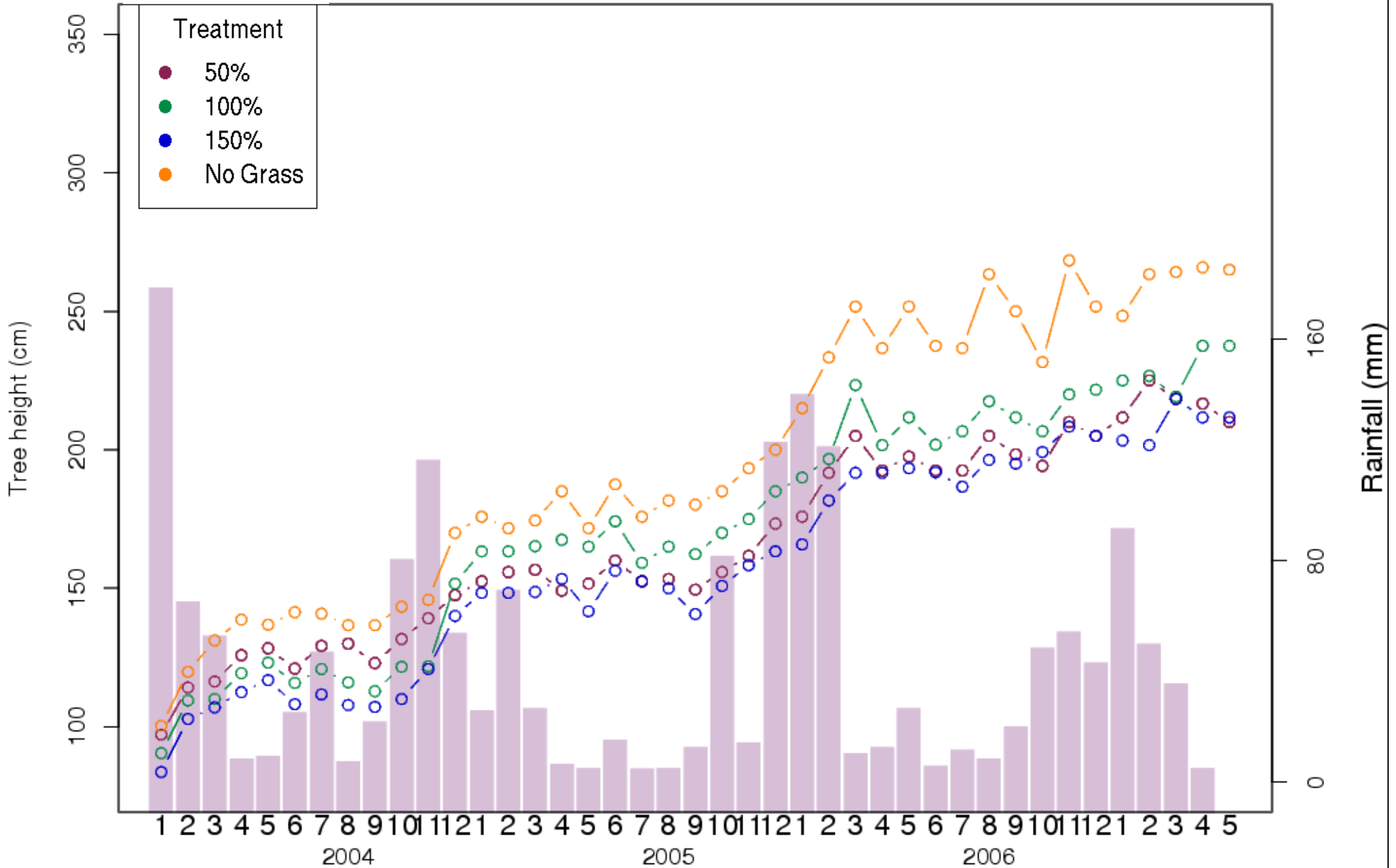
Monthly monitoring of tree size



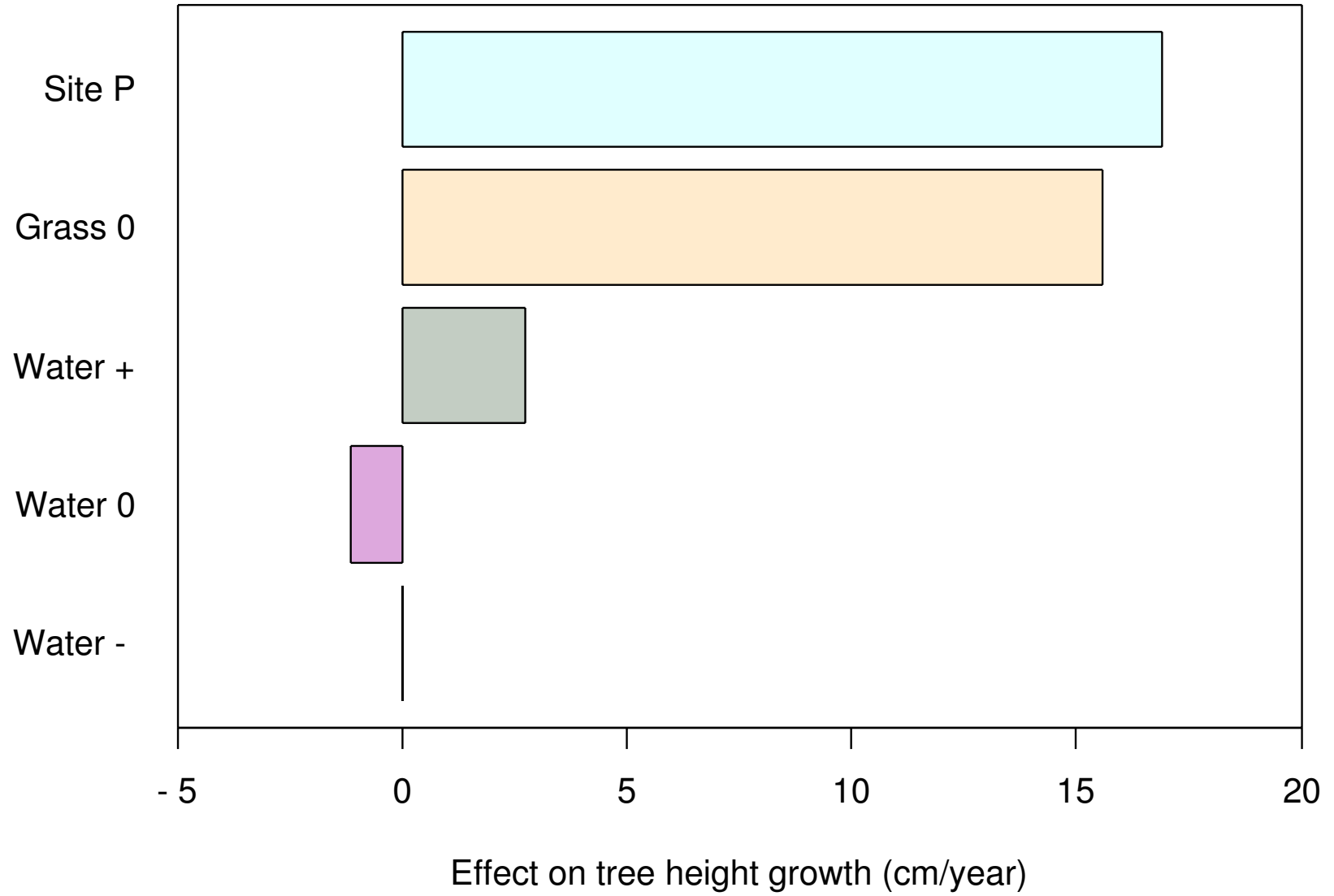
Tree growth Pkop



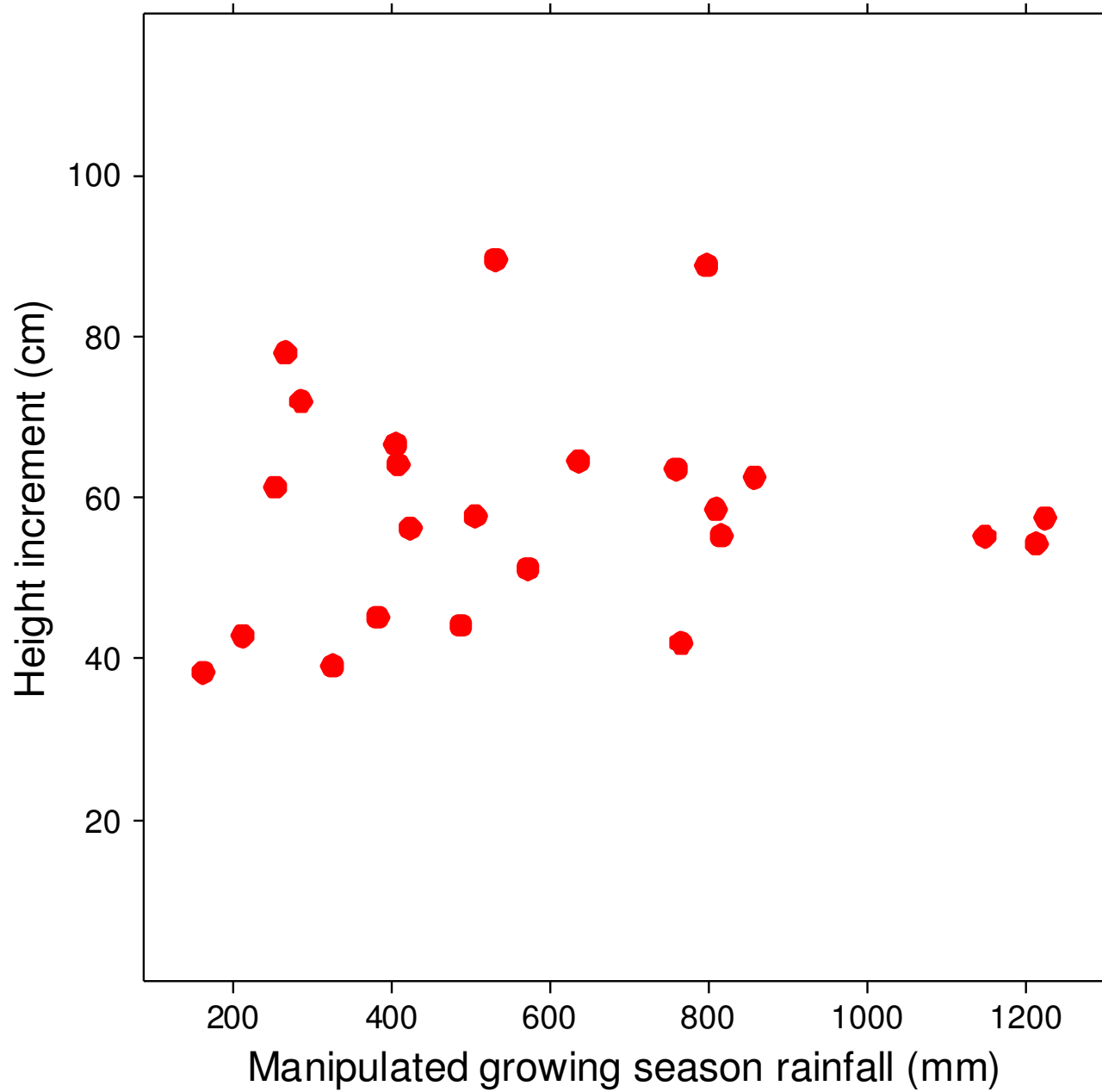
Tree growth Satara



Factor effects on tree growth



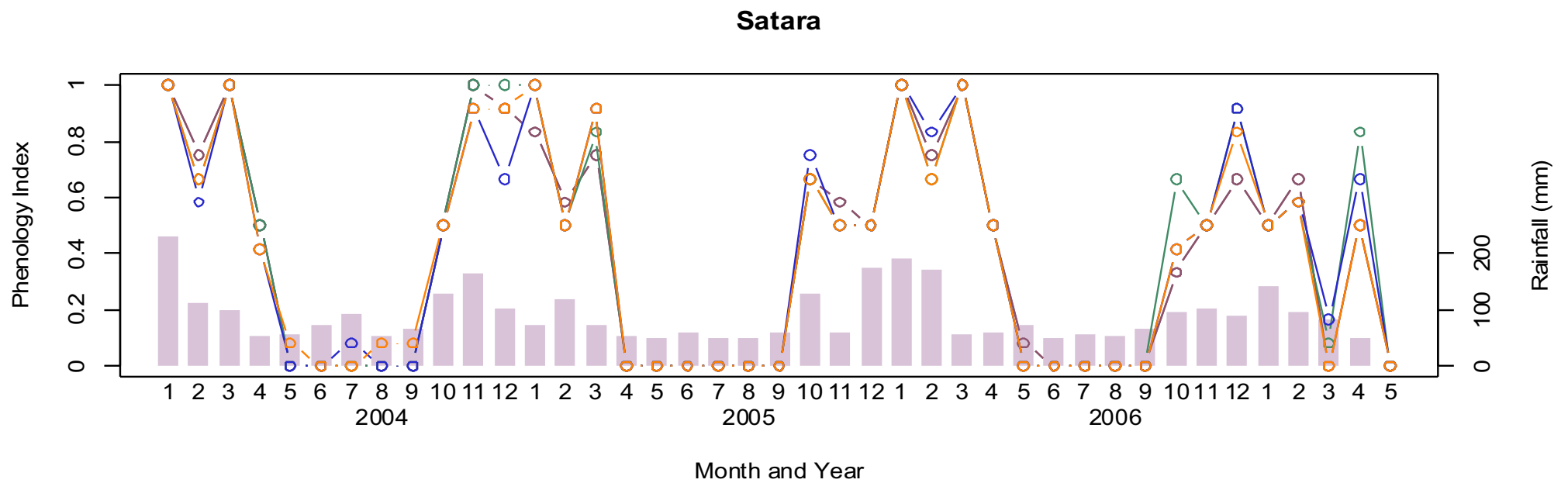
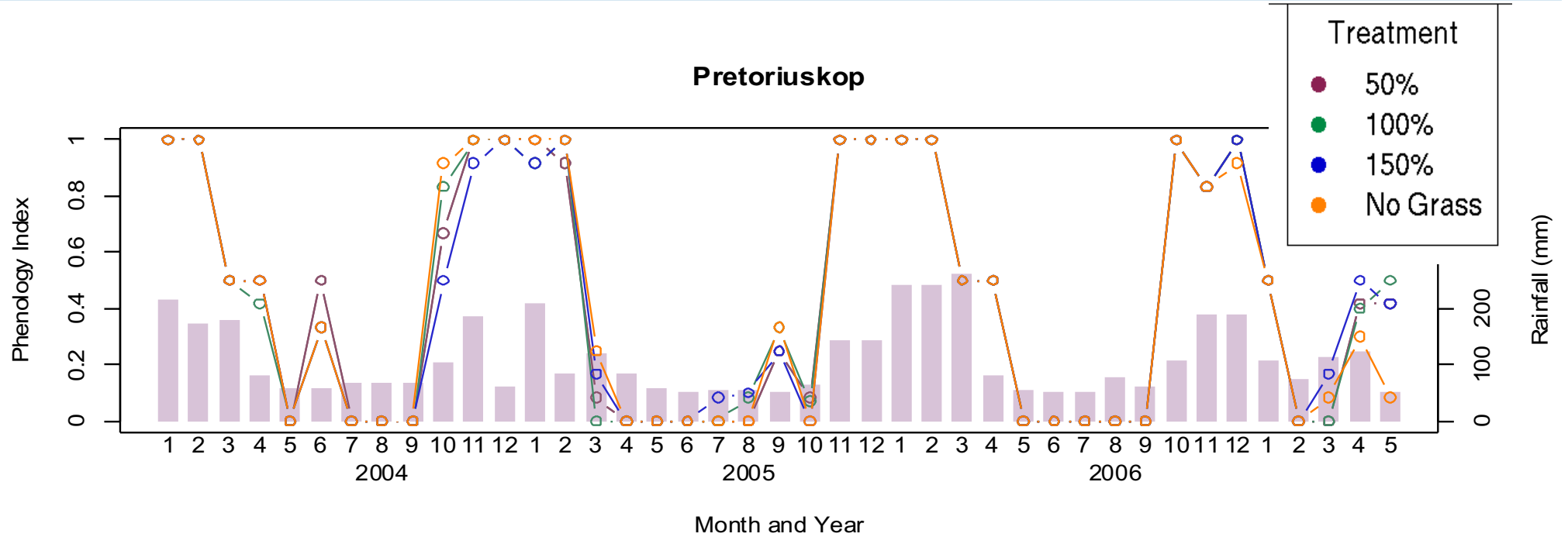
No rainfall effect !



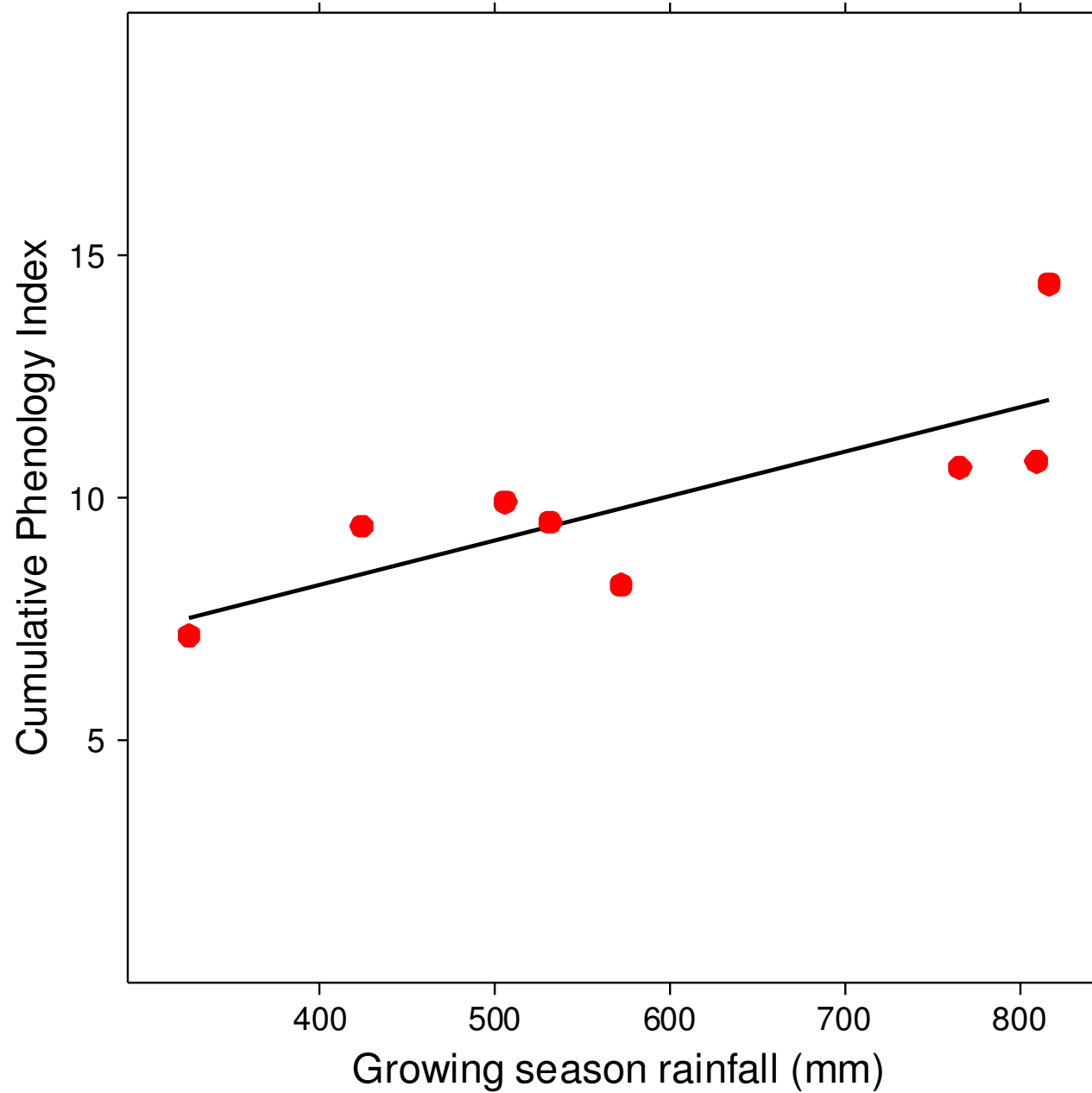
Maybe an effect on growing season length?



Tree Leaf Phenology



Tree growing season length

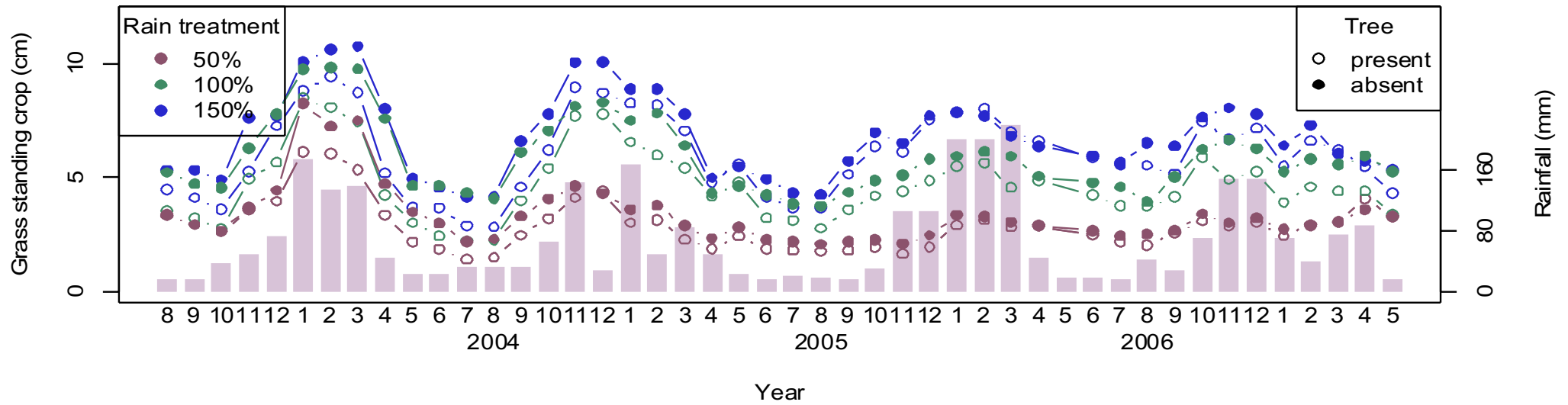


Grass growth data collection

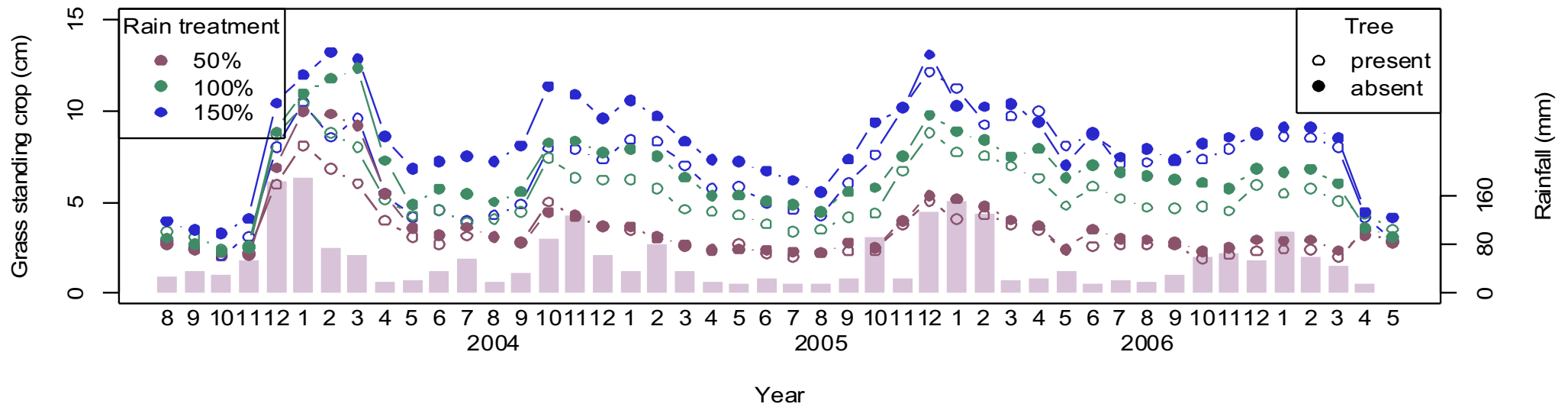


Grass standing crop

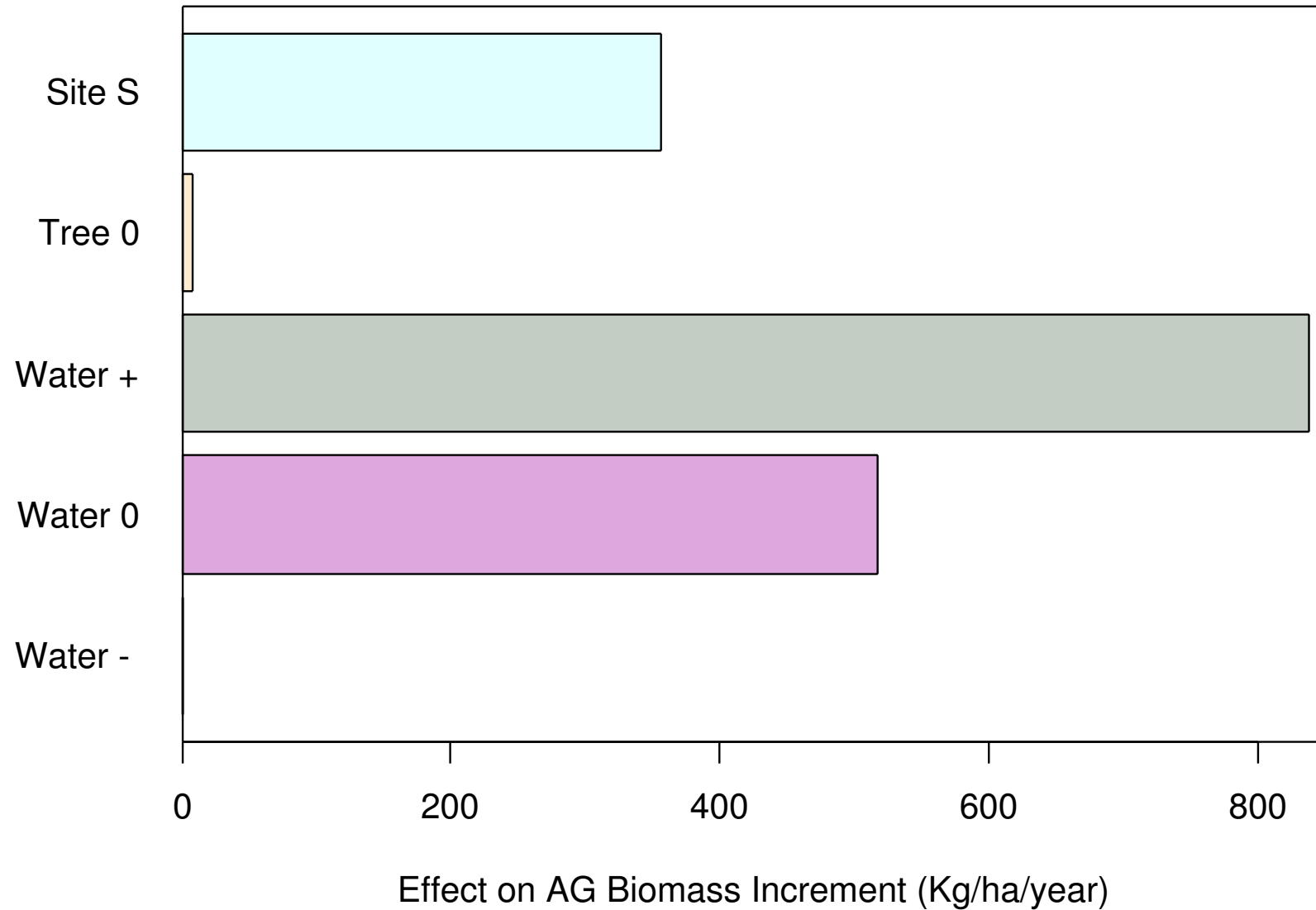
Pretoriuskop



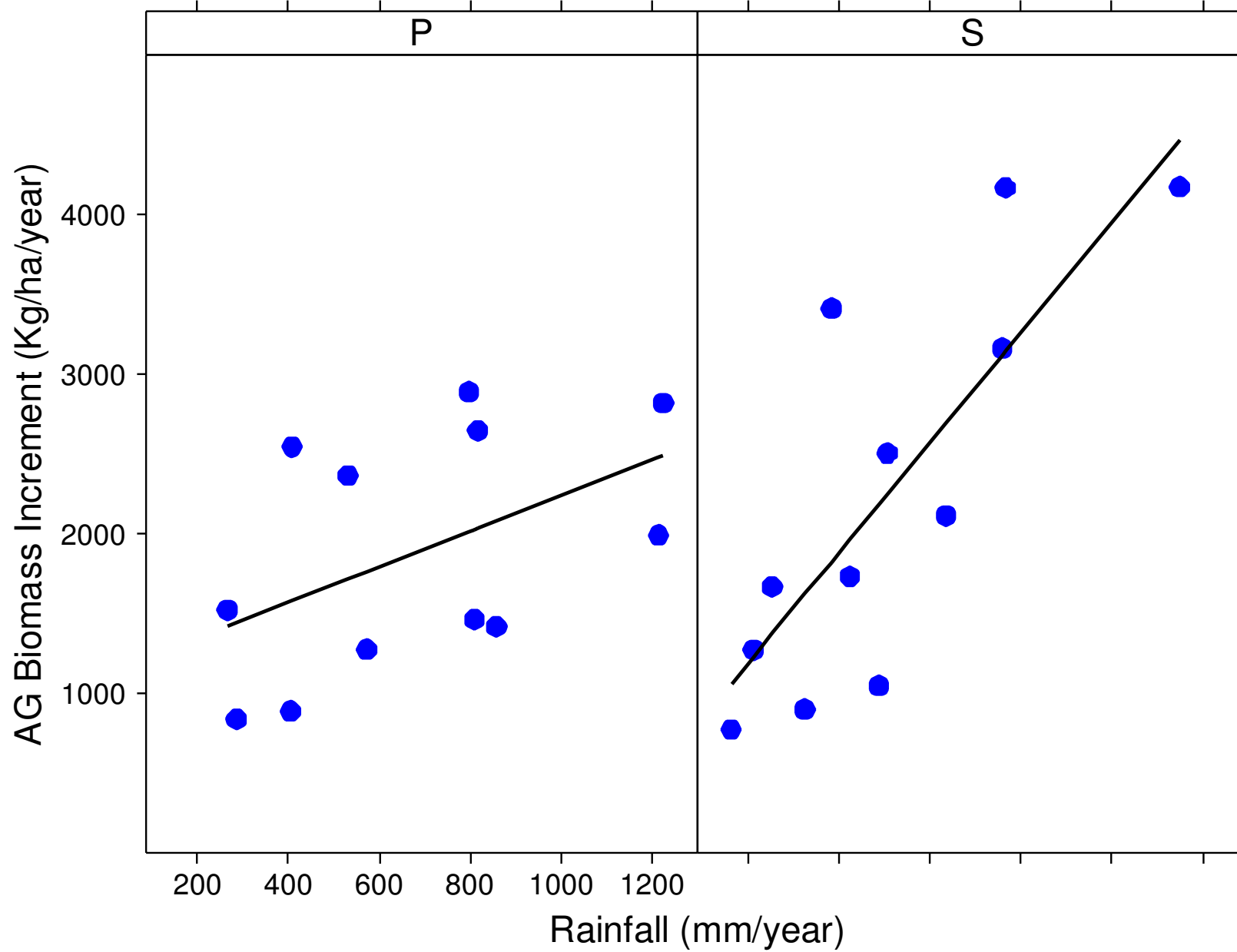
Satara



Factor effects on grass biomass increment

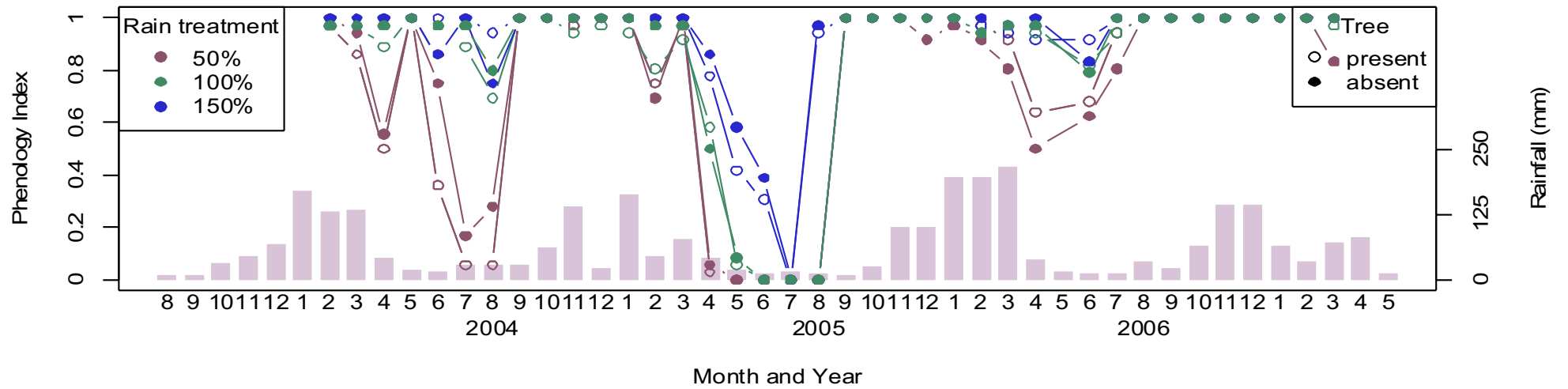


Grass biomass increment

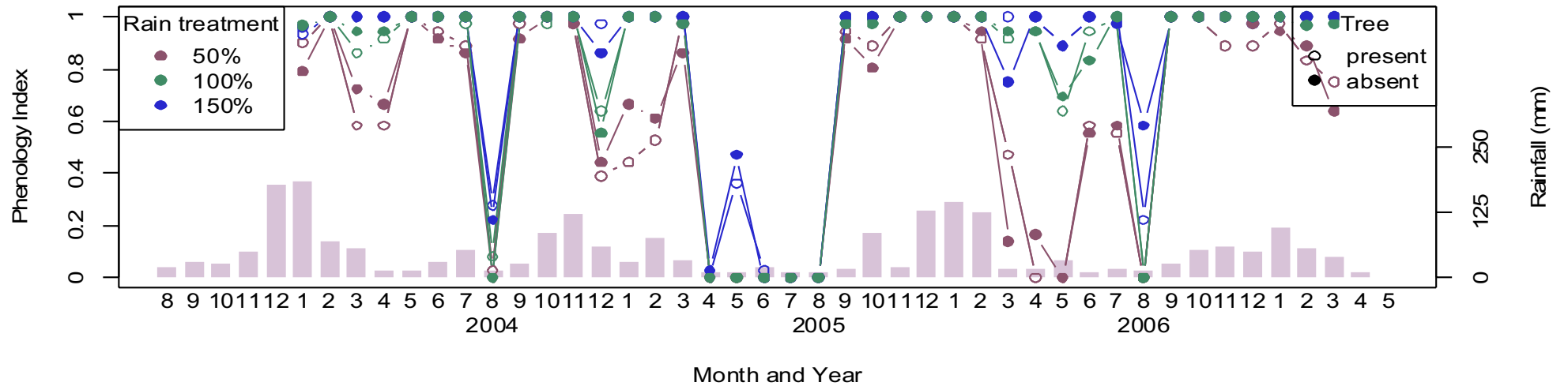


Grass Leaf Phenology

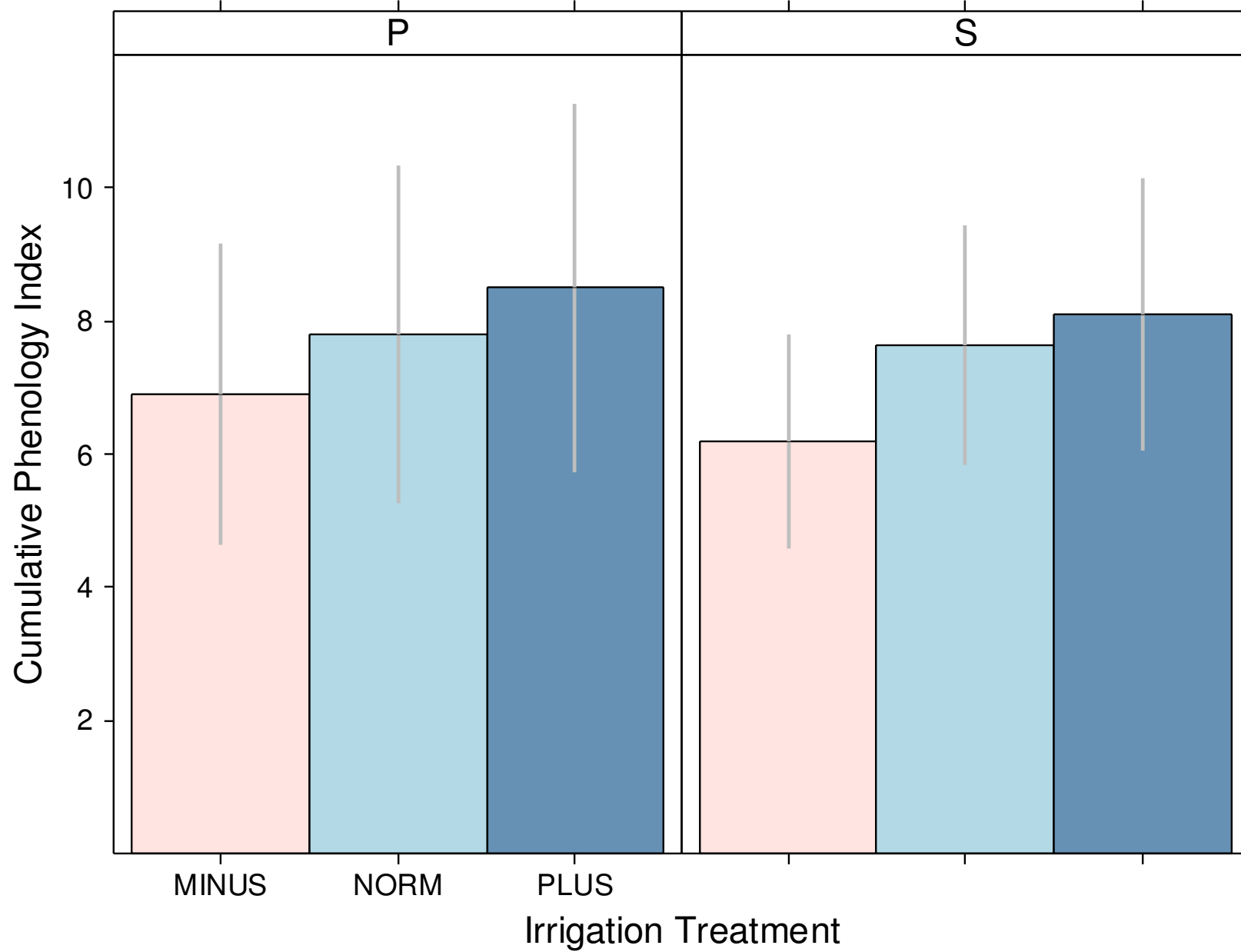
Pretoriuskop



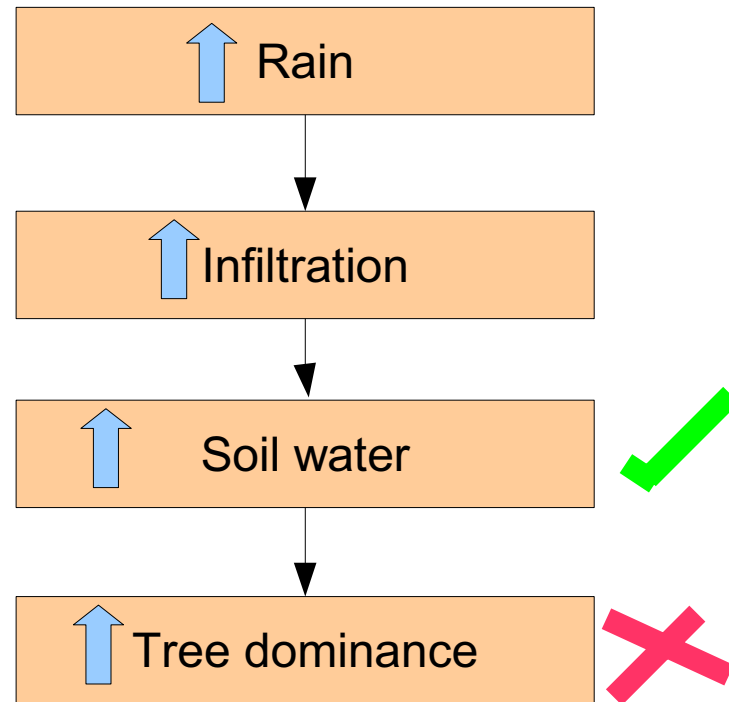
Satara



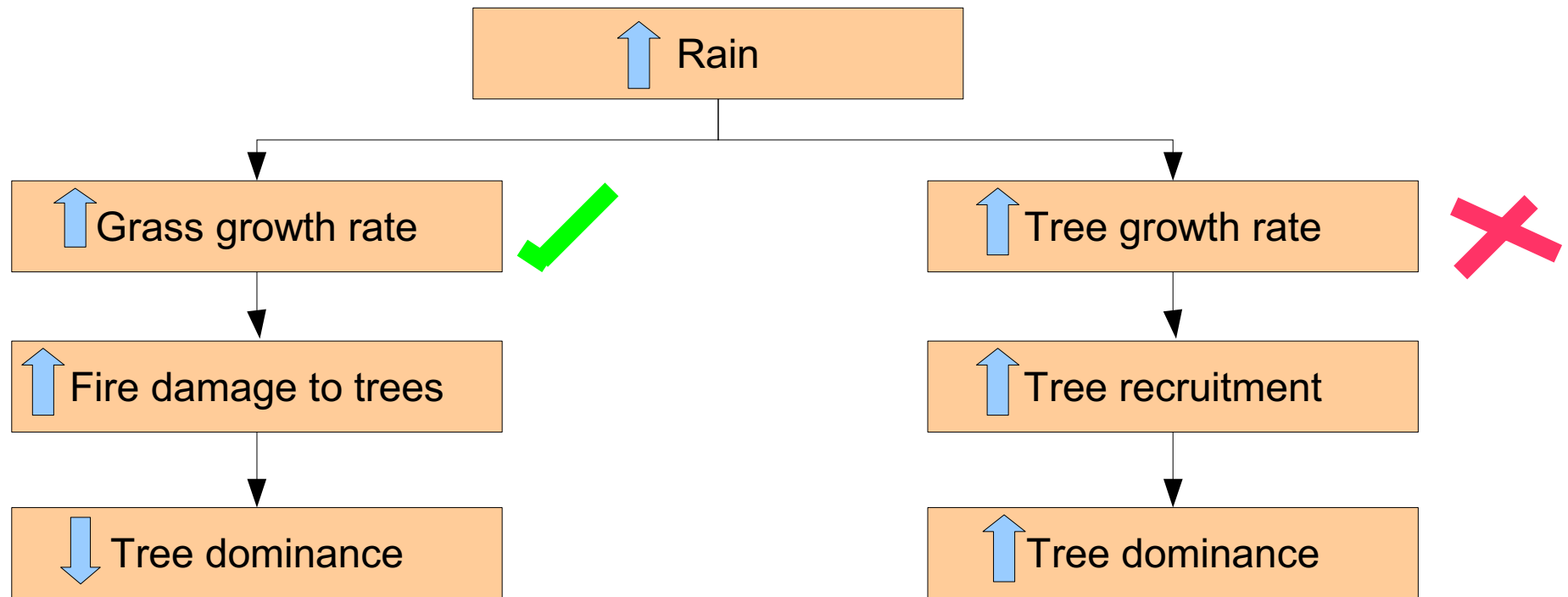
Grass growing season length



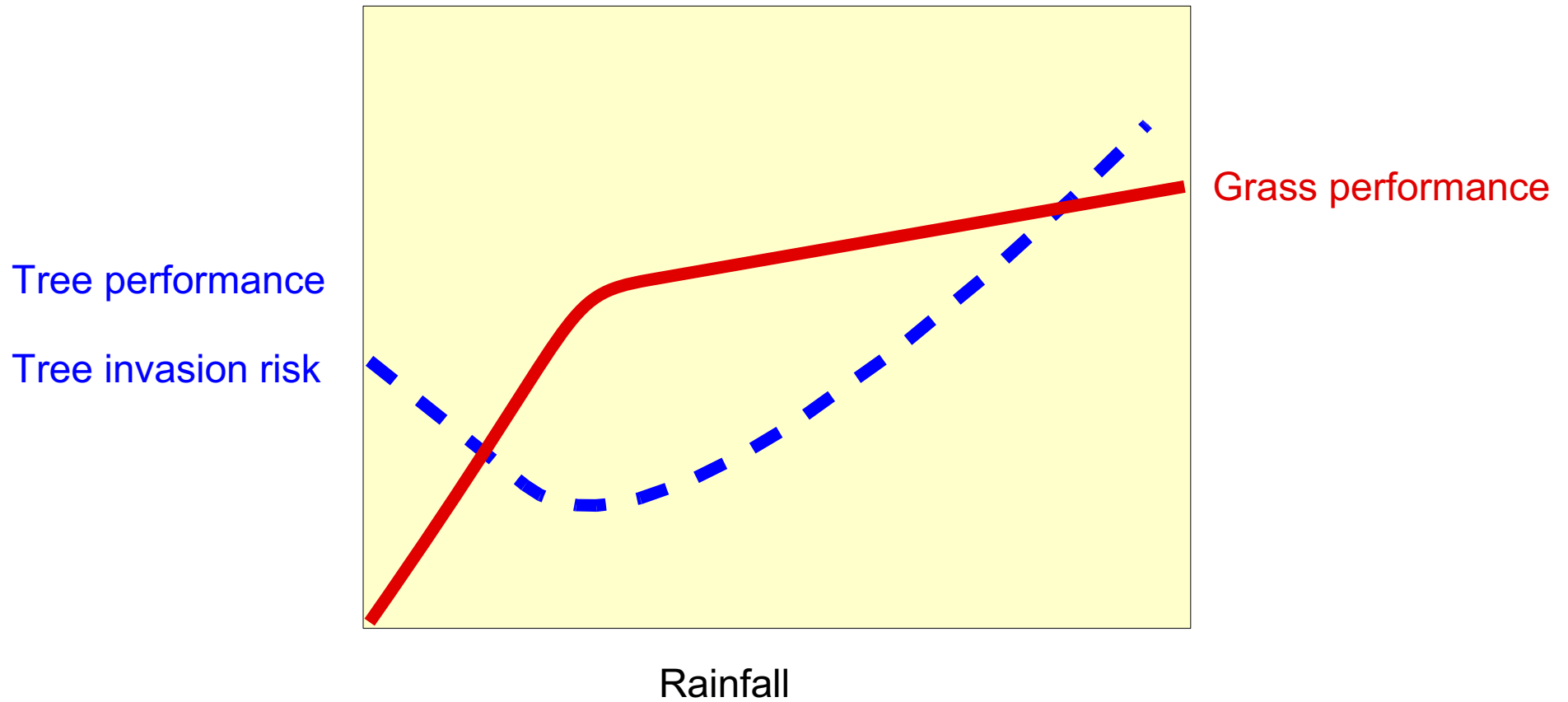
Rooting niche predictions



DBM predictions



Conclusions



Conclusions

