

THE FRUITS AND VEGETABLES INDUSTRY SERIES

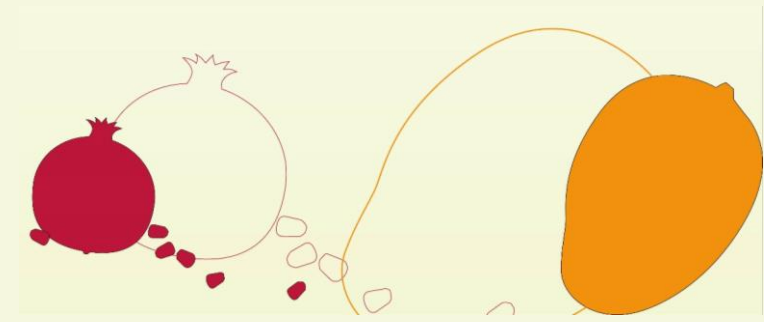
16 May 2023



Session 4 – Impact of climate change on production and quality of fruits and vegetables



FRUIT AND VEGETABLES SCHEME



Title: Impact of climate change on the quality of fruit and vegetables produced in South Africa

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Introduction

- Climate change is an observed and concerning reality all over the world (e.g. Cop 27).
- This phenomenon is manifests in many forms.
- South Africa is not immune to climate change.
- Like the rest of the world, South Africa has reported increased air temperature, changes in precipitation and increases in the incidence and severity of extreme weather events like droughts, hail and floods.
- These have in effect on human livelihood, sustainable development and food security.

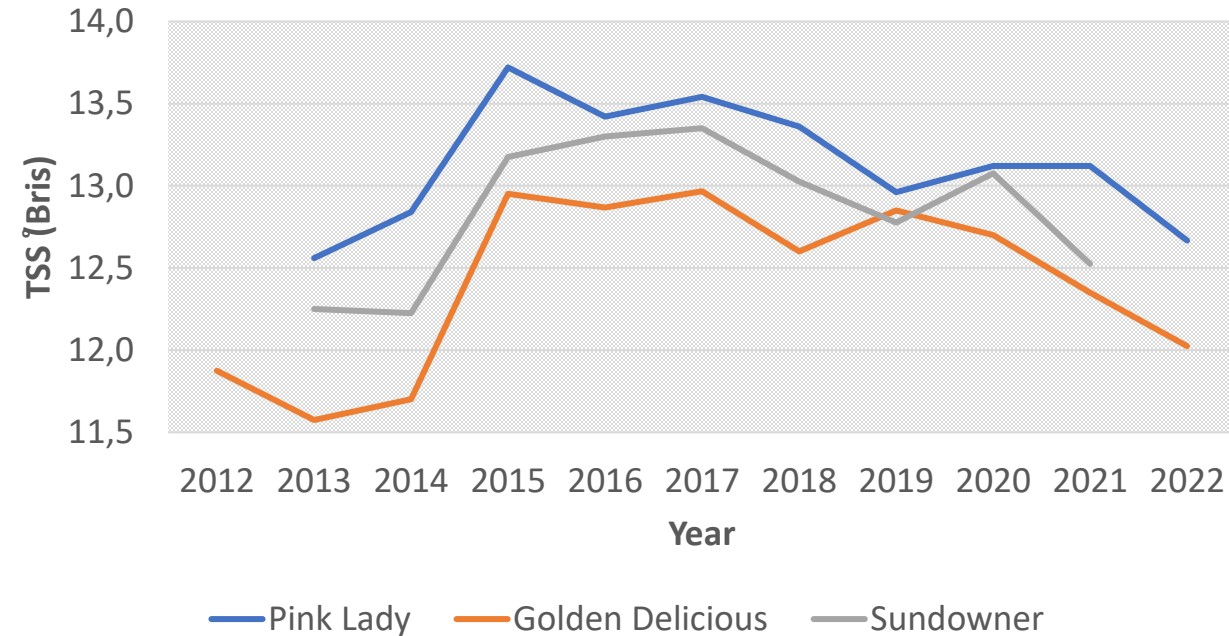
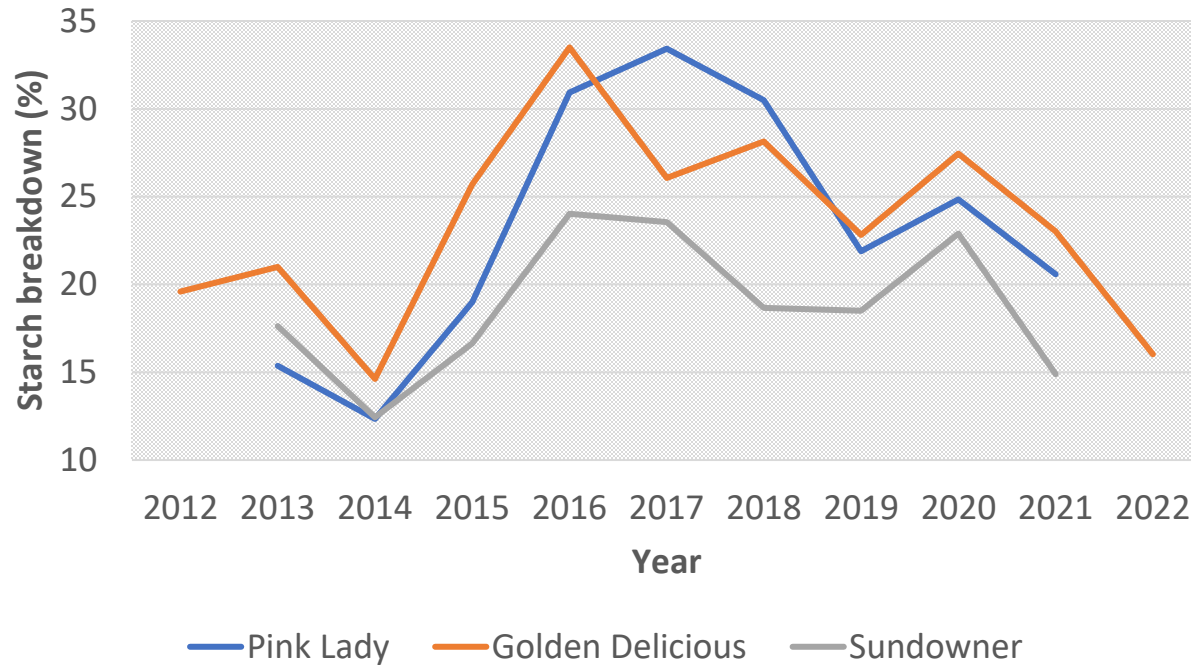
Introduction

- Climate change will inevitably have an influence on crop production and product quality.
- The main objective of this study was to evaluate the impact of climate change on the quality of fruit and vegetables produced in South Africa.



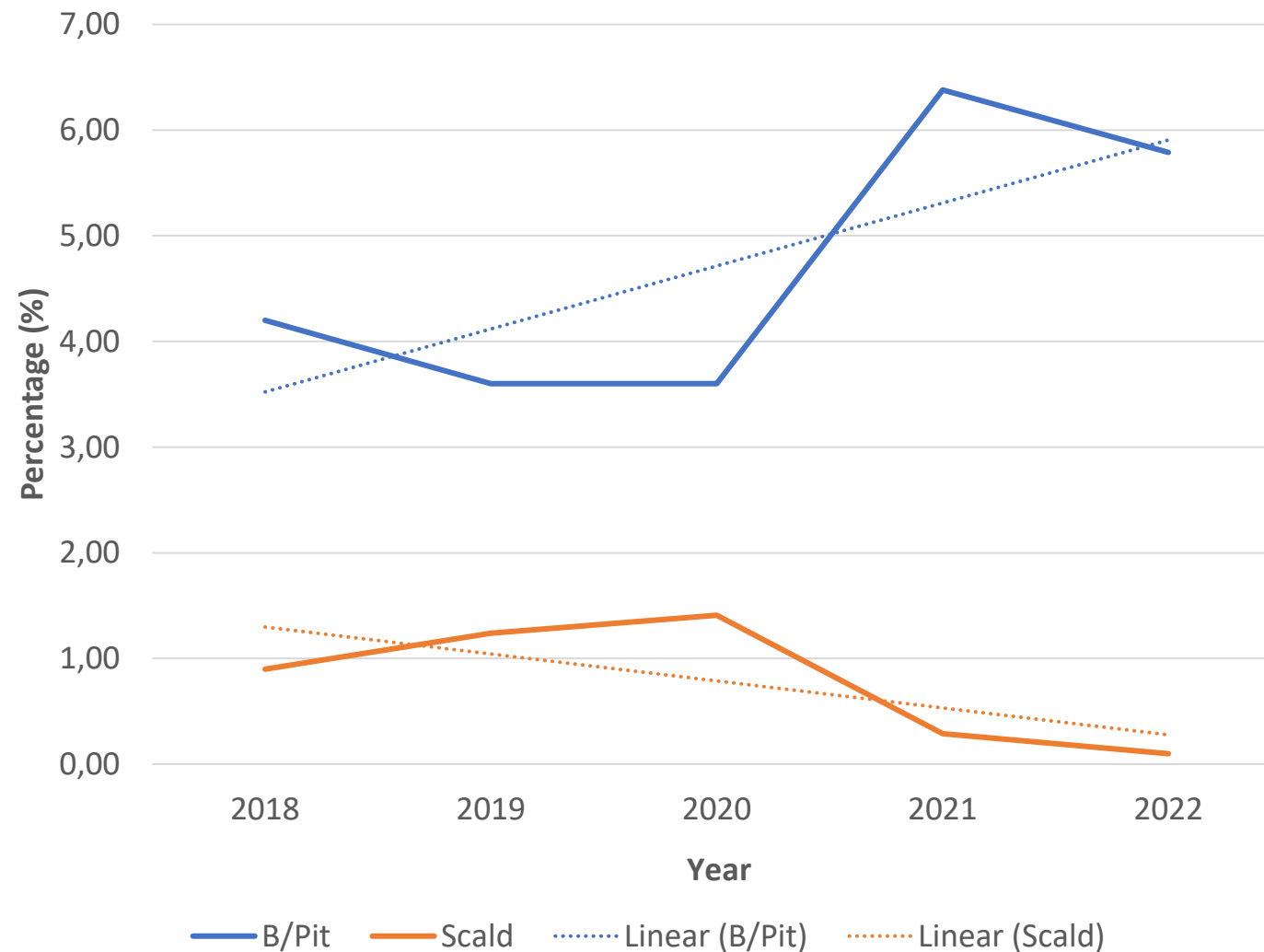
Impact of climate change on the quality of apples in the Western Cape

Change in the maturity of apples in the Western Cape (WC)




- Starch breakdown was higher during the drought years (2016 to 2018) in the WC.
- TSS (Total Suspended Solids) measure in brix was also higher during the drought years than before or after this period.
- Climate change may affect the phenology and maturity time for apples.

Change in the shelf-life quality of apples in the WC

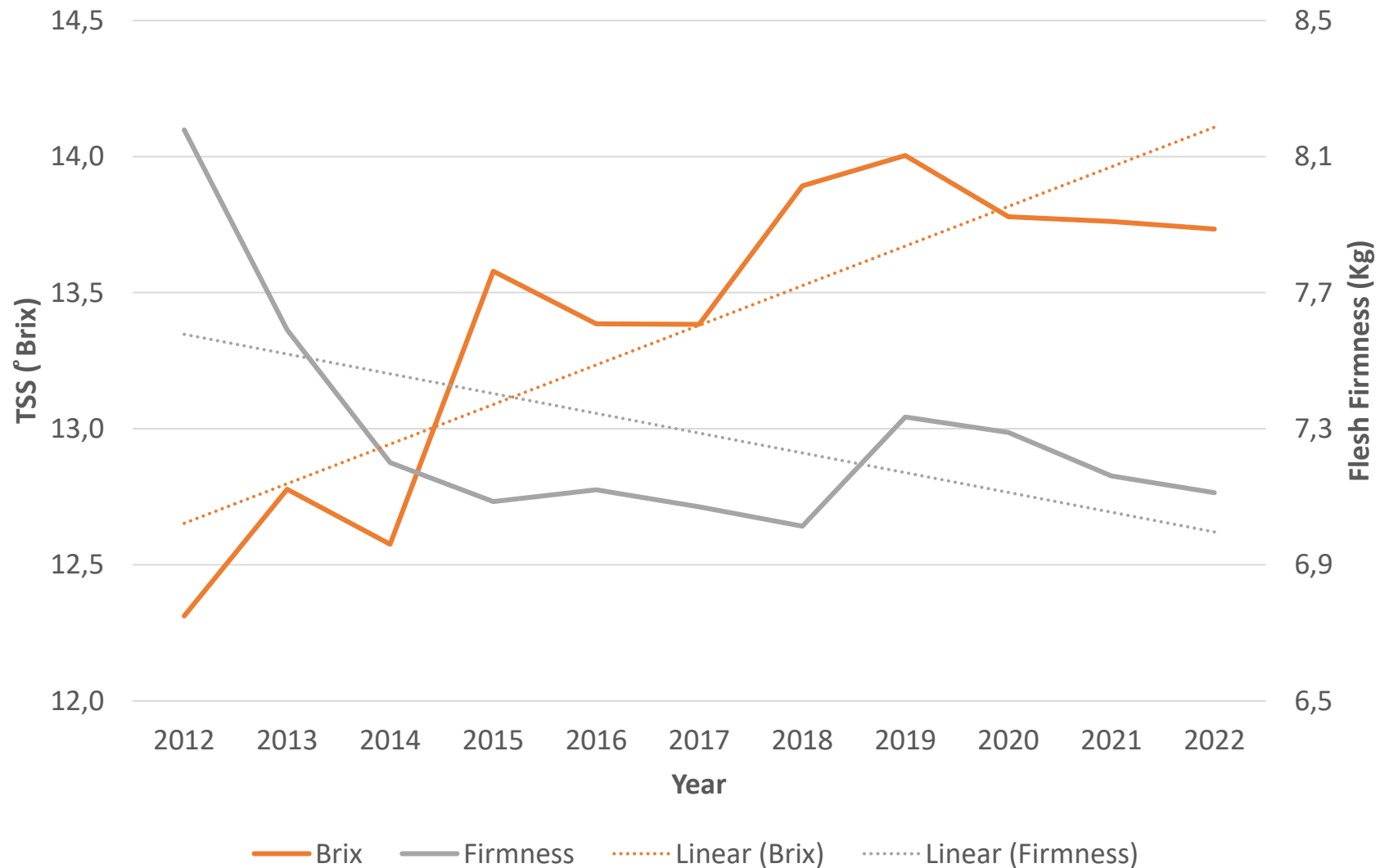


- Bitter Pit on all apple varieties fluctuated but showed an upward trajectory over the years.
- Scald levels were low.



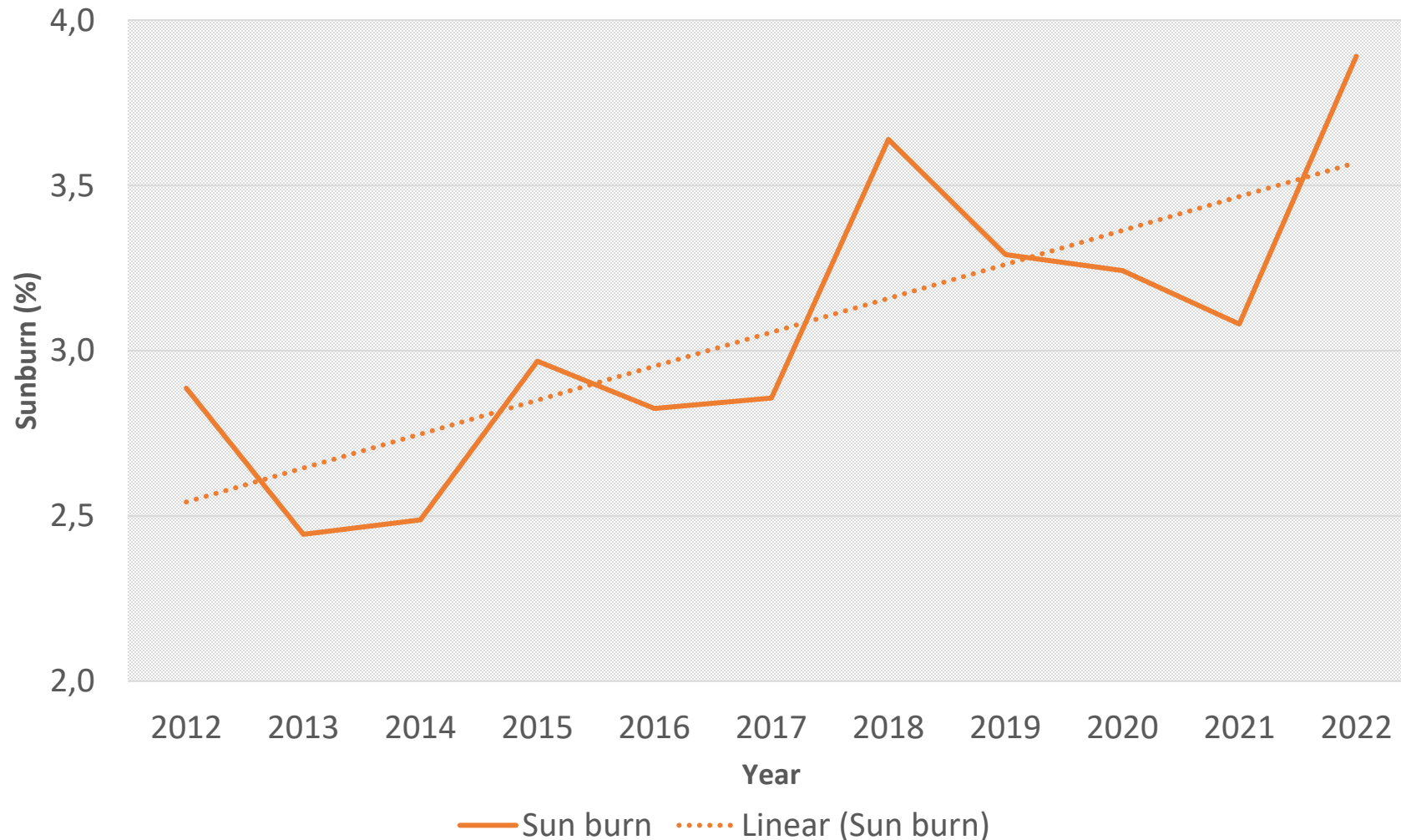
Impact of climate change on the quality of plums in the Western Cape

Impact of climate change on the plum maturity in the WC



- Flesh firmness at maturity decreased over the years.
- Brix increased.
- This may indicate changes in phenology, resulting in plums ripen faster.
- Could result in changes in the timing of some varieties.

Impact of climate change on sunburn incidence on plums in the WC



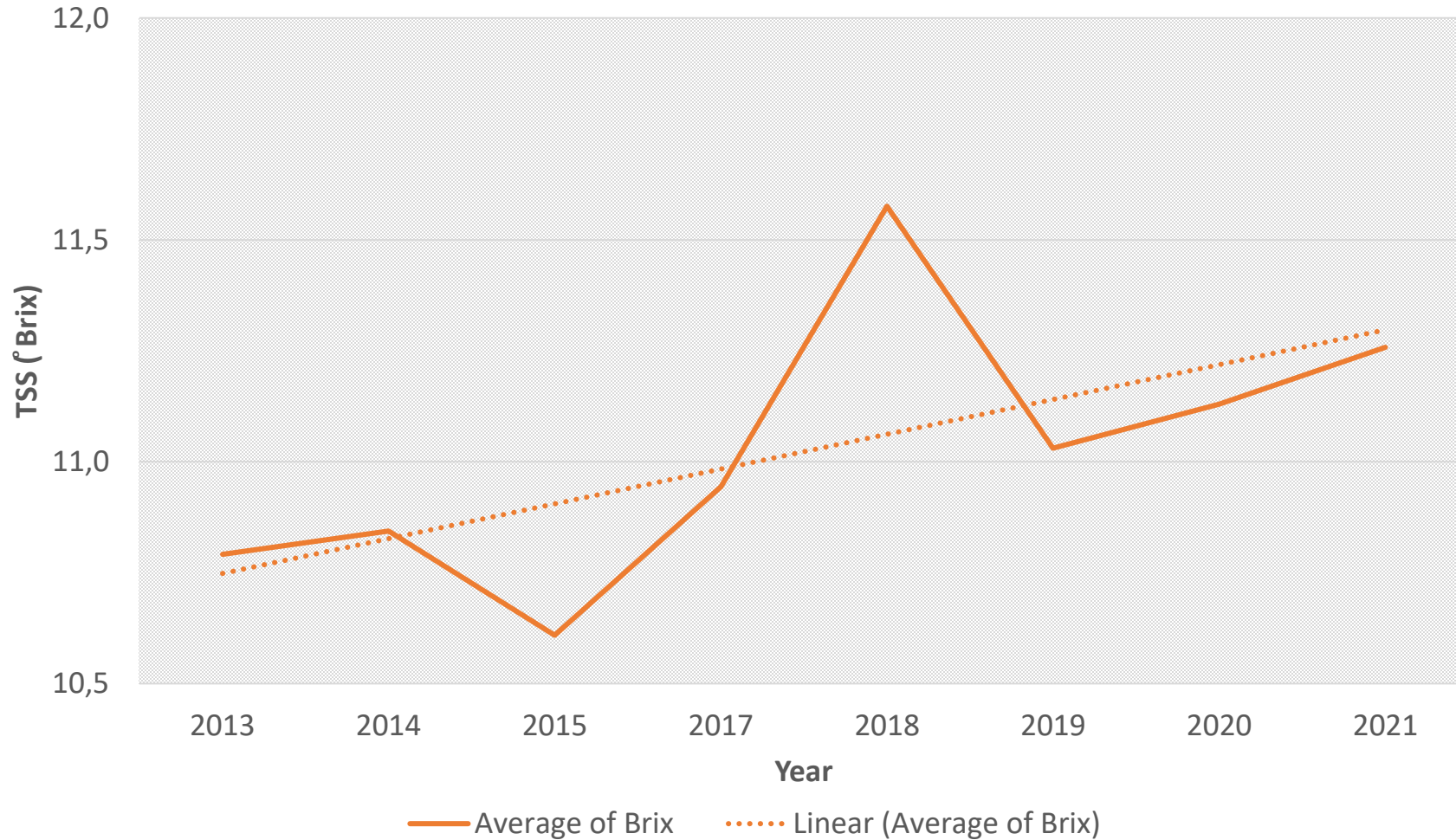
- The risk of Sunburn is evident
- Sunburn increased by 34%



Impact of climate change on the quality of citrus fruit in different provinces

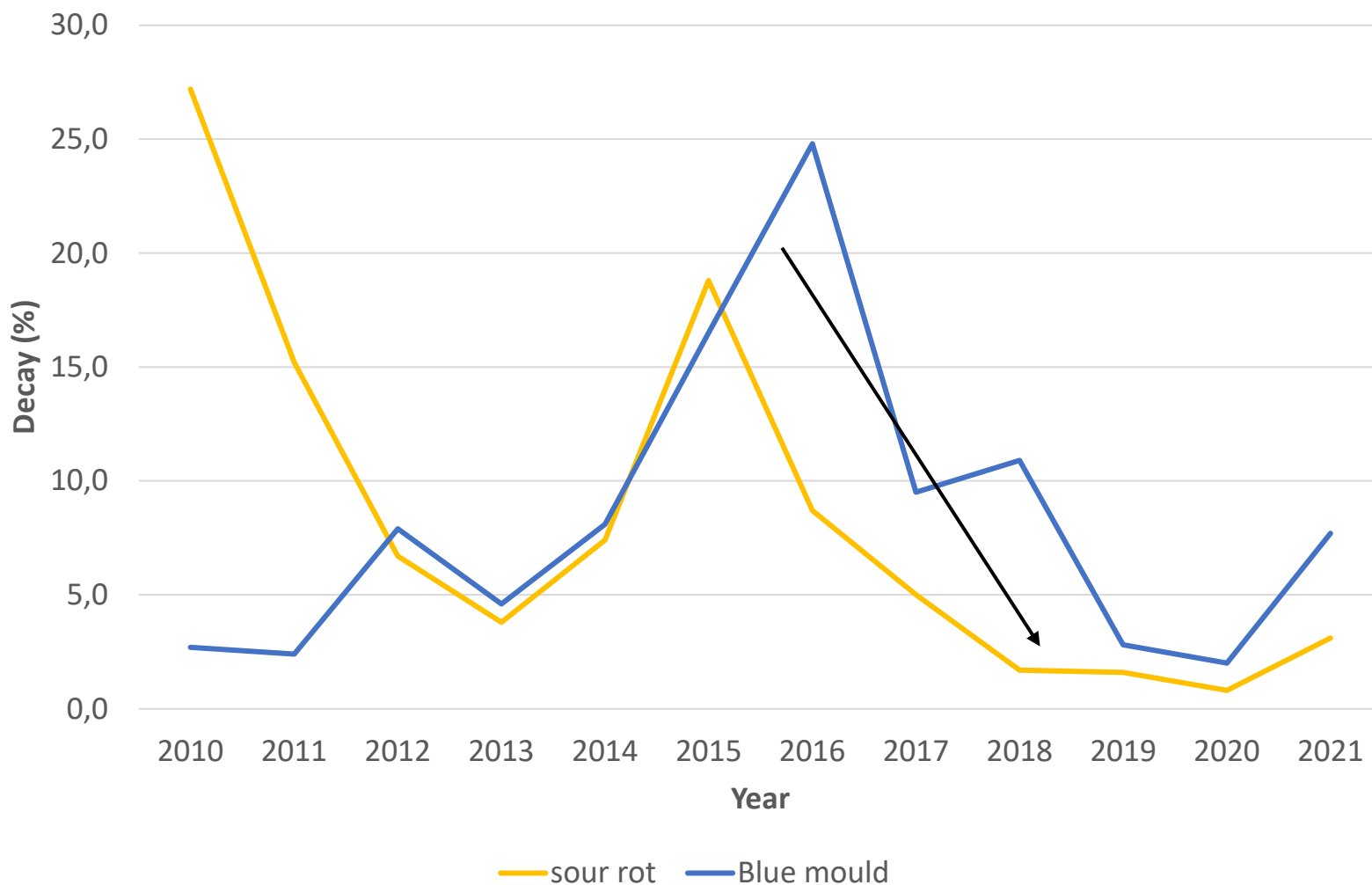


Change in maturity of citrus fruit in the WC



- There was a marginal increase in TSS at maturity.
- This could point towards a shift in phenology and may result in a change in the maturity window of some varieties.

Incidence of decay of citrus fruit from the Eastern Cape (EC)



- The EC experienced drought from 2016 to 2021.
- In this period the risk of decay on fruit decreased.



Impact of climate change on the quality of potatoes produced in South Africa

Potato production and quality

- With rising temperature heat stress could be a problem in some production regions.
- Regions with frost will have a reduction on the number of frost days.
- Rainfall trend are not significant and will not affect potato production.
- Production models show that the overall effect of climate change will benefit potato production in South Africa.
- This benefit will only be realized if farmers adapt, to change time of planting.
- They will also need to adapt their production to deal with disease and pest pressure.

Qualitative survey and climate change adaptation

- Majority of growers (88%) are aware of climate change and are concerned about their sustainability into the future.
- Some growers reported reduced productivity and changes in fruit quality due to climate change.
- To survive under unfavourable climatic conditions 75% of growers have had to adapt:
 1. Advance production techniques
 2. Shade netting
 3. Advanced post-harvest handling





Conclusions

Several factors are prominent in this study:

1. There is indication that climate change may affect fruit phenology and result in a change in the time cultivars mature.
2. There is indication that climate change may affect fruit quality, in most cases negatively and in a few cases positively.
3. There is evidence that fruit in different areas responds differently to climate change.

Conclusions

4. While the work was done diligently, we were limited by the data we received from packhouses. With increases in out of grade fruit, there is a lot of information that is lost because this fruit is either culled on the farm or lost to juice in the packhouse.
5. There is need to continue with this work in a more structured manner and select orchards in different areas and monitor them for a period of time.

Acknowledgments

The The Perishable Products Export Control Board (PPECB) would like to acknowledge the OECD for funding this study and other stakeholders who assisted with data and helped edit the final report.

Thank you for
your attention



***RESEARCH &
DEVELOPMENT***



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Thank you



FRUIT AND VEGETABLES SCHEME



The OECD-COLEAD Fruits and Vegetables Industry Series focuses on market access conditions and opportunities for the fruit and vegetable sector, especially for fruit and vegetables producers and exporters from ACP-countries. This activity is supported by the Fit For Market Plus programme, implemented by COLEAD within the Framework of Development Cooperation between the Organisation of African, Caribbean and Pacific States (OACPS) and the European Union.