RESPONSE TO CMNP IS UNDER HORMONAL CONTROL AND INVOLVES PHOSPHOLIPID SIGNALLING

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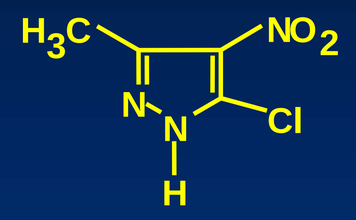
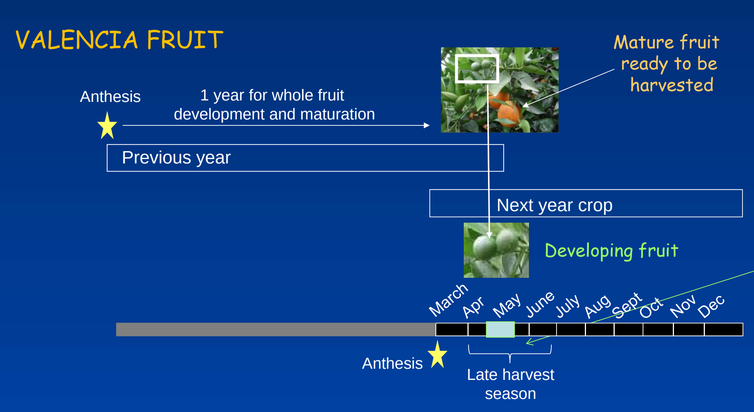
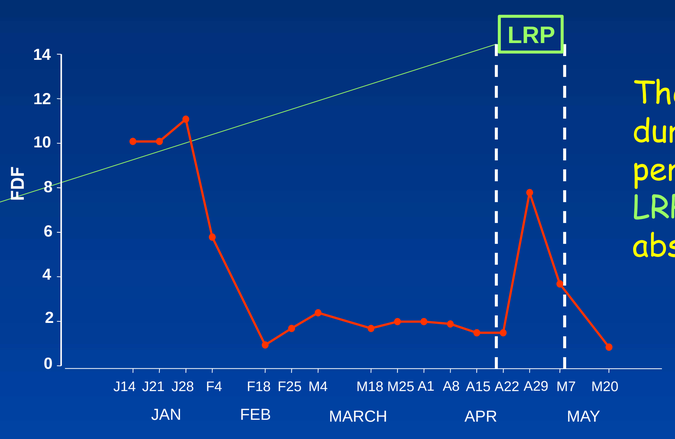
1 Introduction

Control of abscission is a main goal for citriculture to ensure success of mechanical harvesting. Adoption of mechanical harvesting will accelerate when an abscission agent that specifically causes mature fruit to abscise, improves fruit removal, and increases economic efficiency of machines is available. The abscission agent CMNP has been extensively evaluated, and it's use with processed orange harvesting improves machine efficiency and removes an average of 12% more mature fruit when compared to untreated controls. **Our research focuses on mechanisms that control abscission, overcome developmental barriers, and improve response to CMNP throughout the harvest season.**



2 The Valencia scenario



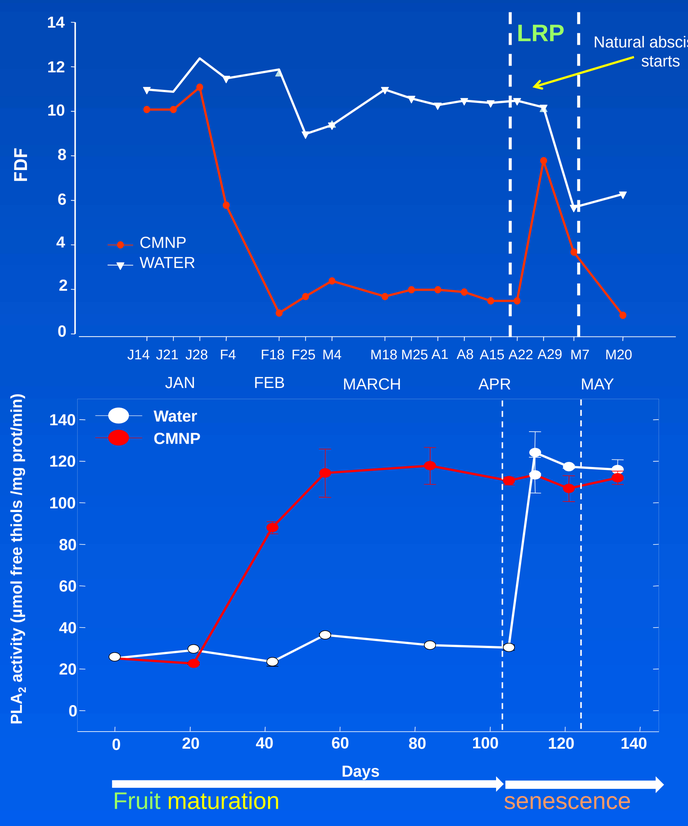


In Valencia, mechanical harvesting is hampered by the presence of developing fruitlets during late season. Adoption of CMNP can be compromised by a transient loss of efficacy.

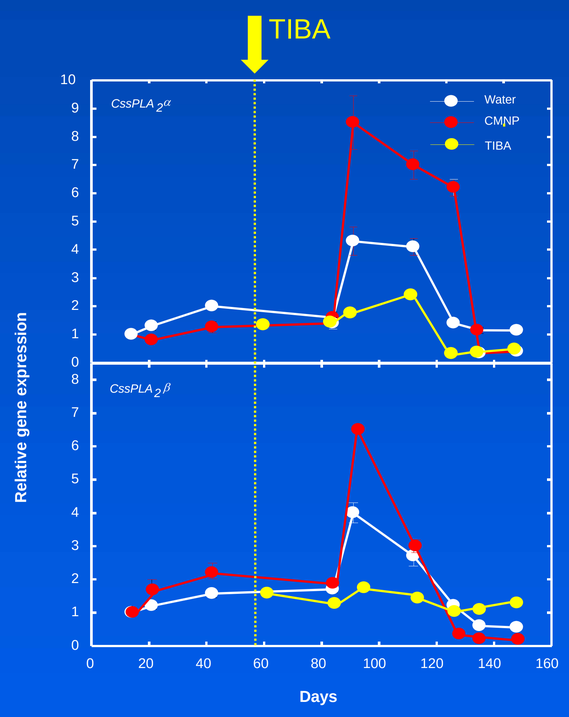
The response to CMNP varies during the Valencia maturation period and harvest season.
LRP: Less Response Period to abscission agent application

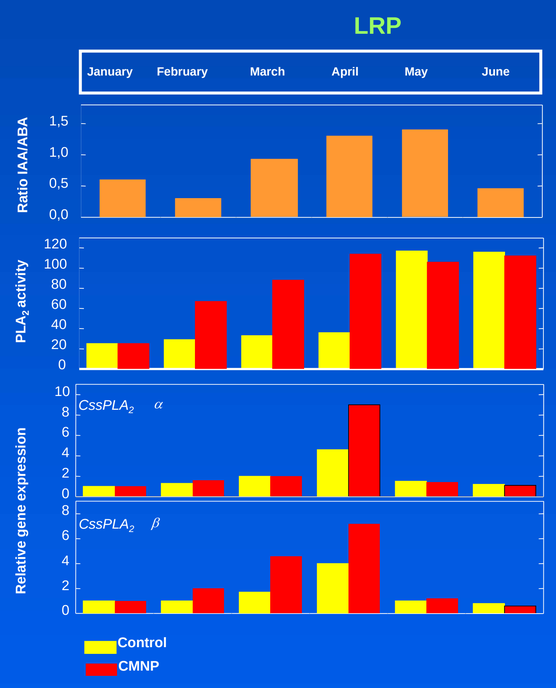
3 Results

The mode of action Of CMNP



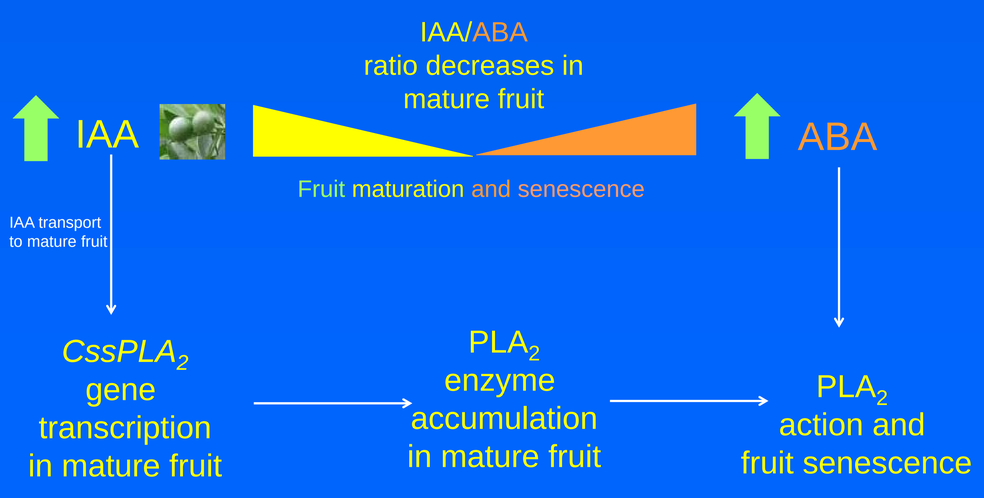
There exists a window for CMNP efficacy in promoting PLA_2 expression and activity.
Natural induction of PLA_2 coincides with LRP

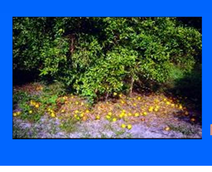




Auxin (IAA) increased in mature tissue upon transport from immature-green tissue and induced *CssPLA*$_2$ gene expression. Inhibiting IAA transport in the whole tree by TIBA application supressed gene induction. RT-PCR analysis of *CssPLA*$_2$ gene expression showed that transcript accumulation is developmentally regulated and transiently coincides with endogenous increase in IAA. CMNP treatment advanced and enhanced this effect. LRP coincides with natural increase in PLA_2 activity and is preceded by IAA transported from immature tissues *in planta*.

4 Conclusion Our hypothesis





Natural abscission

A hormonal switch trigger lipid signalling via phospholipid degradation and abscission. CMNP accelerates the process.

References

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