2023 Trial Data: Comparative Summary for [1]HiCane®, [2]Syncron®, and Untreated Control

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Key Metrics and Comparisons

1. Budbreak Percentage

- **Syncron (33 DBBB)**: Achieved the highest budbreak percentage, averaging **57.2%** in certain trials.
- **HiCane**:Followed closely with a **55.1%** budbreak in targeted conditions, slightly behind Syncron across trials.
- **Untreated Control**: Consistently lower at **52.2%**, highlighting the efficacy of both products.
- **Implication**: Syncron, when applied 33 days before budbreak (DBBB), provides a reliable alternative, with performance comparable to HiCane in Gold3 kiwifruit orchards.

2. Budbreak Duration

- **HiCane**: Achieved synchronization with a budbreak duration of **28–30 days**.
- **Syncron (33 DBBB)**: Slightly longer duration, averaging **30–33 days**.
- **Untreated Control**: Significantly prolonged duration of **40+ days**.
- **Implication**: Syncron is effective in improving synchronization, though not as condensed as HiCane.

3. Yield Metrics

- **Flowers per Winter Bud**:
    - HiCane: **0.55 king flowers/winter bud**.
    - Syncron (33 DBBB): **0.43 king flowers/winter bud**.
    - Untreated Control: **0.35 king flowers/winter bud**.
- **Crop Load (Fruit/m^2)**:
    - HiCane: **85 fruits/m^2**.
    - Syncron: **73 fruits/m^2**.
    - Untreated Control: **44 fruits/m^2**.
- **Implication**: Both products significantly enhance fruit yield, with HiCane maintaining a slight edge over Syncron.

Key Industries
Protecting people, crops and native species

2024 Trial Data: EXPANDED Comparative Summary for HiCane, Syncron, and Untreated Control

1. Budbreak Percentage

- **HiCane**: Achieved the highest budbreak percentage at **66.9%**, reinforcing its reputation as a highly effective budbreak enhancer.
    - Performance is consistent but tied to strict timing (optimal 28–42 days before natural budbreak).
    - Dependent on precise weather conditions, which can limit flexibility for growers.
- **Syncron (Double Application)**: Delivered **61.3%** budbreak, significantly higher than the **Untreated Control (48.3%)**.
    - Double application protocol (6 days apart) improves efficacy by creating a "second window" for activation, minimizing weather-related risks.
    - Narrowing performance gap with HiCane suggests potential for long-term adoption.
- **Untreated Control**: Showed the lowest budbreak percentage at **48.3%**, reflecting the natural baseline without intervention.
    - Useful as a control to evaluate product effectiveness.
- **Implications**:
    - Syncron's double application demonstrates high reliability and reduced dependency on weather precision compared to HiCane.
    - It is a promising alternative for regions with unpredictable environmental conditions.

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2. Budbreak Duration

- **HiCane**: Achieved a condensed budbreak duration of **28.5 days**, ensuring synchronized budburst and uniform flowering.
    - Particularly useful for streamlining subsequent orchard management practices like thinning and pest control.
- **Syncron (Double Application)**: Slightly extended budbreak duration at **27.4 days**, comparable to HiCane.
    - Benefits from a balanced synchrony without risking uneven growth.

- **Untreated Control**: Longest duration at **31.2 days**, leading to uneven growth and staggered management.
- **Implications**:
    - Syncron's duration is competitive with HiCane and provides more uniform growth compared to untreated vines.
    - Growers benefit from manageable flowering and fruiting timelines.

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3. Yield Metrics

- **Fruit per Winter Bud**:
    - **HiCane**: Produced the highest number of fruits per winter bud at **2.11**, maximizing yield potential.
    - **Syncron (Double Application)**: Achieved **1.84 fruits per winter bud**, a slight improvement over previous years.
    - **Untreated Control**: Lowest at **1.24 fruits per winter bud**, indicating the importance of budbreak enhancers for productivity.
- **Crop Load (Fruit/m^2)**:
    - **HiCane**: Highest crop density at **96 fruits/m^2**.
    - **Syncron**: Competitive at **80 fruits/m^2**, highlighting substantial yield improvements compared to untreated vines (**44 fruits/m^2**).
- **Implications**:
    - Syncron offers a balanced trade-off between yield enhancement and safety, appealing to growers seeking reliable productivity.
    - Slightly lower yields compared to HiCane are offset by its superior safety and environmental profile.

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Safety Metrics for 2024: HiCane vs Syncron vs Untreated Control

Safety Metric	HiCane	Syncron	Untreated Control
Worker Health	High risk, PPE required	Low risk, standard PPE sufficient	Safe, no hazards
Environmental Impact	Potential for contamination	Eco-friendly, no residue	No impact
Residue on Fruit	Withholding period required	Residue-free	Residue-free
Crop Phytotoxicity	Possible under poor conditions	None observed	None observed

Practical Implications

1. **Regulatory Compliance**: Syncron meets stringent safety and environmental regulations, including organic certifications.
2. **Cost Efficiency**: Syncron eliminates PPE, training, and compliance costs associated with HiCane.
3. **Marketability**: Residue-free certification allows growers to access high-value export markets sooner.

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1. Worker Safety

- **HiCane**: Hydrogen cyanamide (HiCane) poses significant risks to workers, including potential for:
    - Skin irritation or burns.
    - Respiratory hazards if inhaled during application.
    - Mandatory use of PPE, specialized training, and restricted access during and post-application.
- **Syncron**: No recorded adverse effects on worker health.
    - Certified safe for handling without specialized PPE beyond standard protocols.
    - Suitable for organic farming under regulatory compliance.
- **Untreated Control**: No safety hazards associated as no chemicals are applied.
- **Implication**: Syncron provides a safer work environment, reducing risks and the cost of compliance associated with HiCane.

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2. Environmental Impact

- **HiCane**:
    - Potential for leaching into groundwater.
    - High risk to non-target organisms, including aquatic life.
    - Requires careful application to prevent environmental contamination.
- **Syncron**:
    - Formulated with natural compounds.
    - No residue accumulation in soil or water.
    - Approved for organic agriculture under EC regulations.
- **Untreated Control**: Neutral environmental impact due to lack of treatment.
- **Implication**: Syncron is environmentally preferable, aligning with sustainability goals and reducing potential compliance issues for growers.

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3. Residue on Fruit

- **HiCane**: Hydrogen cyanamide leaves no direct residue but requires extended withholding periods to ensure safety for fruit consumers.
- **Syncron**: Leaves no detectable residues on fruit or vines.
    - Allows quicker market access post-application, supporting flexible harvest timing.
- **Untreated Control**: No residue concerns as no treatment is applied.
- **Implication**: Syncron offers a residue-free solution, particularly important for export markets with stringent residue regulations.

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4. Crop Phytotoxicity

- **HiCane**:
    - No significant phytotoxic effects observed during 2024 trials.
    - However, potential for damage exists under suboptimal application conditions (e.g., extreme heat).
- **Syncron**:
    - Zero phytotoxic effects reported, even under varying environmental conditions.
    - Safe under a wider range of temperatures and humidity levels compared to HiCane.
- **Untreated Control**:
    - As expected, no phytotoxicity due to lack of treatment.
- **Implication**: Syncron minimizes risk of crop damage, enhancing yield reliability.
