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Performance

SACOA
BIOPEST[®]
PARAFFINIC OIL

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BFA
REGISTERED
PRODUCT



SACOA
BIOPEST[®]
PARAFFINIC OIL


ACTIVE CONSTITUENT: 815 g/L PARAFFINIC OIL (as 1888 - 1976),
unsulphonated residue no less than 98.0%

A narrow range emulsifiable paraffinic oil for the management of pests as per directions for use.

CONTENTS
20L

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- Australian owned
- Specialist company
- O&A manufacturing
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This booklet contains practical information to assist in the use of **SACOA BIOPEST** in IPM programs for quality almonds.

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About This Booklet

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Contact Details For SACOA Pty Ltd

Head Office

Phone +61 8 9386 7666
Fax +61 8 9386 7866
Email sacoa@sacoa.com.au

Address

1st Floor, 39 Stirling Highway
Nedlands Western Australia 6009

BIOPEST[®] is a Registered Trademark of SACOA Pty Ltd.

This booklet provides practical information to assist in the effective and safe use of BIOPEST in almond orchards.

What Is BIOPEST?

BIOPEST is a revolution in spray oil technology.

Offering a unique level of 'purity' it is a proven performer in Almond and many other commercial orchard IPM programs as a carrier and biorational pesticide.

A Focus on SACOA

SACOA Pty Ltd is a leading developer and supplier of spray oils and adjuvants in Australia.

Since our inception in 1991 we have grown to become an international Australian-owned company supported by active partnerships with world-leading manufacturers and research and development groups.

Assured Quality and Service

As a committed industry leader SACOA delivers a range of assurances and services to our reseller clients including QA production facilities, ongoing research programs and extensive marketing support via data packages, brochures, guides, manuals and presentations - available in print and online.

Sustainable Farming Focus

Conscious of the importance of sustainable farming practices, SACOA offer a range of products perfectly suited to use in Integrated Pest Management (IPM) programs.

Innovative, Reliable Solutions

Beyond their sustainable farming benefits, our range of spray oil and adjuvant products provide reliable and economically proven solutions for modern farming's many challenges.

More information on our company and our products is available at www.sacoa.com.au.



Quality = Effectiveness + Safety

The quality of the spray oil you use will define two things:

- » How effective it will work in controlling pests.
- » How safe it will be to the fruit and tree.

It's Clear

BIOPEST is a revolution in spray oil quality.

Produced from food-grade paraffinic oil BIOPEST's clarity is a clear sign of its quality and purity.

The next time you open a drum of oil, check its clarity.

Is it 'water clear'?

And Pure

BIOPEST is over 98% pure - the highest practical level achievable with current refining technology. This is a higher purity than any other spray oil product on the market (based on published USR levels).

How do we measure purity?

By USR - USR stands for Unsulphonated Residue and measures the absence of potentially damaging impurities in oils. The lower the USR % the higher the risk of plant damage.

The 'impurities' are generally a grower's worst enemy when applying spray oils. Impurities, when exposed to sunlight, oxidise and form acids on the leaf and fruit surfaces and in certain conditions 'burn' the plant.

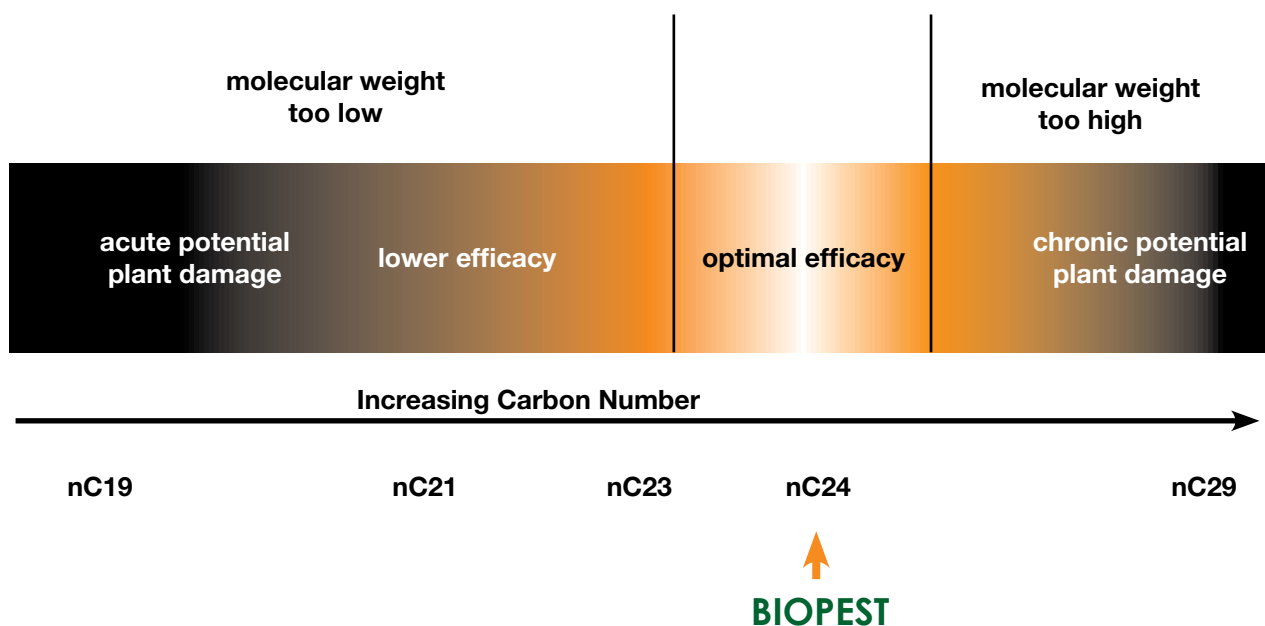
Lighter oils may reduce the impact of impurities, though also offer less potential efficacy. How an optimal weight oil avoids this tradeoff is discussed in detail on the following page.

The Tradeoff Between Efficacy and Plant Safety

The general rule with mineral spray oils has been that heavier oils are optimal for efficacy but carry a greater risk of plant damage, reduced fruit size and fruit spotting. Until now.

Using Carbon Number to Compare Oils

Carbon number (e.g. nC24) measures the number of carbon atoms in each molecule of oil and is used to indicate an oil's 'weight'. This is a key measure of an oil's potential efficacy and an indicator of the potential for plant damage (other factors also apply).



A lighter oil may be less effective, particularly in terms of behaviour modification potential (when used at recommended rates). Though there is also less potential to damage the plant as a lighter oil volatilises (evaporates) more rapidly.

Similarly, an oil around the optimum level of nC24 will be more effective, though can provide a greater risk of plant or fruit damage.

BIOPEST is rated as an nC24 oil. As such it provides greater efficacy though due to its unique qualities it does not provide any increased risk of plant damage. It may in fact offer reduced potential when compared to lower quality, 'lighter' oils.

Why Does BIOPEST Work Better?

BIOPEST offers a uniquely pure, optimal weight oil without the potential plant damage tradeoff.

Here's why those features deliver better performance and plant and fruit safety.

Product Purity

USR over 98%

Impurities cause damage the longer they stay on the plant surface. BIOPEST's USR rating on 99.8% means it can stay on the plant surface and keep working without damaging the plant or restricting growth.

Optimal Weight

nC24

BIOPEST persists on the leaf or fruit surface longer. This means:

- » More pests killed.
- » Significantly greater effectiveness in modifying the behaviour of pests.

Quality Surfactant

Biodegradable

Improves the sticking and spreading properties of the oil in a rapidly biodegradable formula.

Efficacy + Safety

More pest control per spray and for longer with less risk of plant or fruit damage.

BIOPEST - A Revolution in Spray Oil Technology

SACOA BIOPEST Paraffinic Oil is a highly refined food grade paraffinic oil formulation designed for use as a premium carrier as well as a standalone insecticide, fungicide, and to assist management of certain aphid-transmitted viruses.

With an unmatched level of purity BIOPEST represents the most advanced attempt yet to provide growers with a product capable of controlling multiple, unrelated pests simultaneously.

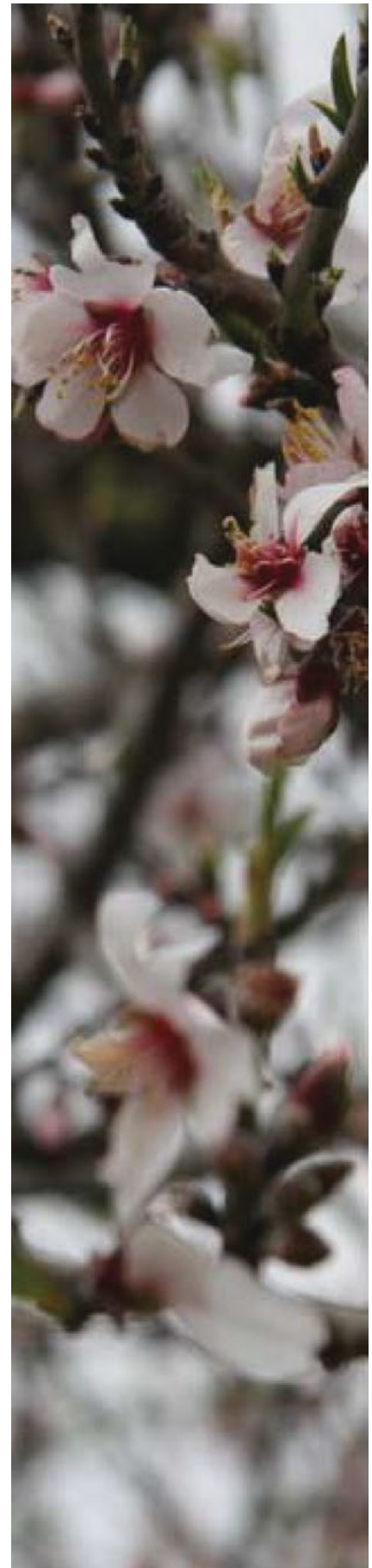
An Essential IPM Solution

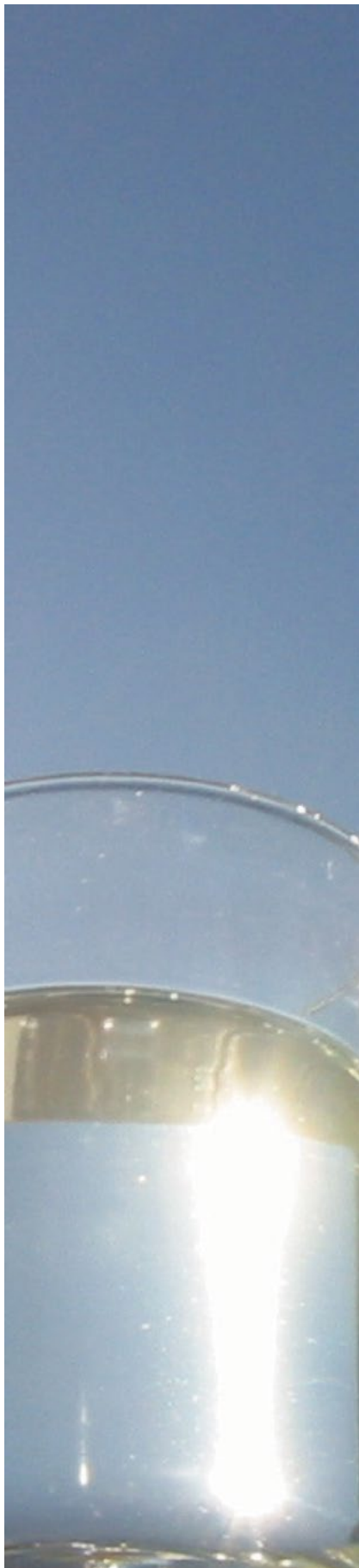
BIOPEST, as an advanced biorational pesticide, is an essential IPM solution due to:

- » PROVEN EFFECTIVENESS IN PEST CONTROL AT LOWER RATES
- » SIMULTANEOUS CONTROL OF A RANGE OF PESTS AND DISEASES
- » NO PEST RESISTANCE
- » ABILITY TO MODIFY PEST BEHAVIOUR
- » MINIMAL IMPACT ON BENEFICIAL INSECTS
- » NOT PERSISTENT IN THE ENVIRONMENT
- » LOW TOXICITY TO ANIMALS AND GROWER
- » SAFE TO HANDLE
- » WON'T STIMULATE PEST OUTBREAKS

Re: Pest Resistance

As mineral oils work at the physical level and not at the biochemical level, they do not invite resistance to develop. This valuable trait is supported by almost a century of mineral oil use in insect and disease control.





BIOPEST - Registration For Use in Almonds

BIOPEST offers the following registration for use in almond IPM programs. Rate represents litreage in dilute spray per 100L water.

Pest	State	Rate	Comments
Aphids (Eggs), Mites (Eggs)	NSW, ACT, VIC, SA, WA, TAS Only	3L	Dormant or delayed dormant
San Jose Scales	NSW, ACT, VIC, SA, WA only	2L	Dormant
Mites and Scales	NSW, ACT, VIC, SA, WA only	1-2L	Summer (Foliar or Cover) or Post Harvest

SACOA is currently undertaking extensive trial work with independent researchers to assess the control of the following:

- » Bryobia Mite (*Bryobia rubrioculus*)
- » European Red Mite (*Panonychus ulmi*)
- » Rust Mite (*Aculus* spp)
- » Two Spotted Mite (*Tetranychus urticae*)
- » San Jose Scale (*Diaspidiotus*)

Preliminary trial work commenced in 2006/2007 with research continuing during 2007/2008.

Anticipated Research Outcomes

SACOA believe BIOPEST will have a greater impact on all diseases and pests targeted, not only during dormancy but over the growing to maturity cycle.

Trial Overview

- » **Coordinator:** Fruit Doctors (Loxton North, SA)
- » **Pest Focus:** As above
- » **Location:** Loxton, SA
- » **Crop:** Almonds - various varieties



A Proactive Approach is Best

Proactive spraying is essential to IPM programs and when using BIOPEST. Research results are expected to show the ability to set pest thresholds, monitor and spray when necessary. This approach avoids the expense of having to manage high or extreme pest levels.

BIOPEST’s use as a standalone insecticide in registered applications such as citrus involves five key principles:

- » High water volumes
- » Rates of between 0.5% - 1%
- » Ideally, multiple applications
- » Thorough coverage of the plant
- » Constant agitation in the tank

The following table expands on these principles.

Factor	Recommended Action	Notes
Water Volume	For small to medium sized trees (i.e. to 3m) - 1,000 - 1,500L per Hectare. For large trees (i.e. 3m +) - 2,000 - 5,000L per Hectare.	Specific levels will be influenced by: » Target pest » Planting density » Tree height » Canopy density
Spray Pressure	As a general rule spray for coverage of the upper leaf surface. Spray pressure will vary depending on the type of sprayer used.	We do not recommend adjusting spray pressure to change the litreage as this will affect the size of the spray droplet and possibly compromise coverage.
Coverage	All parts of the tree must be completely covered in spray.	
Applications	A multiple application approach is generally recognised as providing maximum pest control.	Single applications may also be used though may not provide adequate control on certain pests such as citrus leafminer and others.
Spray Frequency	Multiple applications at recommended rates at crucial times of the year are under trial.	Will depend on pest pressure and pre-defined pest threshold levels.

Factor	Recommended Action	Notes
Equipment	Will work adequately: <ul style="list-style-type: none"> » Air-blast sprayers with towers » Rotary atomisers on towers Not Recommended: <ul style="list-style-type: none"> » Low-profile air-blast sprayers » Mist Blowers » Electrostatic sprayers 	Mist Blowers and electrostatic sprayers are generally unsuitable, as coverage will be compromised from lack of dilute spray volume.
Tractor Speed	Adjust tractor speed to achieve thorough spray coverage to the point of runoff. This may be 2 - 3km/h on large trees.	
Re-Entry Interval	Four hours.	
Pre-Harvest Interval	Twenty four hours.	
Residue Tolerance	BIOPEST has no residue tolerance.	

Spray Timing Chart

The following chart indicates when various pests are active or when symptoms can be observed in orchards. Timing for the treatment of these pests is also included.

Pest	Month											
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Carob Moth												
Bryobia Mite												
European Red Mite												
Indian Meal Moth												
Light Brown Apple Moth												
Rust Mite												
San Jose Scale												
Tomato Russet Mite												
Two Spotted Mite												

	Damage period
	Monitoring and management period