SYNCRON® TRIAL DATA 2

2024 TRIAL DATA:

Hydrogen Cyanamide vs Syncron® vs Untreated Control

COMPARISON DATA: KEY METRICS

Metric	Hydrogen Cyanamide	Syncron®	Untreated Control
Budbreak %	66.9%	62–65%	48.3%
Budbreak Duration	28.5 days	27–36 days	40+ days
Flowers/Winter Bud	2.11	1.84	1.24
Fruit Size (110–160g)	~90% uniform fruits	~80% uniform fruits	Lowest uniformity
Worker Safety	High Risk	Low Risk	Safe
Environmental Impact	High Risk	Eco-friendly	Neutral
Phytotoxicity	Low in optimal conditions	None observed	None observed

CRITICAL OBSERVATIONS

1. **Budbreak Performance:**
   - Syncron® approaches Hydrogen Cyanamide efficacy and surpasses untreated controls significantly, offering a viable alternative under optimized protocols.
2. **Yield and Quality:**
   - Syncron's® enhancements in queen flowers and fruit size uniformity are key selling points for growers focused on profitability and marketable quality.
3. **Safety and Sustainability:**
   - Syncron® leads in safety, sustainability, and regulatory compliance, addressing increasing demands for environmentally responsible solutions.

This detailed analysis positions Syncron® as a high-performing, sustainable alternative to Hydrogen Cyanamide, with potential for optimisation in yield metrics while maintaining its lead in safety and eco-friendliness.

SOUTH ISLAND: Peter: 027 434 1944
NORTH ISLAND: Warren: 027 211 8947
LOWER NORTH ISLAND: Donna: 0272 423 140

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1. BUDBREAK PERCENTAGE

Hydrogen Cyanamide:

- 66.9% average budbreak across all trials.
- Performance consistency noted when applied 28–42 days before natural budbreak. Deviations outside this window reduce efficacy significantly.
- Peak performance observed with specific cultivars (e.g., Hayward and SunGold), dependent on weather and precise application timing.

Syncron®:

- 65% (Hayward) and 62% (SunGold) budbreak when applied at 31–36 days before budbreak.
- Enhanced budbreak by 6–10% compared to untreated controls when evaluated weekly.
- Synergistic effects noted when combined with Calcinit® (15%), boosting efficacy in colder seasons or suboptimal chilling years.
- Outperformed other reference treatments (non-Hydrogen Cyanamide) by 5–7%, particularly in SunGold trials.

Untreated Control:

- Averaged 48.3%, showing natural budbreak progression under untreated conditions.
- Significant variability due to environmental factors like temperature and chilling accumulation.

Implications:

- Hydrogen Cyanamide remains the benchmark in absolute budbreak percentage but depends heavily on strict timing and conditions.
- Syncron® narrows the gap, offering greater flexibility and better performance in years with insufficient chill accumulation.

2. BUDBREAK DURATION

Hydrogen Cyanamide:

- Budbreak duration condensed to 28.5 days, delivering uniform and synchronized results.
- This synchronisation allows for efficient downstream orchard management, such as pruning and pest control.

Syncron®:

- 27–31 days (SunGold) & 31–36 days (Hayward), slightly longer but close to Hydrogen Cyanamide.
- Demonstrated faster cumulative sprouting dynamics, with a notable advance of flowering onset by 3–5 days in Hayward.

Untreated Control:

- Budbreak duration extended to 40+ days, leading to staggered growth phases and reduced management efficiency.

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Implications:

- Syncron's® condensed budbreak window is competitive with Hydrogen Cyanamide, particularly for cultivars like SunGold.
- This shorter duration reduces labour-intensive variability while maintaining high flexibility for weather-related adjustments.

3. YIELD METRICS

Fertile Buds and Flowers

Hydrogen Cyanamide:

- Produced 2.11 fertile buds/winter bud (highest recorded in trials).
- King flowers constituted the majority, enhancing fruit uniformity and profitability.

Syncron®:

- Achieved 1.84 fertile buds/winter bud (Hayward), a significant improvement over untreated controls (1.24 buds/winter bud).
- +15% increase in fertile buds and flowers compared to untreated, with notable dominance of queen flowers, which are commercially preferred.

Untreated Control:

- Produced the lowest fertile buds, with variability in flower types and fewer commercially viable buds.

Fruit Size and Quality

Hydrogen Cyanamide:

- 90% of fruits fell within the premium size range of 110–160g, offering high market value.
- High consistency and minimal size variation observed across treated orchards.

Syncron®:

- 80% of fruits were in the same size range, with significant improvements in the 135–160g category, critical for premium pricing.
- Fruits showed uniformity and comparable quality to Hydrogen Cyanamide-treated orchards.

Untreated Control:

- Produced fewer marketable fruits, with size distribution skewed towards smaller, less profitable ranges.

Implications:

- Syncron® delivers substantial yield and fruit quality enhancements, narrowing the gap with Hydrogen Cyanamide.
- Its dominance in queen flowers supports its economic appeal for growers targeting premium fruit markets.

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4. SAFETY METRICS

Worker Safety

Hydrogen Cyanamide:

- Requires full PPE and strict adherence to safety protocols due to Hydrogen Cyanamide toxicity.
- Risks include skin irritation, respiratory complications, and chronic exposure concerns.

Syncron®:

- No safety risks reported during trials; handling requires only standard PPE.
- Recognised as a safer alternative, especially in labour-intensive orchards.

Environmental Impact

Hydrogen Cyanamide:

- High leaching potential, posing risks to soil and water systems.
- Requires mitigation strategies to comply with regulatory standards for non-target contamination.

Syncron®:

- Fully biodegradable and residue-free, certified for organic farming.
- Meets stringent environmental compliance for domestic and export markets.

Residue on Fruit

Hydrogen Cyanamide:

- Withholding periods required to ensure residue-free harvest.

Syncron®:

- No residues detected, enabling faster market access and increased flexibility in harvest scheduling.

Crop Phytotoxicity

Hydrogen Cyanamide:

- Minimal risk under optimal conditions but susceptible to damage during high-temperature applications.

Syncron®:

- No phytotoxicity observed across diverse environmental conditions, ensuring consistent performance.

Implications:

Syncron® leads in safety metrics, appealing to growers prioritizing worker health and environmental sustainability.

1. Syncron® is a registered trademark of Daymsa.
2. Calcinit® is a registered trademark of Yara Fertilizers (nz) Limited.

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