

5th Australian Almond Research & Development Forum & Field Day

On-Farm Hulling and Moisture Management

Professor John Fielke
University of South Australia

October 30th - 31st, 2019



HOSTED BY:
Almond Board of Australia



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australian
almond

RESEARCH & DEVELOPMENT FORUM & FIELD DAY

AL12003 Advanced Processing of Almonds 2012-2018

Final Report available

**Hort
Innovation**
Strategic levy investment

**ALMOND
FUND**

This project has been funded by Hort Innovation using the almond research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

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Traditional almond harvest



Shake



Dry/sweep



Stockpile in-hull almonds

Almond Volumes



} greater than 50% volume reduction



Inhull

320 kg/m³

1 m³ = 102 kg kernel

Inshell

360 kg/m³

0.41 m³

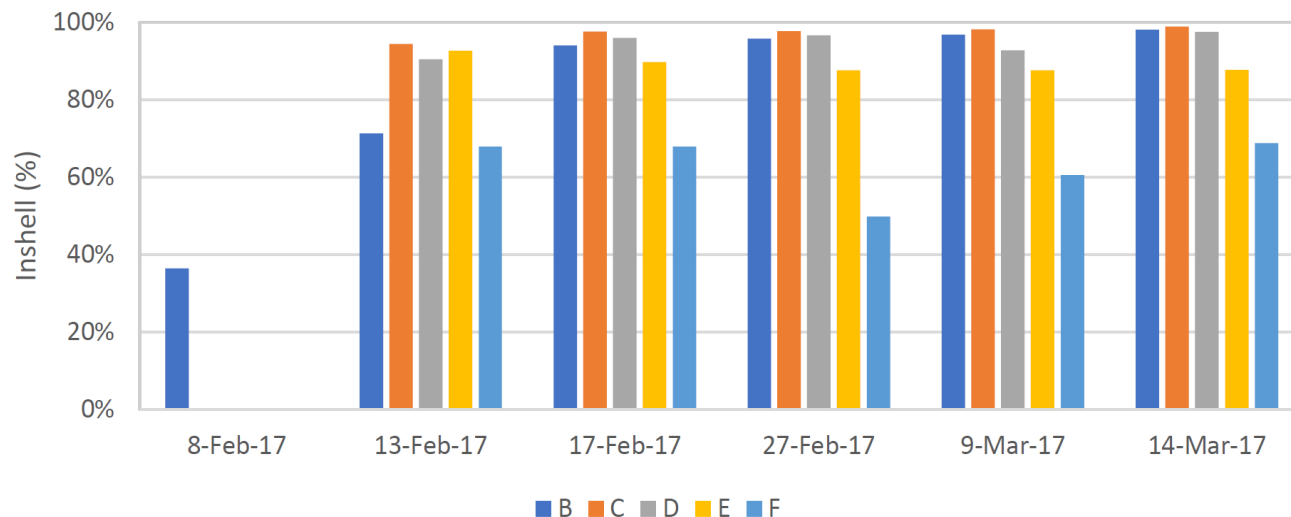
Kernel

600 kg/m³

0.17 m³



Hulling is most efficient soon after hull split



IPM hull split categories as per Strand (2002)

Almonds can be harvested after hull split



Almonds can be hulled on-farm



> 80% inshell before drying

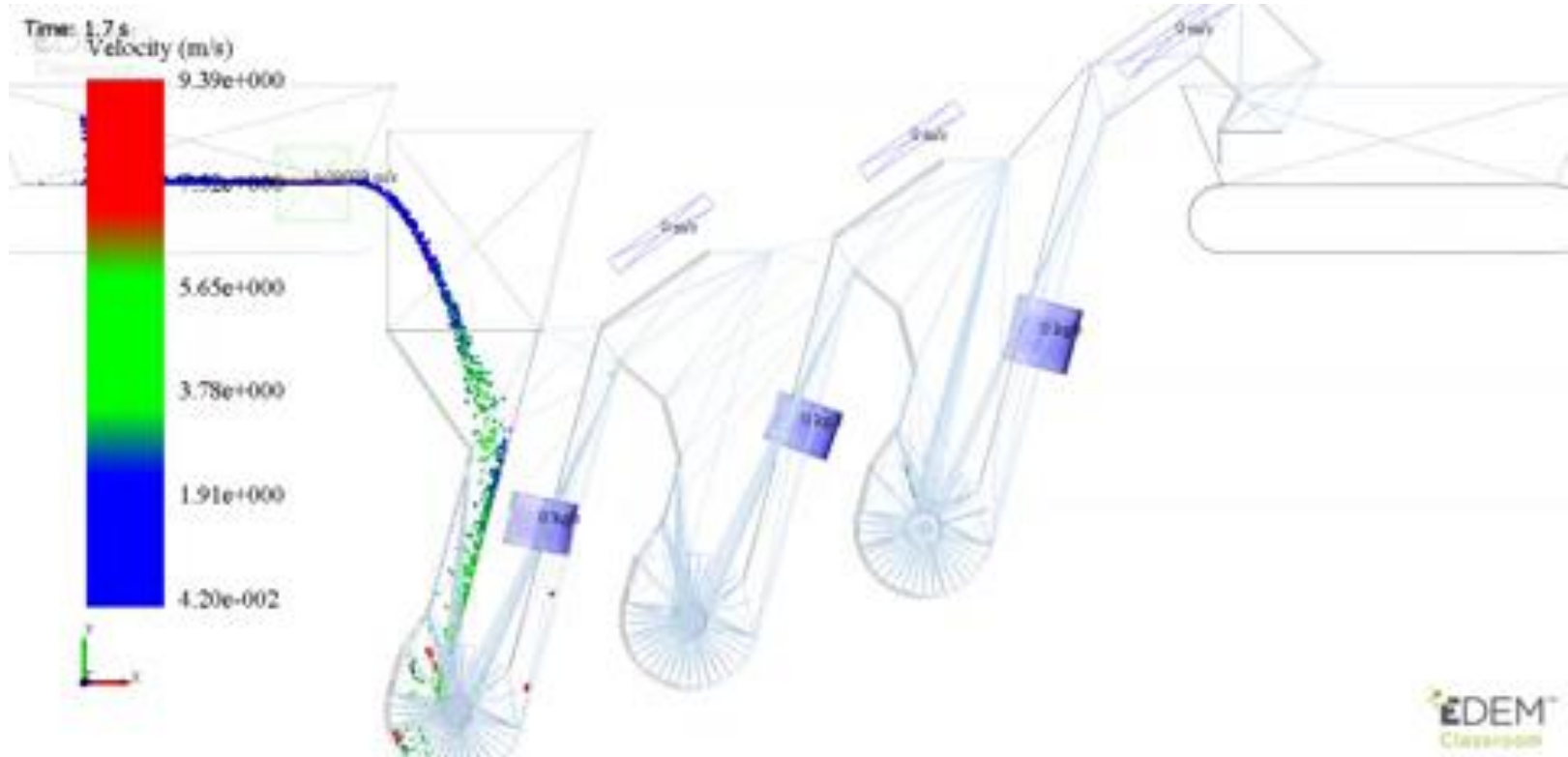
John Fielke (2019), On-Farm Hulling and Moisture Management

Impact hulling with pneumatic conveyor



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Mechanical version of impact huller



Remove the hulls with sizing and air



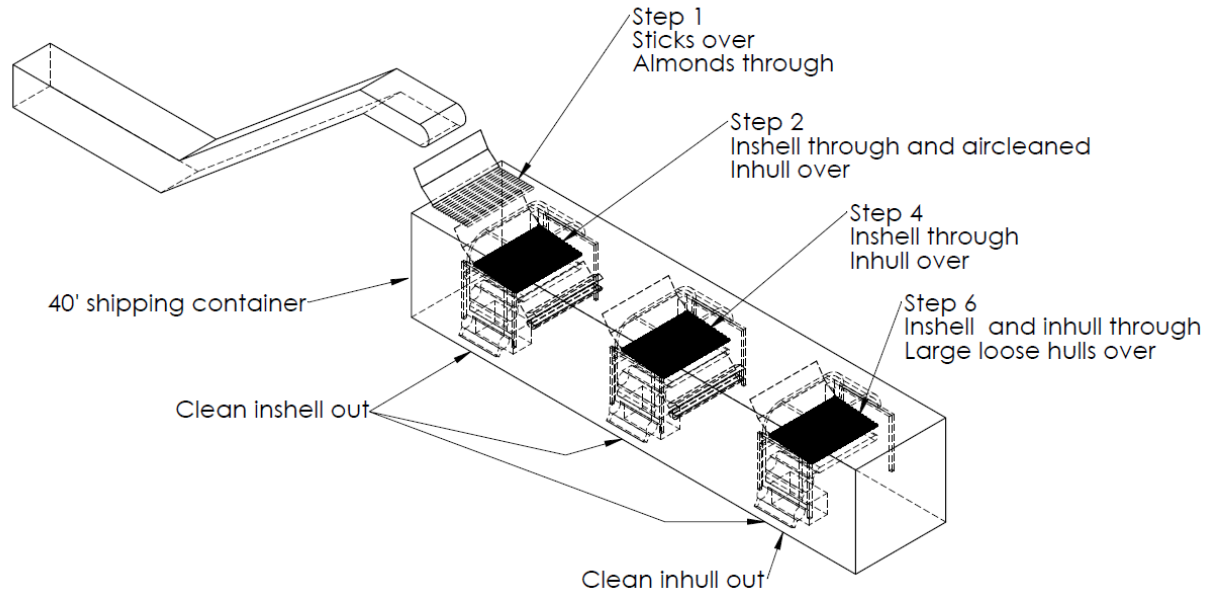
Pellenc Selectiv for grapes used for almonds

John Fielke (2019), On-Farm Hulling and Moisture Management

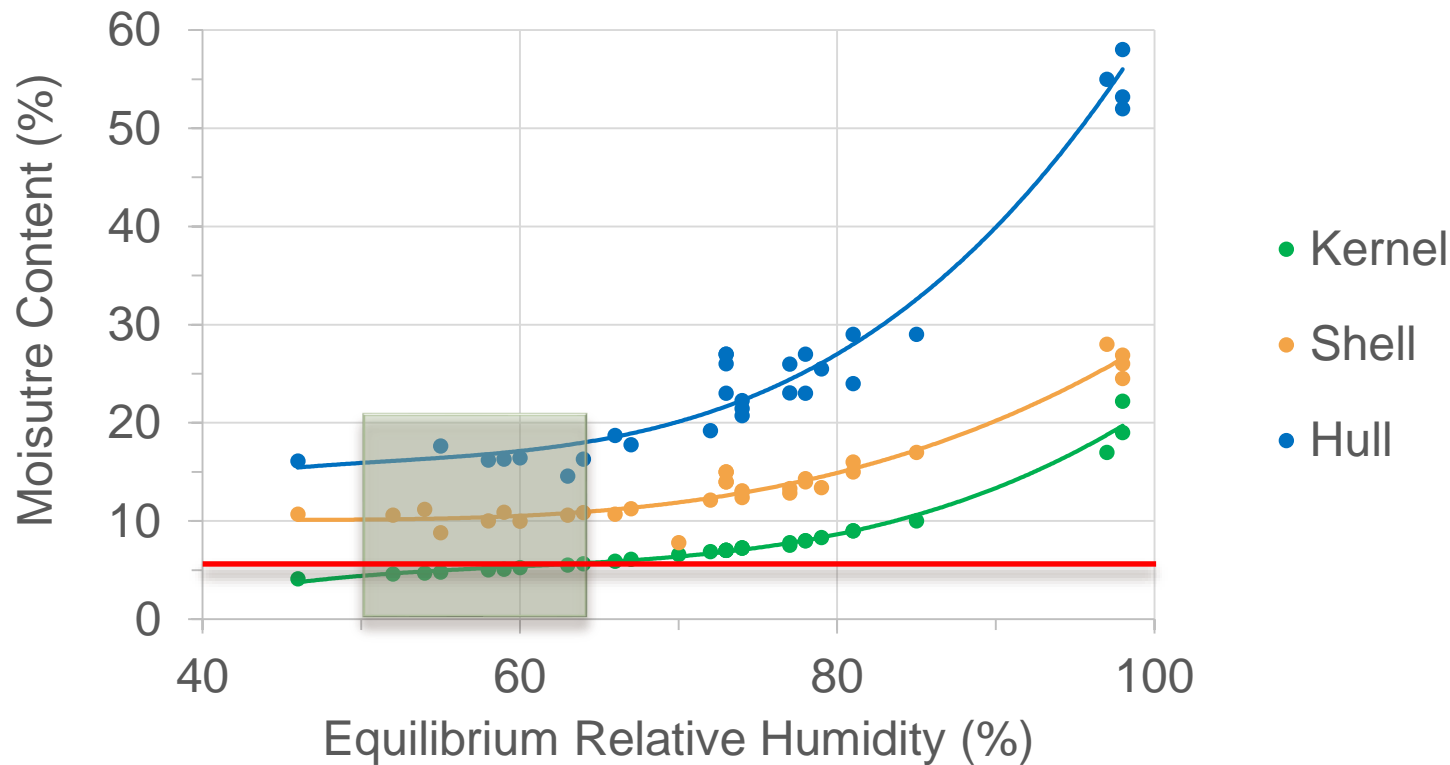


On-Farm Hulling

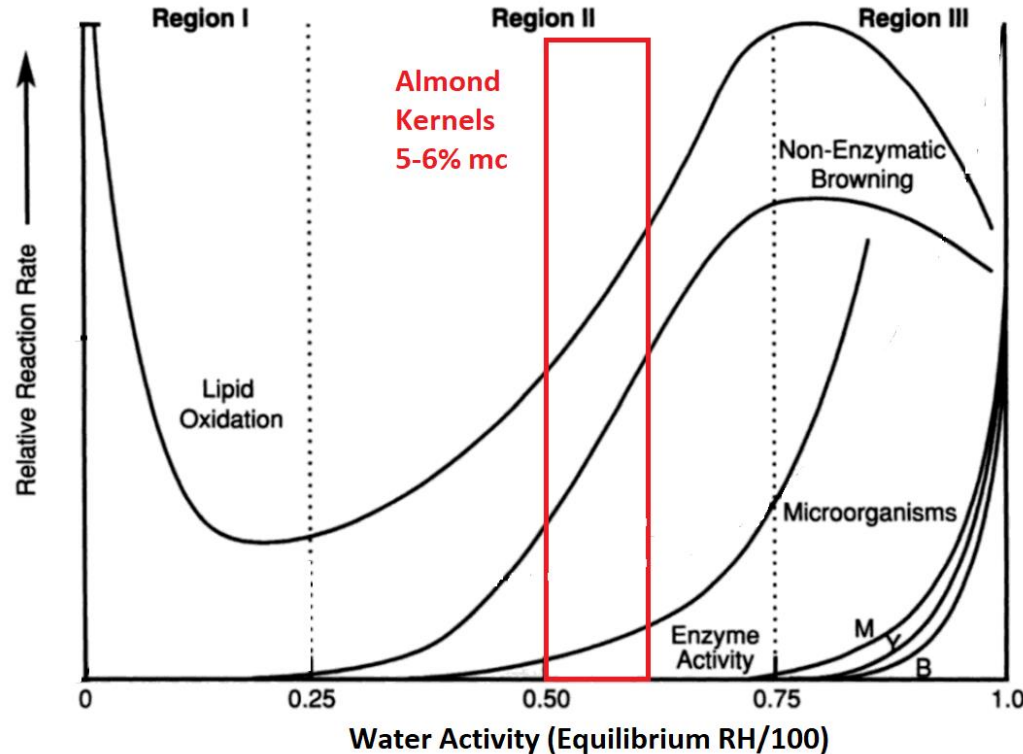
Concept for a mobile on-farm huller and cleaner
(huller between cleaners is not shown)



Almond properties (Fielke)



Need for moisture management



Modified from
Schmidt, S.J. (2004). Water and
solids mobility in foods. Adv. Food
Nutr. Res. 48, 1 – 101.



Hulling and finish drying



As harvested



Hulled



Dried



Finish drying of almonds



Uni
South Australia



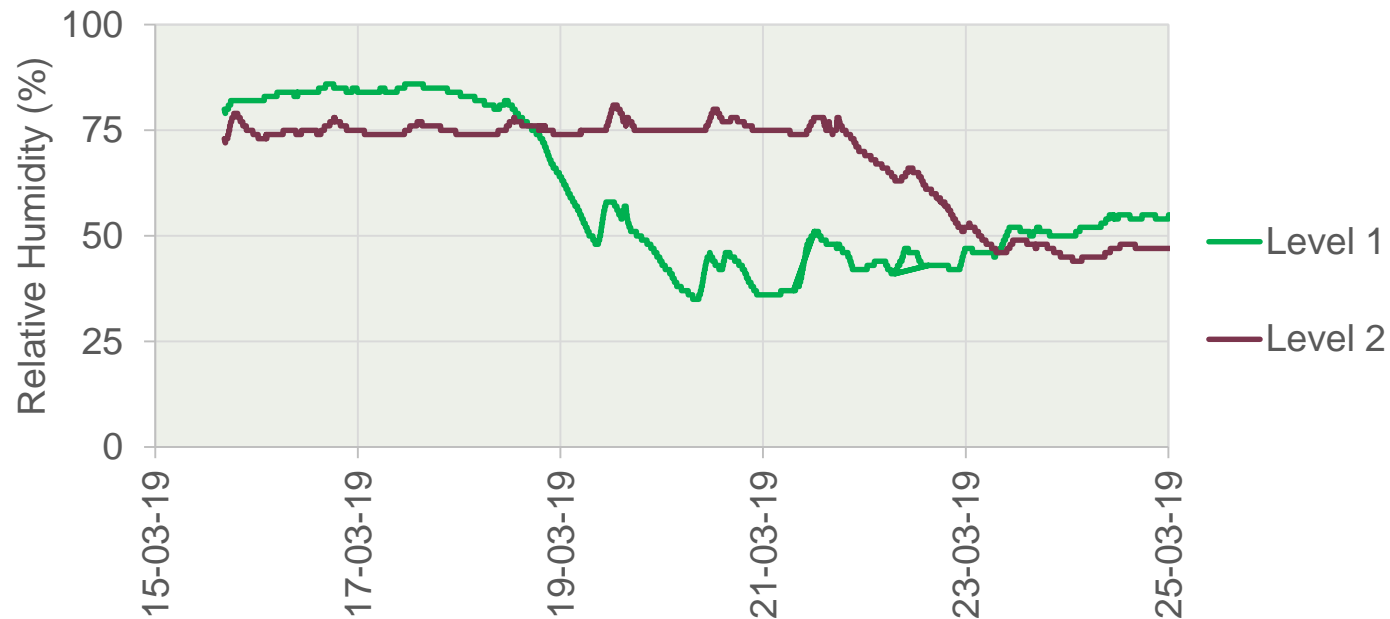
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Finish drying of almonds



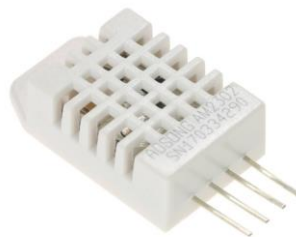
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Progressive drying in silo



Moisture Management via Measurement

- Almonds will equilibrate with surrounding humidity
- Aeration can be used to control temperature and humidity
- Can measure Temp and RH (hence know mc)
 - In-situ for bulk almonds
 - Small batch samples



Microwave moisture meter

UniSA is developing microwave moisture meter for

- Batch sample
- Flowing sample



**Further information
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