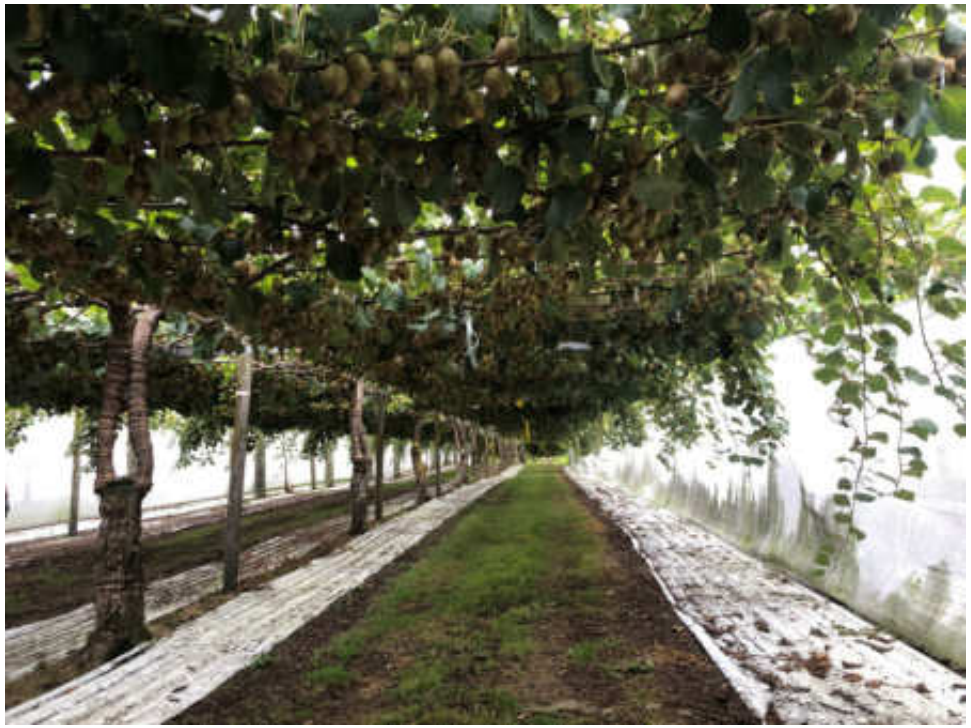
GdL ACTINIDIA
Agrion
Venerdì 24 Maggio 2024
Sala Convegni sede Fondazione Agrion
Via Falicetto, 24 - Manta (CN)

Punti salienti dell'XI *International Symposium on Kiwifruit* 2024 in Nuova Zelanda



20-24 FEBRUARY 2024
MT MAUNGANUI, NEW ZEALAND
XI INTERNATIONAL SYMPOSIUM ON KIWIFRUIT

ISHS Zespri Plant & Food Research

Alba Mininni (Università degli studi della Basilicata)

Contact: alba.mininni@unibas.it

Il convegno in numeri…

20-23 Febbraio 2024 Mont Maunganui – Conveners Sarah Pilkington & Juliet Ansell

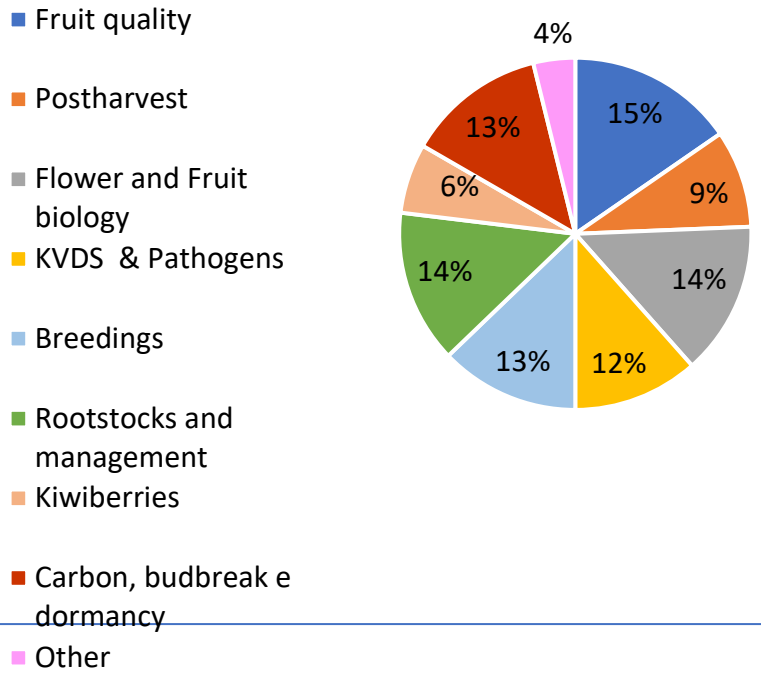
1 Plenary Keynote

Planetary Facts of a Kiwifruit (Kate Meyer)

2 Keynotes

Kiwifruit vine decline syndrome and other emerging and re-emerging biosecurity challenges (Francesco Spinelli)

Boy meets Girl, everywhere? Mysteries in neo-sex chromosome evolution in kiwifruit (Takashi Akagi)



Sessioni orali parallele n. 17

Presentazioni Orali n. 78

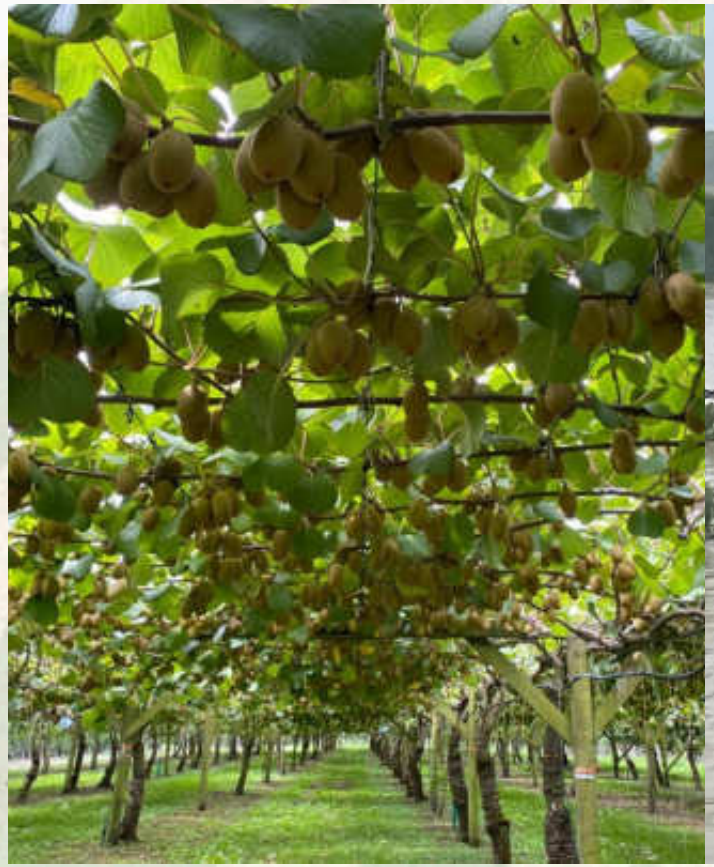
Workshop n. 2

Poster n. 42

Partecipanti n. 230

It’s NEVER BEEN MORE

Urgent - for our growers



Hawke’s bay

Feb 9th 2023

Hawke’s bay

Feb 14th 2023

Buried by mud and silt, New Zealand’s farms face ‘10-year recovery’ – picture essay

Livelihoods in tatters after months of relentless rain and extreme weather – and the clean-up is just beginning

by Tess McClure in Auckland

Karyn Maddren (L) and Sue Meszaros (R) walk down a layered rock waterfall unearthed by a huge landslide on their sheep farm. Photograph: Fiona Goodall/Getty Images

Wed 8 Mar 2023 01.31 GMT

Karyn Maddren walks out into the ruins of her stud farm, and stands in front of the waterfall. A month earlier, it was a green hillside. Now, the dirt has fallen away, exposing the golden-ribbed sandstone beneath. Water washes over the rocks, running clear now, carrying the last of the silt downstream.

“That particular slip has transformed into something very, very pretty,” Maddren says.

“When you’re at the bottom and you turn

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‘Never seen rain like that’: Farmers assess damage, tonnes of crops possibly wiped out

By John Weekes

Save Share

NZ homeowner devastated by flood aftermath

NOW PLAYING · Focus: NZ homeowner devastated by Auckland flood aftermath

Trushar Maisuria, an NZ homeowner arrives to survey the damage to his Don Buck Road home. Video / Dean Purcell

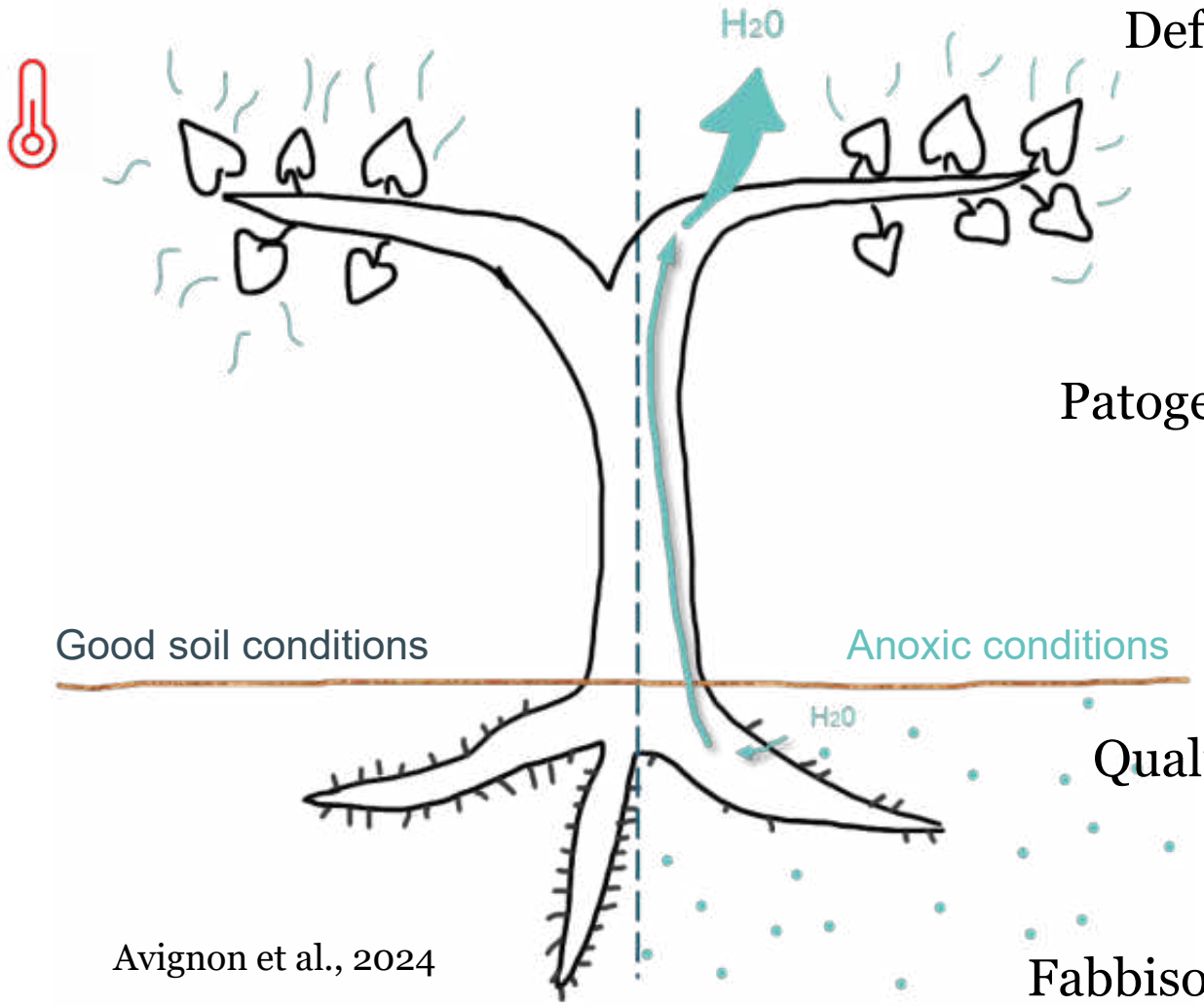
Farmers around Auckland are assessing damage after last night’s deadly downpour amid reports

CRITICITA' dell'ACTINIDICOLTURA

Cambiamenti climatici

Elevata Domanda evapotraspirativa
Deficit idrico ambientale

Condizioni del suolo –
Perdita di qualità
Eccesso idrico



Avignon et al., 2024

Patogeni emergenti

Moria dell'actinidia

Qualità del frutto

Fabbisogno in freddo
Schiusura gemme

Fabbisogni del mercato

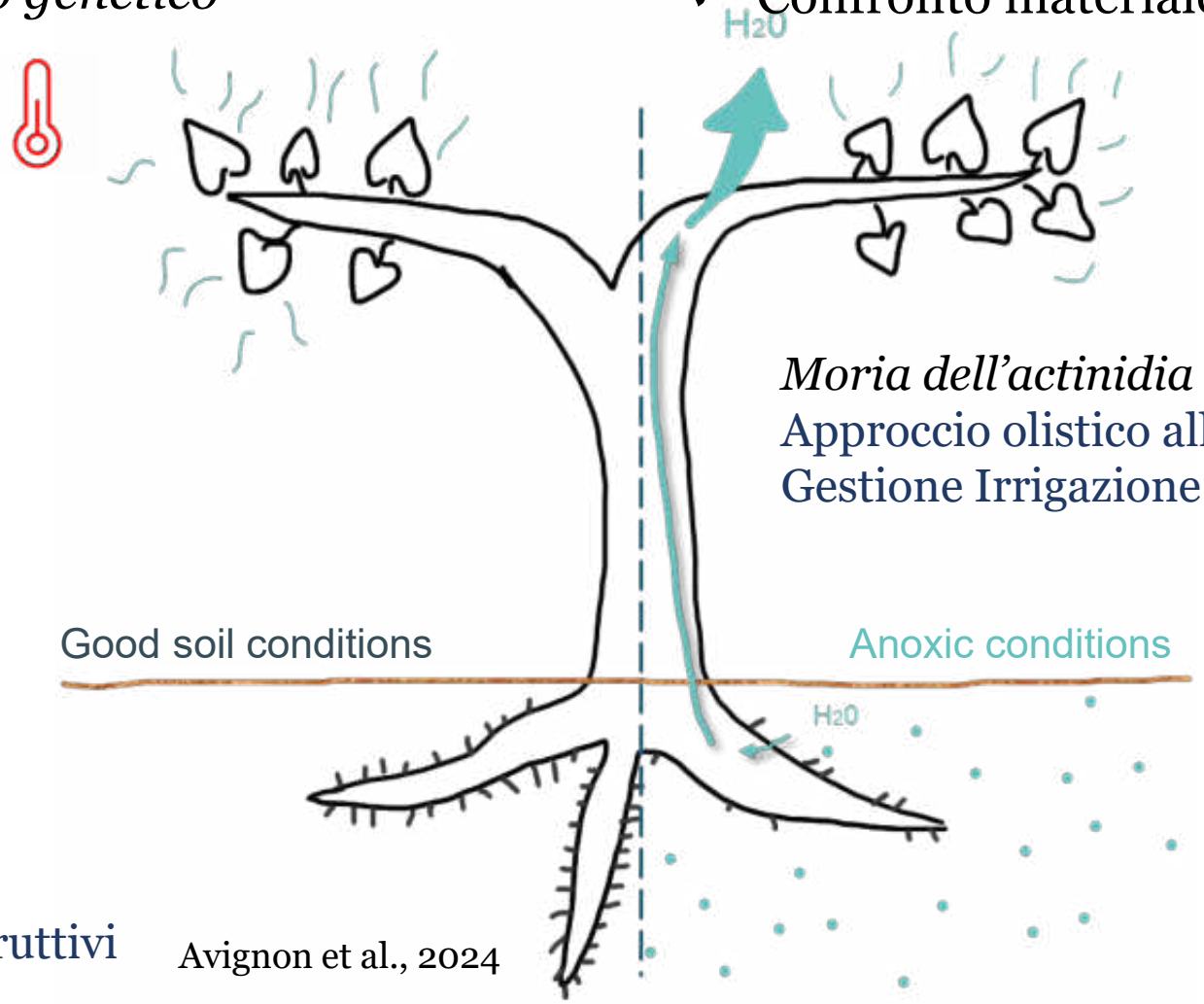
Uniformità fioritura

Cosa sta facendo la ricerca

Fabbisogno in freddo
- ✓ Conoscenze dei meccanismi
- ✓ Nuovi prodotti
- ✓ Confronto materiale genetico

Programmi di miglioramento genetico
- ✓ Portinnesti
- ✓ Cultivar

Gestione del frutteto
Ottimizzazione delle Riserve
Bilancio vegeto-produttivo



Avignon et al., 2024

Moria dell'actinidia
Approccio olistico all'agrosistema –
Gestione Irrigazione e Suolo

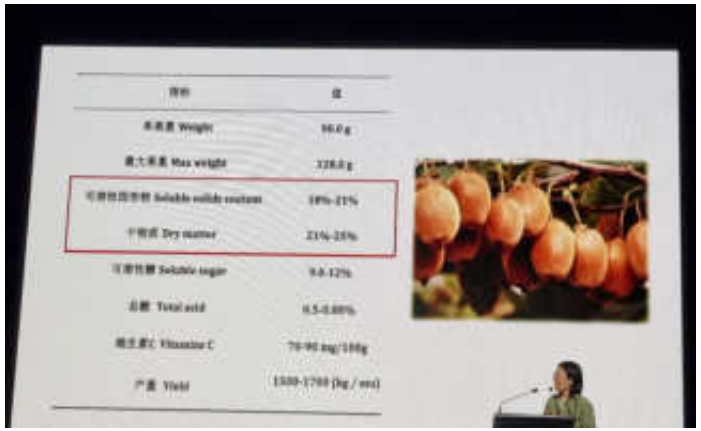
Qualità dei frutti
- ✓ Metodi di Detection non distruttivi

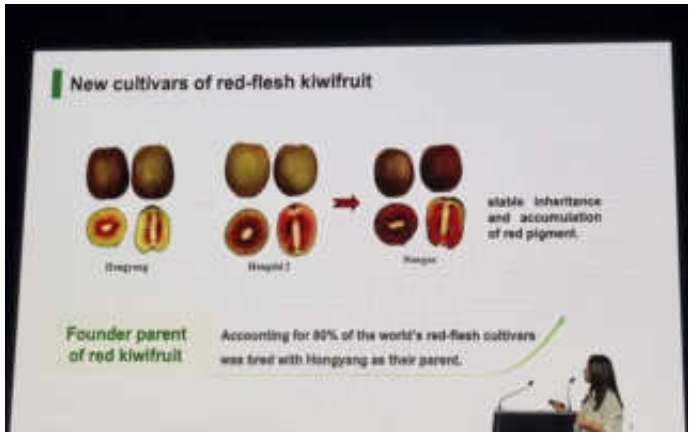
Postharvest
- ✓ Ottimizzazione condizioni ambiente controllato

Session: Breeding & genetics

Programmi di miglioramento genetico

Cultivar con elevata sostanza secca





Ming Xu

The breeding of the new kiwifruit cultivar 'Ruiyu' with green flesh

Mingzhang Li

Breeding on red-flesh and yellow-flesh kiwifruit in Sichuan China

Guanglian Liao

A sweet flavor kiwifruit (*Actinidia eriantha*) cultivar

Contenuto in solidi solubili

19%~22.2%

***Actinidia eriantha* Dr. Guanglian Liao**

Sessions: Breeding & genetics – Rootstocks and water management

Programmi di miglioramento genetico
Portinnesti

Ella Maxwell – Zespri
Establishing a new cultivar development programme in Italy

Jinbao Fang - Zhengzhou Fruit Research Institute, CAAS, China
Explanation of Response to Waterlogging in Kiwifruit

Kentaro Ono - Kagawa University, Japan
Trial of hydroponic cultivation of kiwifruit using wet tolerant rootstock, *Actinidia macrosperma*

Alba Mininni – Università degli studi della Basilicata
Effects of kiwifruit rootstocks on physiological responses of grafting combinations under waterlogging stress

Estendere areali di produzione e rispondere al mercato kiwi a liv globale

Principali sfide/caratteri

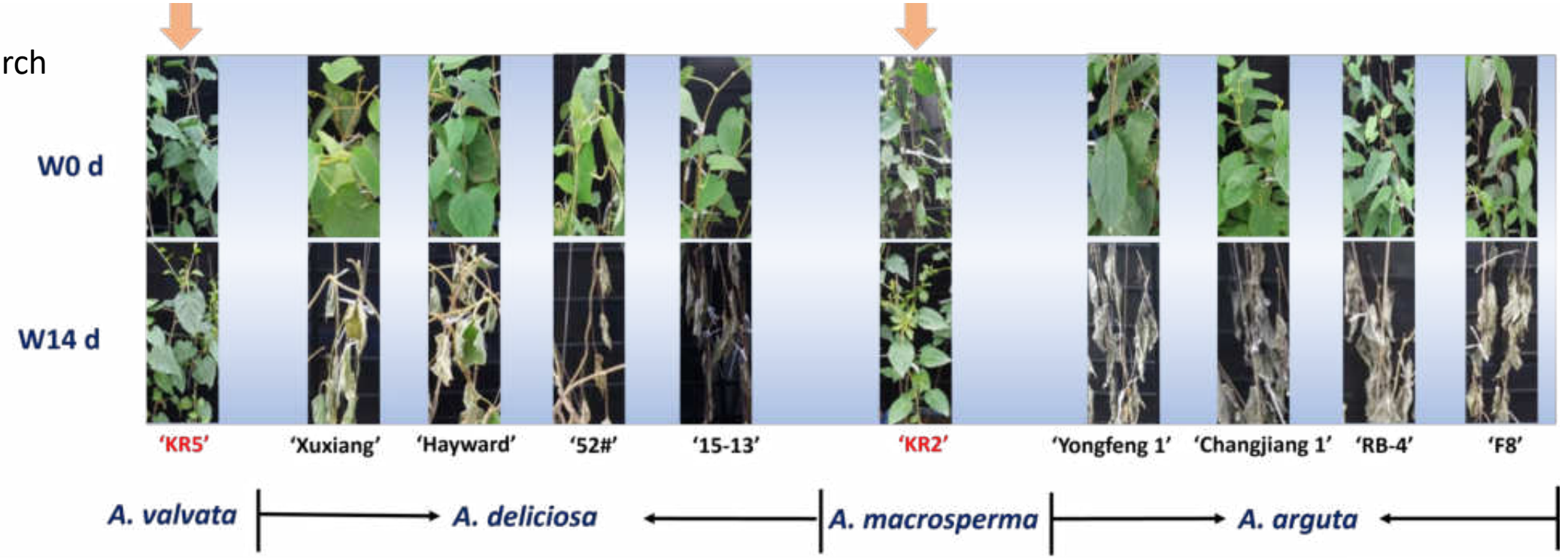
- Vigoria
- Fabbisogno in freddo
- Affinità con cv.
- Tolleranza ad eccesso idrico
- Comportamento in diversi areali

Hayward

D1

Bounty 71

Jinbao Fang
Zhengzhou Fruit Research Institute, CAAS



- **The waterlogging tolerance order is 'KR2' > 'KR5 '> '15-13' > 'Yongfeng 1'.**

'KR5' and 'KR2' tolleranti all'eccesso idrico mantengono la crescita, attività radicale e fotosintetica

Lo stress da eccesso idrico induce espressione di fattori di trascrizione ERF-VII nelle radici, regolando la risposta all'ipossia, metabolismo secondario e radicali liberi, meccanismi che conferiscono tolleranza.

1-year-old *A. chinensis* var *chinensis* (cv 'Zesy 002') vines grafted on 3 different rootstocks

- Hayward — *A. chinensis* var *deliciosa*
- D1
- Bounty 71 — *A. macrosperma*

2 irrigation treatments: Ctrl e WL

Bounty 71 dopo 9 giorni di Eccesso idrico manifesta stessi sintomi di riduzione dell'attività fotosintetica e scambi gassosi di Hayward e D1

Hayward

D1

Bounty 71

Alba Mininni et al., UNIBAS

Session 1B: Kiwifruit vine decline syndrome – Moria

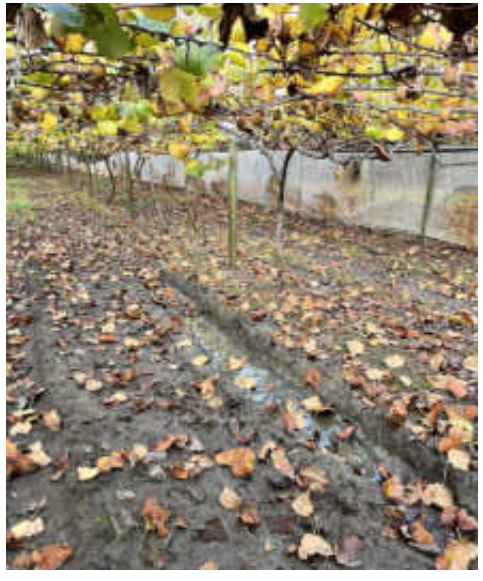
Marianne Avignon – INRAE, France
A new method to assess early kiwifruit decline with Sentinel-2A satellite images

Adriano Sofo – Università degli studi della Basilicata
A new systemic approach for promoting soil and plant health in G3 orchards to face kiwifruit vine decline syndrome (KVDS)

Shahjahan Kabir – Plant & Food Research New Zealand
Phytophthora biodiversity in New Zealand kiwifruit

KEYNOTE: **Francesco Spinelli - Università degli studi di Bologna**
Kiwifruit vine decline syndrome and other emerging and re-emerging biosecurity challenges

✓ *Approccio olistico all'agrosistema*
Gestione Irrigazione
Gestione suolo: Inerbimento, ammendanti organici, drenaggio



✓ *Uso Sentinel2 per Definizione del grado severità e avanzamento nel tempo*

Degradazione suolo, impoverimento, Eccesso idrico → Disbiosi

Ruolo del Microbioma del suolo

Visite in campo

Pukehina, New Zeland

Suolo pesante
Sintomi moria a livello fogliare e app. radicale
Irrigazione singola ala gocciolante
Incisione anulare applicata in pianta giovane

Cambio caratteristiche del Suolo a 15 cm

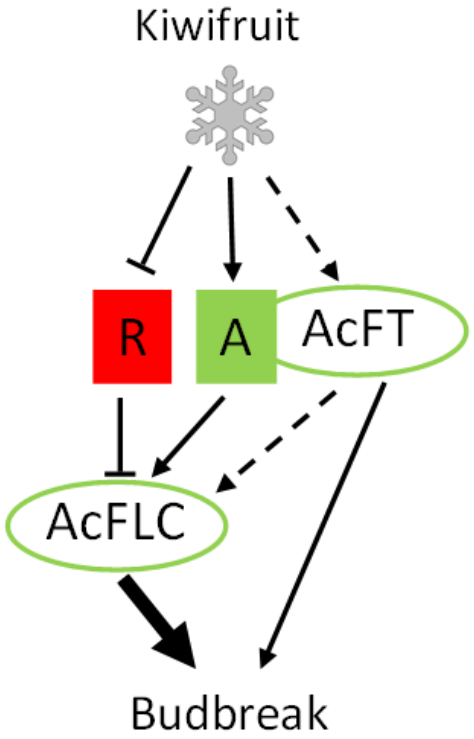
Session 4A: Budbreak and dormancy

Rongmei Wu
DNA methylation reprogramming during the transition from winter dormancy to growth resumption in kiwifruit

Charlotte Voogd
Unravelling the genetic control of budbreak in kiwifruit (*Actinidia chinensis*) – analysis of a cold-responsive *FLC-like* gene

Luca Sebastiani
Enhancing budbreak in kiwifruit: study of biological mechanisms involved in dormancy release and alternative potential products to the Hi Cane

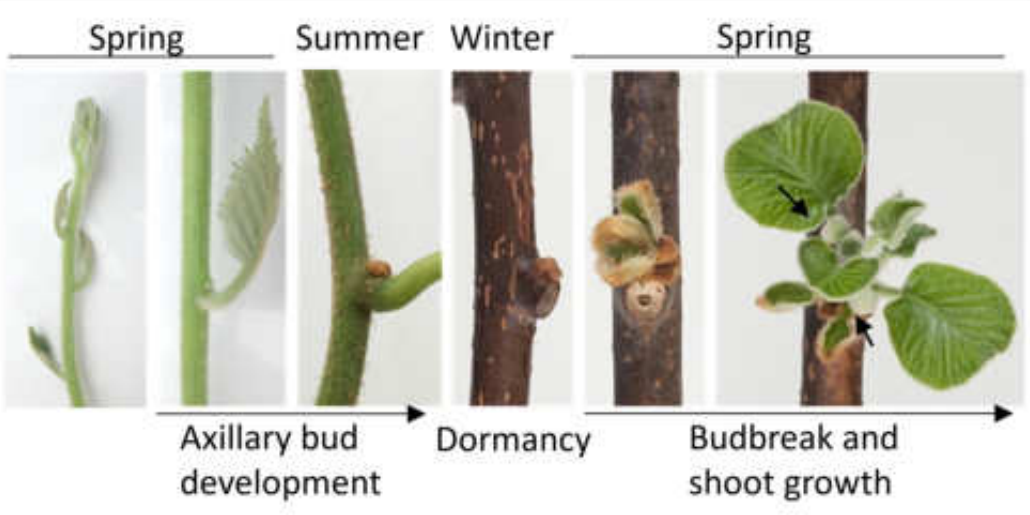
Pasquale Losciale
Comparative estimation of chilling and heat requirement in five kiwifruit varieties and exploitation of this knowledge for the effective application of a breaking dormancy agent (Brecaut®) in cv Jintao®



Fabbisogno in freddo

- ✓ Conoscenze dei meccanismi
- ✓ Confronto materiale genetico

- ✓ Individuato gene *AcFLCL* C che accelera la schiusura gemme
- ✓ Ipotizzato un modello di meccanismo molecolare di *AcFLCL*
- ✓ Diversi prodotti in valutazione (da un anno all'altro ci sono differenze. Individuazione molecola, dose ed epoca di impiego richiede tempo



Session 6B: Carbon, stress and productivity

Minoo Mohajer
The effect of shade during reserve accumulation on 'Zesy002' and 'Hayward' kiwifruit vine performance

Annette Richardson
Growth, carbon acquisition and partitioning in shoots of three kiwifruit cultivars

Nick Gould
Effect of trunk girdling over three years on vine reserves, productivity and yield in *Actinidia chinensis* var. *chinensis* and *A. chinensis* var. *deliciosa*

Lei-Ming Sun (tbc)
Genome-wide analysis of *NDR1/HIN1-like* genes in kiwifruit and functional analysis of *NHL17* homolog under biotic stresses

Brydie Craven
Vigour and distance along canes affects cell proportions in 'Hayward' kiwifruit canes

Andrea Giovannini
The effects of shading and reflective mulch on plant physiology and fruit growth in *Actinidia chinensis*

Riserve, stress e produzione

- ✓ Conoscenze dei meccanismi
- ✓ Confronto materiale genetico
- ✓ Pratiche nel frutteto
  - *Incisione anulare*
  - *Caratteristiche germoglio/branca*

Visite in campo

Te Puke, New Zealand

Condizioni in Nuova Zelanda sono ottimali per la crescita del kiwi.
Interruzione flusso floematico no problematico…

ma da noi? Le riserve possono diventare fattore critico

Frutteto in equilibrio
8% SOM
100 t/ha
Nessun sistema irrigazione

Gestione chioma fondamentale per equilibrio vegeto-produttivo

Incisione anulare (fino a 4 incisioni all'anno)

In piante sane e in **buone condizioni climatiche**…

- Le ripetute incisioni riducono le riserve di amido in inverno non influiscono sul germogliamento o sulla fioritura
- L'incisione anticipa il momento della raccolta e produce frutti più grandi con un contenuto di sostanza secca più elevato

Tuttavia… E' necessario prestare attenzione alle piante che:

- Sono già sottoposte a stress (es. per il ristagno dell'acqua).
- Terreni poveri, pesanti e compattati che possono limitare la crescita delle radici e la loro capacità di immagazzinamento
- Piante giovani in cui l'apparato radicale non è ancora completamente sviluppato (meno di 10 anni)

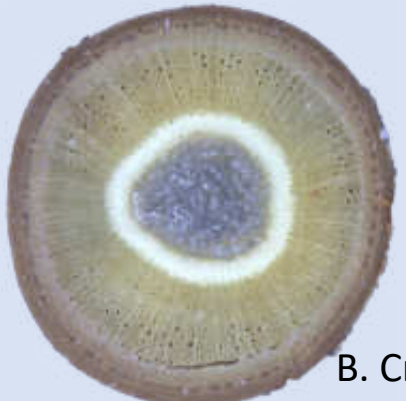
Nick Gould Plant & Food Research

Quale tipo di ramo? … di media vigoria

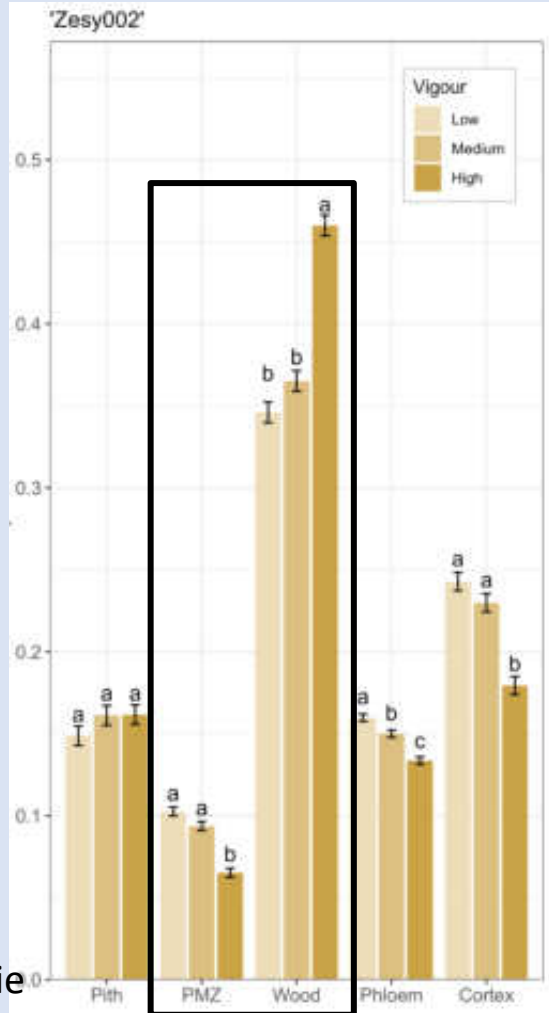
More research is still needed, however:

- PMZ to wood ratio is important
- Greater proportion of PMZ
- Low vigour canes
- Distal end of the cane

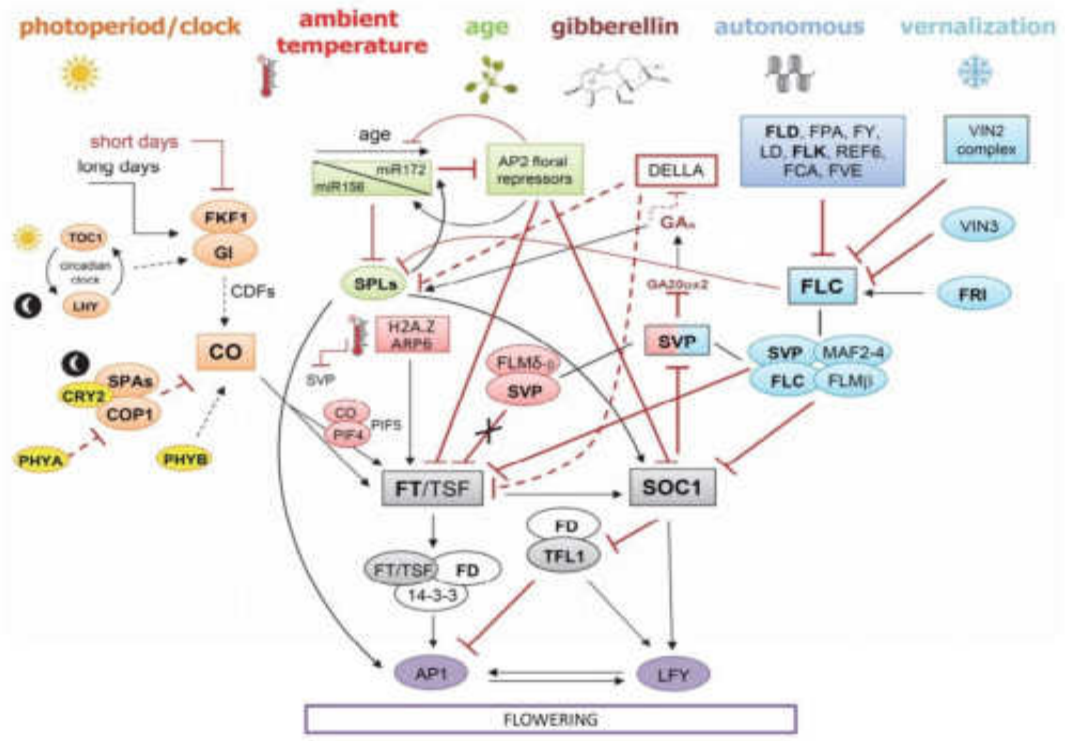
- Cultivars showed similar proportional trends



B. Craven, K. Kramer-Walter and C. McKenzie



Session Flower Biology



Main flowering time pathways acting in *Arabidopsis thaliana*

Aumento conoscenza su ruolo di diversi geni coinvolti in induzione e differenziazione fiorale

Fioritura

Meccanismo complesso regolato da aaspeti ambientali, fisiologici, genetici, molecolari

Olivia Kelly Investigation into the transcriptional regulation of stigma death in *Actinidia chinensis*
Dinum Herath Mutagenesis of *AcCLV1* genes in kiwifruit: implications for shoot apical meristem and fruit development
Yongyan Angel Peng The role of *LEAFY* genes in floral formation in kiwifruit
Bo Yang Characterization of *Actinidia chinensis FD* genes and their role in kiwifruit flowering
Annette Richardson The fate of inflorescence meristems during their transition to inflorescences at anthesis
Simona Nardozza Towards sustainable and climate resilient yield in kiwifruit

Session: Fruit Quality and Assessment tools & Controlling ripening & Postharvest

Juan Pablo Zoffoli
Degreening of the yellow-flesh kiwifruit (*Actinidia chinensis* cv. Dori) reduces chilling injury after storage at 0°C

Talon Sneddon
'SunGold' kiwifruit ethylene production in response to controlled scuffing

Jeremy Burdon
Quality aspects of the kiwifruit core

Josephine Longuet-Higgins
Use of optical coherence tomography (OCT) to detect changes during shrivel development in kiwifruit

Maryam Alavi
Conceptual and mechanistic framework for prediction of kiwifruit quality in storage over time

Chelsea Kerr
Understanding the influence of postharvest storage conditions on kiwifruit using RNA-Seq transcriptome profiling

Magdalena Urbanska
Towards fast, non-invasive, and objective quantification of the compression-induced fruit surface deformation

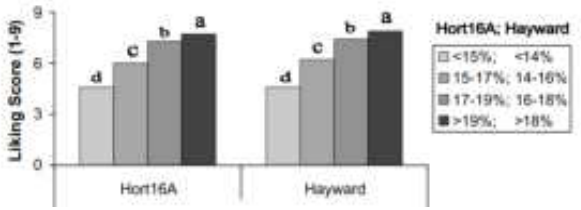
Mo Li
A review of non-destructive methods for kiwifruit skin assessment

Robert Valkenburg
Comparison of methods for rapid non-destructive and destructive measurement of dry matter, SSC, and firmness in gold kiwifruit

Jason Sun
Non-destructive internal colour measurement of 'Zes008' kiwifruit

Andrew McGlone
Measuring the outer pericarp colour of red-fleshed kiwifruit – new tools with an old method

Sam Langdon-Arms
The Soft Fruit Sensor (SFS) – a hand-held fruit firmness measuring device developed for the kiwifruit industry



Sam Langdon-Arms, V.A. McGlone

- *From packhouse to the market*, Definizione di **un modello** per identificare le cause principali di perdite frutti durante la conservazione e Mitigare I rischi
- **Metodi non distruttivi** per monitorare qualità frutti es. Soft Fruit Sensor
- **Misurare il colore per kiwi a polpa rossa** (Color Cube, KonicaMinolta, KiwiMeter)→ Color Cube promettente, si confermano delle incongruenze del colore rosso (non indice di maturazione) McGlone VA, Billing D, Burdon J
- **Degreening a 15 °C** con raccolta anticipata di 11 giorni prima di conservare a 0°C riduce danni da freddo e mantiene consistenza (Labra, Naranjo and Zoffoli, Chile)

UAV – Agricoltura di precisione

Raimundo Cuevas

Effect of biostimulant applications with UAV to avoid abiotic stress conditions

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ISHS XII INTERNATIONAL SYMPOSIUM ON KIWIFRUIT

6 – 9 September 2027

Italy, **Matera**

Conveners

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