

Date pollination

R&D findings

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The germplasm collection was assembled with RIRDC (now AgriFutures) support.



Background

- The date plantings in Alice Springs (Northern Territory) are part of a germplasm collection imported in the 1980's and selections from remote communities.
- Review by USA Professor Carpenter suggested that pollen from *Phoenix sylvestris* (sugar palm) would produce large seedless fruit when used to pollinate commercial dates (*P. dactylifera*).
- While seed of *P. sylvestris* the palms were imported the pollen part effects had not been assessed.

Aims:

1. Optimise pollen collection and storage
2. Facilitate artificial pollination
3. Investigate optimal parents (xenia)

These investigations assisted growers to improve production techniques while ensuring future developments have information available for deciding appropriate palms for pollination.





Pollen collection and storage

- Entire male inflorescences were collected once they emerged from their spathe prior to anthesis and hung on wire over clean sheets of paper to collect pollen.
- Pollen was sieved through a 100 μ m sieve and stored in air tight plastic containers at 4°C .
- All pollen sources were successfully stored at 4°C over silica gel for extended periods prior to successfully setting fruit.

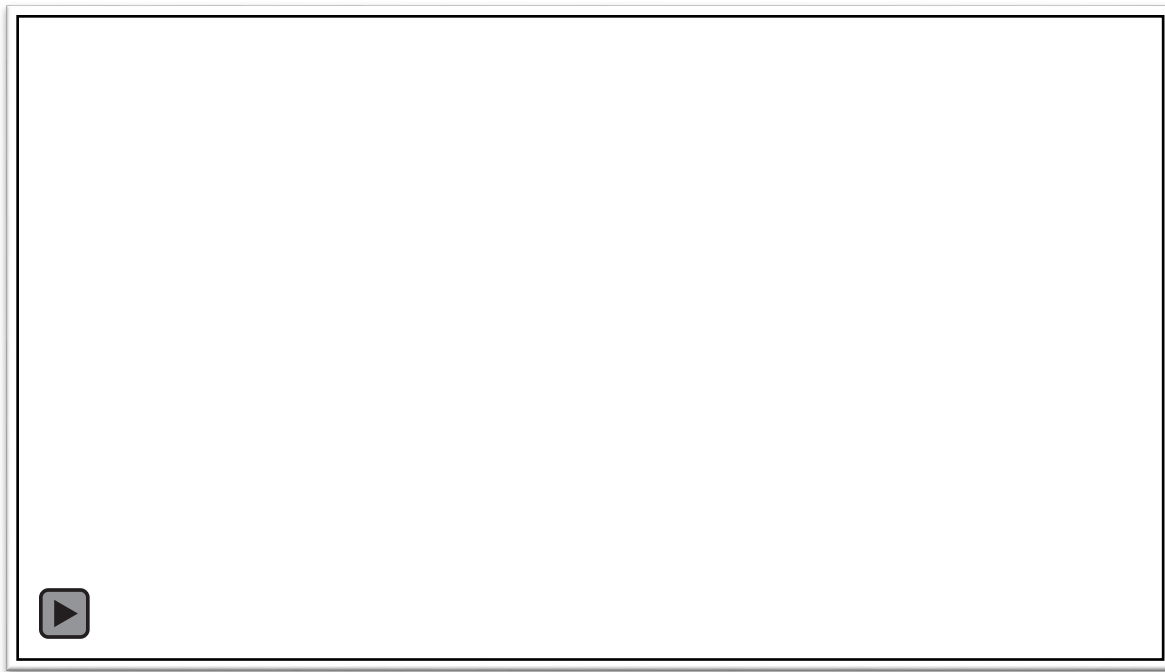
(see YouTube video at end of presentation for more details).



Facilitate artificial pollination

Quantify pollen production for different varieties (male) and investigate manual pollination:

- Pollen was allowed to settle to room temperature, then placed in modified polyethylene bottles with screw on lids. The pollen was applied by blowing gently on the tube of the jar.
- Fruiting dates used Medjool, Barhee, Zahidi, Deglete Noor and Thoory





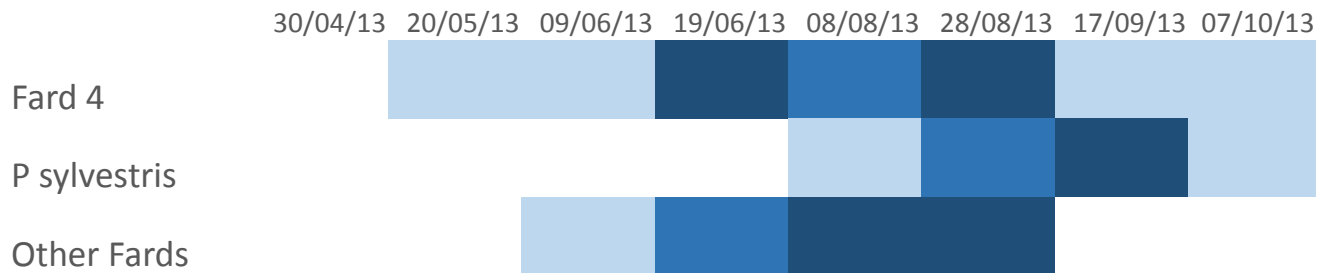
Investigate optimal parents

- Determine the effect of different pollen sources on fruit development (Jarvis, Fard 4, Oliver and other Fards)
- Fruit were separated into seed and flesh, dried at 40°C for 3 days then re-weighed to determine moisture content.
- Khala vs Rutab stage



Results

Pollen availability



Key:

Low availability

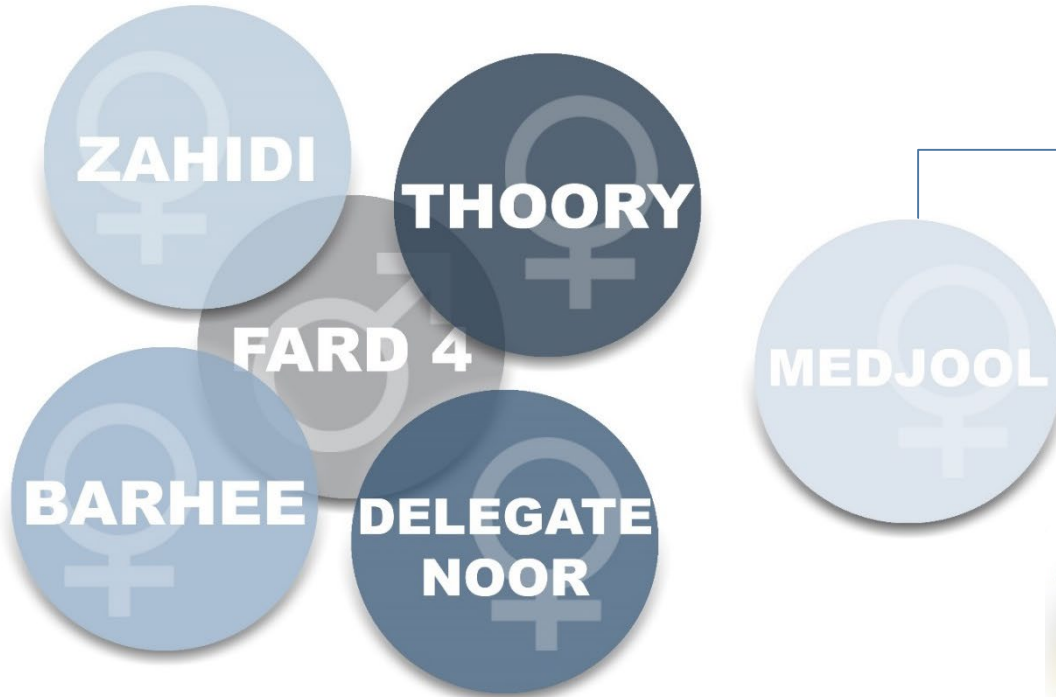
Medium availability

High availability





♂ Pollen weight per palm (g)



Relationship: best male polliniser per female variety

Key findings

- All pollen sources were successfully stored at 4°C over silica gel for extended periods prior to successfully setting fruit.
- Fard 4 was an elite pollen source for supplementary pollinating
 - Fard and Oliver males produced almost twice the weight of pollen per inflorescence.
 - Fard 4 produced the greatest numbers of inflorescence.
 - The *P. sylvestris* flowering was highly variable perhaps reflecting their seedling origin.
- Fard 4 generally produced the largest seed and on occasions the largest fruit.
- Based on the results presented in this report, we recommend the adoption of Fard 4 as the pollen source of choice.

More information?



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[YouTube link](#)



Scan the QR code

We've included a link to our online video.

Most iPhones have inbuilt software to scan QR codes. Many Android phones need to have software downloaded, but there are plenty of free programs available.



Acknowledgments:

The invaluable technical assistance for this project was provided by Glen Oliver and Douglas MacDougall. Dr Vivek Bhat supervised the field trials when in Alice Springs and the statistical analyses were performed by Mark Hearnden with help from Alan Niscioli. The new bags used to protect the growing fruit were developed by Bob Williams and manufactured by Heather Wallace. We thank Dave and Anita Reilly, Gurra Downs Date Company Pty Ltd for their encouragement and essential guidance on cultivars, pollination apparatus and everything about dates. We thank the staff at the Arid Zone Research Institute for their support throughout the project.