



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

January 25, 2008

NOTIFICATION

Frank E. Sobotka, Ph.D.
Agent for IPM Resources LLC
Rotam Agrochemical Company LTD
660 Newtown-Yardley Rd., Suite 105
Newtown, PA 18940

Subject: Label Notification(s) for Pesticide Registration Notice 2007-4

Dear Dr. Sobotka:

The Agency is in receipt of your Application(s) for Pesticide Notification under Pesticide Registration Notice (PRN) 2007-4 dated December 17, 2007 for:

EPA Registration 83100-4

ABACUS Agricultural Miticide/Insecticide

The Registration Division (RD) has conducted a review of this request for applicability under PRN 2007-4 and finds that the label change(s) requested falls within the scope of PRN-2007-4. The label has been date-stamped "Notification" and will be placed in our records.

Please be reminded that 40 CFR Part 156.140(a)(4) requires that a batch code, lot number, or other code identify the batch of the pesticide distributed and sold be placed on nonrefillable containers. The code may appear either on the label (and can be added by non-notification/PR Notice 98-10) or durably marked on the container itself.

If you have any questions, please contact me directly at 703-305-6249 or Nicole Williams of my staff at 703-308-5551.

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Arrington".

for Linda Arrington
Notifications & Minor Formulations Team Leader
Registration Division (7505P)
Office of Pesticide Programs



United States
Environmental Protection Agency
Washington, DC 20460

<input type="checkbox"/>	Registration
<input type="checkbox"/>	Amendment
<input checked="" type="checkbox"/>	Other

OPP Identifier Number

Application for Pesticide - Section I

1. Company/Product Number ROTAM AGROCHEMICAL COMPANY LTD / 83100-4	2. EPA Product Manager John Hebert	3. Proposed Classification <input type="checkbox"/> None <input checked="" type="checkbox"/> Restricted
4. Company/Product (Name) ABACUS Agricultural Miticide/Insecticide	PM# 07	
5. Name and Address of Applicant (Include ZIP Code) ROTAM AGROCHEMICAL COMPANY LTD C/O IPM RESOURCES LLC (AGENT) 660 Newtown-Yardley Rd., Suite 105 Newtown, PA 18940 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____	

Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)
 Notification of label change per PR Notice 2007-4. This notification is consistent with the guidance in PR Notice 2007-4 and the requirement of EPA's regulations at 40 CFR 156.10, 156.140, 156.144, 156.146, and 156.156. No other changes have been made to the labeling or the Confidential Statement of Formula for this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if the amended label is not consistent with the requirements of 40 CFR 156.10, 156.140, 156.144, 156.146, and 156.156, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.

Section - III

1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Metal	<input checked="" type="checkbox"/> Plastic
* Certification must be submitted		If "Yes" Unit Packaging wgt.	No. per container	If "Yes" Package wgt	No. per container
3. Location of Net Contents Information <input checked="" type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container 4 x 1gal		5. Location of Label Directions <input checked="" type="checkbox"/>	
6. Manner in Which Label is Affixed to Product <input checked="" type="checkbox"/> Lithograph Paper glued Stenciled				<input type="checkbox"/> Other _____	

Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)					
Name Frank E. Sobotka, Ph.D.		Title Agent		Telephone No. (Include Area Code) 215-497-9501	
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.					6. Date Application Received (Stamped)
2. Signature 		3. Title Agent			
4. Typed Name Frank E. Sobotka, Ph.D.		5. Date December 17, 2007			

Section 3 area updated 1/25/08
 Nicole Williams

[Directions for use booklet/Front cover can be used as front container label]

PULL HERE TO OPEN ►

RESTRICTED USE PESTICIDE
TOXIC TO FISH, MAMMALS, AND AQUATIC ORGANISMS
FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

GROUP	6	INSECTICIDE
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ABACUS™

Agricultural Miticide/Insecticide

ACTIVE INGREDIENT:

Abamectin (CASRN: 65195-55-3 and 65195-56-4).....	2.0%*
Other Ingredients:.....	98.0%
Total:	100.0%

* 0.15 lb. Abamectin per gallon

EPA Reg. No. 83100 - 4
EPA Est. No.: 069821-CHN-005

KEEP OUT OF REACH OF CHILDREN

WARNING/AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use inside booklet.

Manufactured by:
 Rotam Agrochemical Company Limited
 7/F Cheung Tat Centre
 18 Cheung Lee Street
 Chai Wan, Hong Kong

Net Contents:
1 GALLON (3.78 Liters)

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[TO BE INSERTED]

FIRST AID (Avermectin B₁)	
If In Eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20minutes. • Remove contact lenses, if present, after the first 5 minutes, the continue rinsing eye. • Call a poison control center or doctor for further treatment advice.
If Swallowed	<ul style="list-style-type: none"> • Do not induce vomiting unless told to do so by the poison control center or doctor. • Have person sip a glass of water if able to swallow. • Do not give anything by mouth to an unconscious person. • Call poison control center or doctor for treatment advice.
If Inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call poison control center or doctor for treatment advice.
If On Skin Or Clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for further treatment advice.
<p>Note to Physician</p> <p>Recommendations for Medical Treatment for ABACUS (Avermectin B₁)</p> <p>Acute Toxicity: Early signs of intoxication include mydriasis (dilated pupils), ataxia (unsteadiness), and muscle tremors. Toxicity follows accidental ingestion of the concentrate and can be minimized by inducing vomiting within one-half hour of exposure.</p> <p>If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant fluid and electrolyte imbalance should be gauged. Appropriate supportive parenteral fluid replacement therapy should be given, along with other required supportive measures (such as maintenance of blood pressure levels) as indicated by clinical signs, symptoms, and measurements.</p> <p>In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since avermectin is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic avermectin exposure.</p>	
<p>(Avermectin B₁)</p> <p>Have the product container or label with you when calling a poison control center or doctor or going for treatment.</p> <p>For Medical Emergency treatment call your Local Poison Control Center for assistance.</p>	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING/AVISO

Causes substantial by temporary eye injury. Harmful if swallowed. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wear protective eyewear (goggles or face shield). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

This product contains a chemical (N-methyl pyrrolidone) known to the state of California to cause birth defects or other reproductive harm.

Personal Protective Equipment

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category B on an EPA chemical-resistant category selection chart.

Applicators and other handlers must wear:

- Coveralls worn over short-sleeved shirt and short pants
- Chemical-resistant gloves – EPA chemical resistance category B (e.g. barrier laminate or butyl rubber \geq 14 mils).
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing or loading

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Environmental Hazards

This pesticide is toxic to fish and wildlife. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from target areas. Do not contaminate water when disposing of equipment wash water or rinsate. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Use of this product may pose a risk to threatened and endangered species of fish, amphibians, crustaceans (including fresh water shrimp), and insects. All use of this product in the state of California should comply with the recommendations of the California Endangered Species Project. Before using this product in California, consult with your county agriculture commissioner to determine use limitations that apply in your area.

Physical or Chemical Hazards

Do not use or store near heat or open flame.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of Rotam Agrochemical Company Limited or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold Rotam Agrochemical Company Limited and Seller harmless for any claims relating to such factors.

Rotam Agrochemical Company Limited warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of the product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or Rotam Agrochemical Company Limited, and Buyer and User assume the risk of any such use. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAW ROTAM AGROCHEMICAL COMPANY LIMITED MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.**

To the extent consistent with applicable law, Rotam Agrochemical Company Limited or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAW THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF ROTAM AGROCHEMICAL COMPANY LIMITED AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF ROTAM AGROCHEMICAL COMPANY LIMITED OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

Rotam Agrochemical Company Limited and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by a duly authorized representative of Rotam Agrochemical Company Limited.

DIRECTIONS FOR USE Restricted Use Pesticide

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements on this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves – EPA chemical resistance category B (e.g. barrier laminate or butyl rubber ≥ 14 mils)
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

Do not apply this product through any type of irrigation system. Thorough coverage is essential for good mite and insect control on crops.

Do not apply Abacus by aerial application in New York State.

Abacus is an emulsifiable concentrate that will control certain pests on the crops listed on this label when applied according to the Directions for Use.

Abacus has been tested for phytotoxicity and has a wide margin of safety on a variety of crops. Abacus has also been shown to be compatible with many commonly used pesticides, crop oils, and nutritional sprays. However, since it is not possible to test a large number of possible mixtures, the user should pre-test to assure the physical compatibility and lack of phytotoxicity effect of any proposed mixtures with Abacus.

Chemigation

Do not apply this product through any type of irrigation system.

Spray Drift Precautions for Abacus Use on Cotton, Celery, Celeriac, Cucurbits, Grapes, Head Lettuce, Peppers, Potatoes, Strawberries, and Tomatoes

Do not apply by ground within 25 ft., or by air within 150 ft. of lakes, reservoirs, rivers, permanent streams, marshes, pot holes, or natural ponds; estuaries and commercial fish farm ponds.

All aerial and ground application equipment must be properly calibrated and maintained using appropriate carriers. For aerial applications, the spray boom should be mounted on the aircraft so as to minimize drift caused by wing tip vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or rotor diameter.

Use the largest droplet size consistent with good pest control. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure. Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 ft. above the crop canopy should be avoided.

Make aerial or ground applications when the wind velocity favors on-target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph. Risk of exposure to aquatic areas can be reduced by avoiding applications when wind direction is toward aquatic area. Do not cultivate within 25 ft. of the aquatic area so as to allow growth of a vegetative filter strip.

Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of increased spray drift to aquatic areas. Avoid spraying during conditions of low humidity and/or high temperature.

Do not make aerial or ground applications during temperature inversions. Inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground service.

Resistance Management: Because of the inherent risks of resistance development to any product, it is strongly advised that Abacus be used in a sound resistance management program that includes rotation with other products with different modes of action.

CROP USE DIRECTIONS

Almonds and Walnuts

For control of two-spotted spider mites, strawberry spider mites, Pacific spider mites, and European red mites (Ground Application Only).

Almonds and Walnuts		APPLICATION RATE	
Pests	For Dilute Sprays ¹ fl. oz. Abacus/100 gals.	For Concentrate Sprays ² fl. oz. Abacus/A	
Two spotted spider mite Pacific spider mite Strawberry spider mite European red mite	2.5-5.0	10-20	
Horticultural Spray Oil*	0.25% or 1 gal./A	Minimum of 1 gal./A	

* Not a dormant oil

¹ The rate of Abacus per 100 gals. is based on a volume of 400 gals./A dilute spray.

² To determine the amount of product per acre for concentrate sprays, first determine the amount that would be required in a full cover dilute spray. Use the same amount of product per acre in concentrate sprays as would be required for the dilute sprays to the same orchard/grove. This may result in use of less than 10 fl. oz./A on small trees.

Application Instructions

- Abacus may be applied using conventional dilute or concentrate sprayers calibrated to deliver sufficient water for thorough coverage. Gallonage of spray will vary with size and number of trees per acre and density of foliage. In any case, thorough coverage is essential for good spider mite and insect control.
- Apply in combination with horticultural spray oil* (not a dormant oil) as directed. Applications without horticultural spray oil* may result in reduced efficacy and/or residual control.
- Do not graze treated orchards.
- To reduce the risk to aquatic environments, maintain a 25-yard buffer zone from all water bodies containing aquatic life (streams, ponds, lakes, rivers, springs, irrigation canals containing water year-round, swamps, bogs and marshes).

*Use Abacus in combination with a horticultural spray oil (not a dormant oil) approved for use on almonds and walnuts. Apply Abacus when spider mites first appear. Residual spider mite control is greater from spray deposits on newer leaves compared to older leaves. A second application may be made if necessary to maintain control.

Use Restrictions - Almonds and Walnuts

- Do not exceed 20 fl. oz. of Abacus per acre per application or 40 fl. oz./A in a growing season.
- Do not make more than 2 applications per growing season.
- Do not apply in less than 40 gals. of water per acre.

- If a second application is necessary, do not retreat within 21 days.
- Do not apply within 21 days of harvest.
- Do not apply by aircraft.
- Do not graze treated orchards.

Apple: For control of white apple leafhopper, tentiform leafminers, European red mites, two-spotted spider mites, and McDaniel spider mites (Ground Application Only)

Apples	APPLICATION RATES	
	For Dilute Sprays ¹ fl. oz. Abacus/100 gals.	For Concentrate Sprays ² fl. oz. Abacus/A
Two-spotted spider mite McDaniel spider mite European red mite Tentiform leafminers White apple leafhopper	2.5-5.0	10-20
Horticultural Spray Oil* (For best results, use oil with Abacus).	0.25% or 1 gal./A	Minimum of 1 gal./A

* Not a dormant oil

1 The rate of Abacus per 100 gals. is based on a volume of 400 gals./A dilute spray.

2 To determine the amount of product per acre for concentrate sprays, first determine the amount that would be required in a full cover dilute spray. Use the same amount of product per acre in concentrate sprays as would be required for the dilute sprays to the same orchard/grove. This may result in use of less than 10 fl. oz./A on small trees.

Application Instructions

- Abacus may be applied using conventional dilute or concentrate ground sprayers calibrated to deliver sufficient water for thorough coverage. Gallonage of spray will vary with size and number of trees per acre and density of foliage. In any case, thorough coverage is essential for good spider mite and insect control.
- For best results, apply in combination with horticultural spray oil (not a dormant oil) as directed. Applications without horticultural spray oil* may result in reduced efficacy and/or residual control.
- Do not graze treated orchards.
- Observe the following precautions when spraying in the vicinity of aquatic areas such as lakes, reservoirs, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds.
- Spray last three rows windward of aquatic areas using nozzles on one side only, with spray directed away from aquatic areas.

- Avoid spray going over tops of trees by adjusting or turning off top nozzles. Shut off nozzles on the side away from grove/orchard when spraying the outside row. Shut off nozzles when turning at ends of row and passing tree gaps in rows.
- Do not apply Abacus when weather conditions favor drift to aquatic areas.
- Do not apply within 110 ft. upwind of aquatic areas or when wind speed is above 8 mph.
- Do not apply during a temperature inversion.
- For best results, use Abacus in combination with a horticultural spray oil* approved for use on apples. Apply Abacus when spider mite or insect thresholds are reached. A second application may be made if necessary to maintain control.
- **White Apple Leafhopper (Not for use west of the Rocky Mountains):** Application of Abacus is limited only to first generation white apple leafhopper. Apply soon after petalfall in combination with horticultural spray oil*.
- **Spider Mites:** For best results, apply before a threshold of 5 spider mites per leaf is reached. Residual spider mite control with Abacus in combination with Horticultural spray oil* is greater from spray deposits on newer leaves compared to older. Applications of Abacus for spider mite control should be limited to a period extending from petalfall through six weeks following petalfall.
- **Tentiform Leafminers:** For best results, apply against egg (to control new hatch) and early sap feeder stages of first and second generation tentiform leafminers when locally established thresholds have been reached. Do not apply during bloom.

Use Restriction - Apples

- Do not exceed 20 fl. oz. of Abacus per acre per application or 40 fl. oz./A in a growing season.
- Do not make more than 2 applications per growing season.
- Do not apply in less than 40 gals. of water per acre.
- If a second application is necessary, do not retreat within 21 days.
- Do not apply within 28 days of harvest.
- Do not apply by aircraft.
- Abacus in combination with horticultural spray oil* may cause fruit injury to certain varieties of apples, e.g., russetting on light-skinned varieties such as Golden Delicious, when used alone or when other products are applied sequentially. The Directions for Use and Precautions on horticultural spray oil labels, as well as precautions in official spray guides should be followed carefully when using Abacus in combination with horticultural spray oil (Not a dormant oil).
- Do not graze treated orchards.

Avocados: For control of Avocado thrips

Avocados	APPLICATION RATES
Pests	fl. oz. Abacus/A
Avocado Thrips (<i>Scirtothrips perseae</i>)	10.0 - 20.0 Do not use less than 10 fl. Oz. of Abacus/A
Horticultural oil (not a dormant oil)	Minimum 1 to 4% v/v

Application Instructions

- NOTE:** Abacus may be applied using ground application equipment or aircraft. Aerial application is permitted because of its importance to the avocado growing industry. However, aerial application is not the preferred method of application for the best control of thrips. With aerial application, spray coverage and the resulting control of thrips is less than with ground application. For this reason, the user accepts all liability for the level and duration of control of thrips when Abacus is aerially applied.

Gallons of spray will vary with size and number of trees per acre and density of foliage. In any case, thorough coverage is essential for good mite and insect control.

- For best results, apply when immature thrips are first observed but before numbers exceed 5 immature thrips per leaf/fruit. Use 10-15 fl. Oz. Of product/A for low* to moderate* infestations and 15-20 fl.oz. of product/A for severe* infestations. Add a 1.0% - 4% NR (narrow range) 415 oil in combination with a horticultural spray oil (not a dormant oil) approved for use on avocados.
- Make a second application, if needed, to maintain control, but wait at least 30 days after the first application to retreat. **(See Use Restrictions)**
- For Ground Application:** If spray volume is greater than 400 gals./A, apply Abacus at a rate of 2.5 fl.oz. per 100 gals. Of water plus 1.0% - 4.0% of an NR 415 oil.

Note: To prevent crop injury, observe all precautions and restrictions on the oil label. When using oil concentrations above 2.0% treat a small test area before making a large-scale application.

*Thrips Infestation Level	Number of immature thrips per leaf/fruit
Low	1 - 2
Moderate	3 - 4
High	More than 5

Use Restrictions - Avocados

- Do not apply within 14 days of harvest.
- Ground and aerial application permitted.
- Do not apply in less than 100 gals. of water with ground equipment or 50 gals. of water

with aircraft.

- Do not apply more than 20 fl. oz./A per application.
- Wait at least 30 days before repeating application.
- Do not make more than 2 applications per season.
- Do not apply more than 40 fl. oz./A per season.
- Do not allow livestock to graze in treated orchards.

Celeriac (*Apium graveollens*) : For control of two-spotted spider mites

Celeriac APPLICATION RATE	
Pests	fl. oz. Abacus/A
Two-spotted spider mites	16.0

Application Instructions - Celeriac

- Abacus may be applied using conventional or concentrate sprayers calibrated to deliver sufficient water for thorough coverage of the foliage.
- For best results, use in combination with a non-ionic surfactant.
- Apply when mites first appear and repeat as necessary to maintain control.

Use Restrictions

- Do not apply at less than 7-day intervals.
- Do not exceed 48 fl. oz./A after transplanting.
- Do not apply within 7 days of harvest
- Do not apply in less than 20 gals. of water per acre.
- For resistance management purposes, use no more than 2 sequential applications

Citrus: For control of citrus rust mites, broad mites, two-spotted spider mites, citrus bud mites, citrus leafminers, and citrus thrips

Citrus APPLICATION RATES		
Pests	For Dilute Sprays ¹ fl. oz. Abacus/100 gals.	For Concentrate Sprays ² fl. oz. Abacus/A
Asian citrus psyllid	--	10-20 ³
Citrus rust mite	0.5-2.0	5-20 ³
Broad mite	1.0-2.0	10-20 ³
Two-spotted spider mite	1.0-2.0	10-20 ⁴
Citrus bud mite	--	5-20 ³
Citrus leafminer	--	10-20 ⁵
Citrus thrips		
Horticultural Spray Oil*	Minimum 0.2%	Minimum of 1 gal./A

¹ The rate of Abacus per 100 gals. is based on a volume of 1,000 gals./A dilute spray.

- ² For concentrate sprays, adjust the dosage to apply an amount per acre equal to that used in full cover dilute spray.
- ³ For best results, use a minimum of 150 - 300 gals./A of spray mix with a minimum of 3 gal/A of horticultural spray oil*.
- ⁴ For best results, use 500 gals./A of spray mix with a minimum of 0.5% horticultural spray oil*.
- ⁵ For best results, use 100-250 gals./A of spray mix applied to achieve outside coverage.
- * Not a dormant oil

Application Instructions

- Apply using conventional dilute or concentrate ground sprayers calibrated to deliver sufficient water for thorough coverage (or outside coverage for citrus leafminers and citrus thrips). Gallonage of spray will vary with size and number of trees per acre and density of foliage. In any case, thorough coverage is essential for good mite and insect control.
- Observe the following precautions when spraying in the vicinity of aquatic areas such as lakes, reservoirs, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds.
- Spray last three rows windward of aquatic areas using nozzles on one side only, with spray directed away from aquatic areas.
- Avoid spray going over tops of trees by adjusting or turning off top nozzles. Shut off nozzles on the side away from grove/orchard when spraying the outside row. Shut off nozzles when turning at ends of row and passing tree gaps in rows.
- Do not apply Abacus when weather conditions favor drift to aquatic areas.
- Do not apply within 110 ft. upwind of aquatic areas or when wind speed is above 8 mph.
- Do not apply during a temperature inversion
- Applications should be made with a minimum of 0.20% horticultural spray oil (Not a dormant oil) in the spray mixture or not less than 1.0 gal. of oil per acre (except where specified differently below).
- **Mites:** Apply when mites first appear during spring, summer, and/or fall.
- **Citrus Bud Mites:** For the best results, time the spray at "budswell."
- **Citrus Leafminers:** Apply to protect new growth during spring, summer, or fall.
- **Citrus Thrips:** Spray applications targeted for citrus thrips will only control the current generation and must be correctly timed. Apply when economic thresholds have been reached (after egg hatch has begun - preferably early to mid-hatch).

Use Restrictions - Citrus

- Do not apply within 7 days of harvest.
- Do not apply within 30 days of last treatment.
- Do not apply more than 3 applications or 40 fl. oz./A in any growing season.
- Always apply in combination with horticultural spray oil (Not a dormant oil) as directed.
- For resistance management purposes, do not use in citrus nurseries.
- Do not apply by aircraft.

Cotton

For control of two-spotted spider mites, carmine spider mites, Pacific spider mites, and strawberry spider mites.

Cotton		APPLICATION RATES	
Spider Mites	fl. oz. Abacus /A		
	Mid-season/Lay-by	Early Season	
Two-spotted Carmine Pacific Strawberry	8-16	4-6	

Application Instructions

Abacus is an emulsifiable concentrate which, when mixed with water according to the Directions for Use will control spider mites (two-spotted, carmine, Pacific and strawberry) on cotton.

- Use 8-16 fl. oz. Of Abacus per acre depending on size of the plant and density of the foliage.
- Apply with ground sprayers or aerially by fixed-wing aircraft or helicopter in a minimum of 5 gals. of water per acre to provide thorough coverage.
- Begin application when mites are first noticed and repeat if necessary.
- For use on early season cotton, apply when cotton is under 10 inches in height. Apply at a rate of 4-6 fl. oz. of Abacus per acre by ground equipment only. Do not use less than 4 fl. oz./A.

Use Restrictions - Cotton

- Do not apply more than 32 fl. oz. or more than 2 applications of Abacus per acre in any growing season.
- Do not apply within 21 days of last treatment.
- Do not apply this product east of the Mississippi River.
- Do not apply within 20 days of harvest.
- Do not graze or feed cotton foliage.
- Do not apply this product through any type of irrigation system.

Cucurbits (Chayote, Chinese Waxgourd, Citron Melon, Cucumbers, Gherkin, Edible Gourds (including: hyotan, cucuzza, hechima, Chinese okra); Momordica spp. (including: balsam, apple, balsam pear, bittermelon, Chinese cucumber); Muskmelon, Cantaloupe, Pumpkin, Summer Squash, Winter Squash, (Squash includes: butternut squash, calabaze, hubbard squash, acorn squash, spaghetti squash); Watermelon):

For control of spider mites and leafminers

Cucurbits APPLICATION RATES

Pests	fl. oz. Abacus/A
Spider mites Leafminers	8.0 - 16.0

Application Instructions

- Mix with water as indicated below and apply thoroughly by ground or air as a foliar spray to ensure good upper and lower leaf coverage.
- Use 8 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.
- Apply when adult leafminer flies or spider mites are first observed and repeat applications as necessary to maintain control within constraints of a sound resistance management program.

Use Restrictions - Cucurbits

- Do not exceed 48 fl. oz./A in a growing season.
- Do not apply within 7 days of harvest.
- Do not apply at less than 7-day intervals.
- Do not apply in less than 20 gals. of water per acre by ground or less than 5 gals. of water by air.
- Do not make more than 2 sequential applications.
- Do not apply by aircraft in New York state.

Fruiting Vegetables: Tomato; eggplant; peppers (includes bell pepper, chili pepper; cooking pepper, pimento, sweet pepper); Tomatillo

For control of Broad mite, Colorado potato beetle, *Liriomyza* leafminers, Spider mites, *Thrips palmi*, Tomato pinworm, and Tomato russet mite

Fruiting Vegetables APPLICATION RATES

Pests	fl. oz. Abacus/A
Broad mite Colorado potato beetle <i>Liriomyza</i> leafminers Spider mites <i>Thrips palmi</i> Tomato Russet mite	8.0 - 16.0
Tomato pinworm	16.0

Application Instructions

- Mix with water as indicated below. Thorough coverage of the crop canopy is essential for optimum results. Inadequate coverage may result in reduced control.

Note: Abacus may be applied with ground application equipment or aircraft. For best control of mites, apply Abacus with ground application equipment. With aerial application, spray coverage and the resulting control of mites is less than with ground application. For this reason, the user accepts all liability for the level and duration of control of mites when Abacus is aerially applied.

- **Broad, russet, and spider mites:** Apply when mites first appear.
- **Thrips palmi:** Apply when thrips are first observed.
- **Tomato pinworm:** Application may be made from the time moth activity is detected up to, but no later than, the time when newly emerged larvae are present.
- **Mites, leaf miners, Thrips palmi, and Colorado potato beetle:** Use 8 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.

Repeat application as necessary to maintain control. **(See Use Restrictions).**

Note: Abacus may be used without a wetting agent. Spreading and penetrating surfactants can improve insect control when necessary to improve the wetting of foliage and to smooth out spray deposits, a nonionic surfactant is recommended. Do not use binder or sticker-type surfactants.

Use Restrictions – Fruiting Vegetables

- Do not apply within 7 days of harvest.
- Ground or aerial application permitted; however do not apply with aircraft in New York State.
- For resistance management, do not use on fruiting vegetables grown for transplanting.
- Do not apply in less than 20 gals. of water/A with ground application equipment. Do not apply in less than 5 gals. of water/A with aircraft. Under conditions such as high pest populations, dense foliage, or adverse application conditions (such as high temperatures) use a greater volume of water to insure adequate coverage.
- **Application Interval:** Wait at least 7 days before repeating application, but do not make more than 2 sequential applications.
- **Maximum Amount per Season:** Do not apply more than 48 fl. oz./A in a growing season.

Grapes

For control of western grapeleaf skeletonizer, two-spotted spider mites, Pacific spider mites, and Willamette spider mites; and for quick knock-down control of western grape leaf hoppers and variegated leaf hoppers.

Grapes APPLICATION RATES

Pests	fl. oz. Abacus/A
Two-spotted spider mite Pacific spider mite Willamette spider mite Western grapeleaf hoppers Variegated leaf hoppers	8.0 - 16.0 Plus a nonionic surfactant

Application Instructions

- **Note:** Abacus must be applied in combination with a nonionic surfactant to

improve wetting of foliage and to smooth out spray deposits.

- Abacus may be applied using conventional ground sprayers calibrated to deliver sufficient water for thorough coverage. Thorough coverage is essential for good spider mite and insect control.
- Always apply in combination with a nonionic surfactant to improve the wetting of the foliage and smooth out spray deposits.
- Do not spray alternate rows.
- Abacus must be applied to both sides of each row for maximum coverage.
- Use 8 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.
- Do not graze treated vineyards.
- Apply Abacus plus a nonionic surfactant when western **grapeleaf skeletonizer** larvae are first observed. For optimal control, apply shortly after egg hatch.
- For **spider mite** control, apply when mites first appear, but before motiles exceed 5 per leaf.

Use Restrictions - Grapes

- Do not exceed 16 fl. oz. of Abacus per acre per application or 32 fl. oz./A in a growing season.
- Do not make more than 2 applications per growing season.
- If a second application is necessary, do not retreat within 21 days of first application.
- Do not apply in less than 50 gals. of water per acre.
- Do not apply within 28 days of harvest.
- Do not apply by aircraft in new York state.
- Do not graze livestock in treated vineyards.

Although Abacus in combination with a nonionic surfactant has been tested for safety to grapes, it is impossible to test on all grape varieties under the variety of biotic and abiotic conditions that may cause phytotoxicity. Therefore, Directions for Use and Precautions on nonionic labels and in official spray guides should be followed carefully when using Abacus in combination with a nonionic surfactant.

Herbs (Except Chives) Some of the crops in this subgroup are: basil; camomile; catnip; coriander (leaf); dill weed; lavender; marigold; marjoram (*Oiganum* species); nasturtium; parsley (dried); rosemary; sage; summer and winter savory; tarragon; thyme; and wintergreen.

For control of *Liriomyza* leafminers

Herbs (Except Chives)	APPLICATION RATE
Pests	fl. oz. Abacus/A
<i>Liriomyza</i> leafminers	8.0-16.0

Application Instructions

Mix with water as indicated below. Apply thoroughly with ground application equipment as a foliar spray and ensure good upper and lower leaf coverage.

- Use 8 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.
- Apply when adult flies are first observed and repeat application, as necessary to maintain control. (See Use Restrictions)
- Abacus may be used without a wetting agent. When necessary to improve the wetting of foliage and to smooth out spray deposits, a nonionic surfactant is recommended.

Note: Although Abacus has been tested in combination with a nonionic surfactant for safety to herbs, it is impossible to test on all herb types and varieties under the variety of conditions that may cause crop injury. Therefore, when using Abacus in combination with a nonionic surfactant, carefully follow the **Directions for Use and Precautions** on the nonionic surfactant label and in official spray guides.

Use Restrictions - Herbs

- Do not apply within 14 days of harvest
- Apply with ground application equipment.
- Use a minimum of 30 gals of water/A.
- Wait at least 7 days before repeating application.
- Do not make more than 2 applications per single cutting (harvest).
- Do not make more than 6 applications per cropping season at the 8 fl. oz./A rate or 3 applications per cropping season at the 16 fl. oz./A rate.

Hops

For control of two-spotted spider mites (Not registered for use in California)

Hops		APPLICATION RATE
Pests	fl. oz. Abacus/A	
Two-spotted spider mites	8.0 - 16.0	

Application Instructions - Hops

- Apply Abacus when two-spotted spider mites reach treatment thresholds.
- Mix with water as indicated below and apply by ground equipment as a foliar spray to assure good upper and lower coverage.
- Gallonage of spray may vary with the size of plants and density of foliage. In any case, thorough coverage is essential for good control of two-spotted mites. When using concentrate sprays, the amount of water is reduced, but the amount of Abacus per acre should remain the same as for dilute sprays.
- If a second application is necessary for control, do not retreat within 21 days of the first application and only after an alternative miticide with a different mode of action has been used.

Use Restriction - Hops

- Do not use less than 16 fl. oz. per application or exceed 32 fl. oz./A per growing season.
- Do not apply within 28 days of harvest.
- Do not apply in less than 40 gals. of water per acre.

- If a second application is necessary to maintain control, do not retreat within 21 days of the first application.
- Do not apply by aircraft.
- Do not permit livestock to graze treated hop yards.

Note: Abacus may be used without any wetting agent. When necessary to improve the wetting of foliage and to smooth out spray deposits, a nonionic surfactant is recommended.

Spray Drift Precautions - Hops

All ground application equipment must be properly maintained and calibrated using appropriate carriers.

Observe the following precautions when spraying in the vicinity of aquatic areas such as lakes, reservoirs, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds.

Do not apply by ground equipment within 25ft. of the above mentioned aquatic areas. Avoid applications when wind direction is toward these areas.

Do not make ground applications during temperature inversions or if heavy rainfall is imminent. Inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

Use the largest droplet size consistent with good pest control. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure.

Make ground applications when the wind velocity favors on-target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity or wind gusts approach 15 mph. Inclusion of a compatible drift reducing agent is encouraged.

Low humidity and high temperatures increase the evaporative rate of droplets and therefore increase spray drift potential. When making applications under these conditions, set up equipment to produce larger droplets to compensate for evaporation.

Leafy Vegetables Some of the crops in this group are: Celery, Lettuce (head and leaf), Amaranth (Chinese spinach), Garden cress, Upland cress, Dandelion, Endive, Fennel, Parsley, Radicchio, Rhubarb, Spinach, and Swiss chard.

For Control of Carmine spider mite, *Liriomyza* leafminers, and Twospotted spider mite

Leafy Vegetables APPLICATION RATE

Pests	fl. oz. Abacus/A
Liriomyza leafminers Spider mites (two spotted and carmine)	8.0 - 16.0

Application Instructions

• Mix with water as indicated below. Thorough coverage of the crop canopy is essential for optimum results. Inadequate coverage may result in reduced control.

Note: Abacus may be applied with ground application equipment or aircraft. For best control of mites, apply Abacus with ground application equipment. With aerial application, spray coverage and the resulting control of mites is less than with ground application. For this reason, the user accepts all liability for the level and duration of control of mites when Abacus is aerially applied.

- Use 8 - 12 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.
- **Spider mites:** Apply when mites first appear, and repeat as needed to maintain control. **(See Use Restrictions)**
- **Leafminers:** Apply when adult flies are first observed and repeat applications as needed to maintain control. **(See Use Restrictions)**

Note: Abacus may be used without a wetting agent. Spreading and penetrating surfactants can improve insect control. When necessary to improve the wetting of foliage and to smooth out spray deposits, a nonionic surfactant is recommended. Do not use binder or sticker-type surfactants.

Use Restrictions – Leafy Vegetables

- Do not apply within 7 days of harvest.
- Ground or aerial application permitted; however **do not apply with aircraft in New York State.**
- For resistance management, do not use on leafy vegetables grown for transplanting.
- Do not apply in less than 20 gals. of water/A. with ground application equipment. Do not apply in less than 5 gals. of water per acre with aircraft. Under conditions such as high pest populations, dense foliage, or adverse application conditions (such as high temperatures) use a greater volume of water to insure adequate coverage.
- Wait at least 7 days before repeating application.
- Do not make more than 2 sequential applications.
- Do not apply more than 48 fl. oz./A. per growing season

Mint (peppermint and spearmint)

For control of Twospotted spider mite

Mint APPLICATION RATE

Pests	fl. oz. Abacus/A
Two-spotted spider mites	8.0 – 12.0

Application Instructions

- Mix with water as indicated below. Thorough coverage of the crop canopy is essential for optimum results. Inadequate coverage may result in reduced control.
- Treat when mites first appear.
- For optimum control, a nonionic surfactant or organosilicone-based surfactant should be used at the manufacturer's recommended rate.

Use Restrictions - Mint

- Do not apply within 28 days of harvest.
- Ground or aerial application permitted; however do not apply with aircraft in New York State.
- Do not apply in less than 20 gals. of water/A with ground application equipment. Do not apply in less than 5 gals. of water/A with aircraft. Under conditions such as high pest populations, dense foliage, or adverse application conditions such as high temperatures, use a greater volume of water to insure adequate coverage.
- Do not apply more than 12 fl. oz./A per application.
- Wait at least 7 days before repeating application.
- Do not make more than 2 sequential applications and do not apply more than 3 applications per season.
- Do not apply more than 36 fl. oz./A per crop per season.
- Do not allow livestock to graze or feed treated foliage to livestock.

Pears (including oriental pear trees)

For control of two-spotted spider mites, McDaniel spider mites, European red mites, pear rust mites, yellow mites, and pear psylla (Ground Application Only).

Pears

APPLICATION RATES

Pests	For Dilute Sprays ¹ fl. oz. Abacus/100 gals.	For Concentrate Sprays ² fl. oz. Abacus/A
Two-spotted spider mite McDaniel spider mite European red mite Pear rust mite Yellow mite	2.5-5.0	10-20
Pear psylla	2.5-5.0	10-20
Horticultural Spray Oil*	0.25%	Minimum of 1 gal./A

¹ The rate of Abacus per 100 gals. is based on a volume of 400 gals./A dilute spray.

² To determine the amount of product per acre for concentrate sprays, first determine the amount that would be required in a full cover dilute spray. Use the same amount of product per acre in concentrate sprays as would be required for the dilute sprays to the same orchard/grove. This may result in use of less than 10 fl. oz./A on small trees.

Application Instructions

- Abacus may be applied using conventional dilute or concentrate ground sprayers calibrated to deliver sufficient water for thorough coverage. Gallonage of spray will vary with size and number of trees per acre and density of foliage. In any

- case, thorough coverage is essential for good spider mite and insect control.
- Always apply in combination with horticultural spray oil (not a dormant oil) as directed. Do not graze treated orchards.
 - Observe the following precautions when spraying in the vicinity of aquatic areas such as lakes, reservoirs, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds:
 - Spray last three rows windward of aquatic areas using nozzles on one side only, with spray directed away from aquatic areas. Avoid spray going over tops of trees by adjusting or turning off top nozzles. Shut off nozzles on the side away from the grove/orchard when spraying the outside row. Shut off nozzles when turning at ends of row and passing tree gaps in rows.
 - Do not apply Abacus when weather conditions favor drift to aquatic areas.
 - Do not apply within 110 ft. upwind of aquatic areas or when wind speed is above 8 mph.
 - Do not apply during a temperature inversion.
 - Use Abacus with a minimum of 0.25% horticultural spray oil (Not a dormant oil) in the dilute spray mixture and not less than 1.0 gal. of horticultural spray oil (Not a dormant oil) per acre in the final finished spray.

Use Restrictions - Pear

- Do not exceed 20 fl. oz. of Abacus per acre per application or 40 fl. oz./A in a growing season.
- Do not make more than 2 applications per growing season.
- Do not apply less than 40 gals. of water per acre.
- If a second application is necessary, do not retreat within 21 days of the first application.
- Do not apply within 28 days of harvest.
- Do not apply by aircraft.
- Do not graze treated orchards.

Plums and Prunes: For control of European spider mite, Pacific spider mite, and Twospotted spider mite

Abacus may be applied using conventional dilute or concentrate sprayers calibrated to deliver sufficient water for thorough coverage. Gallons of spray will vary with size and number of trees per acre and density of foliage. In any case, thorough coverage is essential for good spider mite control.

Plums and Prunes APPLICATION RATES

Pests	For Dilute Sprays ¹ fl. oz. Abacus/100 gals.	For Concentrate Sprays ² fl. oz. Abacus/A	Instructions
European red mite Pacific Spider Mite Two-spotted spider mite	2.5-5.0	10-20	

Horticultural Spray Oil (not a dormant oil)		
or		
Nonionic Surfactant		

^a The rate of Abacus per 100 gals. is based on a volume of 400 gals./A dilute spray.

^b To determine the amount of product per acre for concentrate sprays, first determine the amount that would be required in a full cover dilute spray. Use the same amount of product per acre in concentrate sprays as would be required for the dilute sprays to the same orchard/grove. This may result in use of less than 10 fl. Oz./A on small trees.

Application Instructions

- Apply when mites first appear.
- A second application may be made, if needed, to maintain control. **(See Use Restrictions)**
- Always apply Abacus in combination with a nonionic surfactant that spreads on and/or penetrates the leaf cuticle, or apply with horticultural spray oil (not a dormant oil).

NOTE:

1) A nonionic surfactant that spreads on and/or penetrates the leaf cuticle can improve insect control.

Although Abacus has been tested in combination with nonionic surfactants for safety to stone fruit, it is impossible to test on all plum/prune fruit varieties under the variety of conditions that may cause crop injury.

Therefore, when using Abacus in combination with a nonionic surfactant, carefully follow the **Directions for Use and Precautions** on the surfactant label and in official spray guides.

2) A horticultural oil (not a dormant oil) may improve efficacy and can be used but it may increase the possibility of phytotoxicity to foliage and fruit.

- Use nonionic surfactants at the manufacturer's recommended rate.
- Use a minimum of 0.25% horticultural spray oil (not a dormant oil) in the dilute spray mixture and not less than 1.0 gal of horticultural spray oil per acre in the final finished spray.

Use Restrictions – Plums and Prunes

- Do not apply within 21 days of harvest.
- Ground application only. Do not apply with aircraft.
- Do not apply in less than 40 gals. of water/A.
- Do not apply more than 20 fl. oz./A per application.
- If a second application is needed, wait at least 21 days before repeating application.
- Do not make more than 2 applications per growing season.
- Do not apply more than 40 fl. oz./A in a growing season.
- Do not allow livestock to graze in treated orchards.
- Observe the following precautions when spraying in the vicinity of aquatic areas such as lakes, reservoirs, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds:
 - Spray last 3 rows windward of aquatic areas using nozzles on one side only, with spray directed away from aquatic areas.
 - Avoid spray going over tops of trees by adjusting or turning off top nozzles.
 - Shut off nozzles on the side away from the grove/orchard when spraying the outside row.

- Shut off nozzles when turning at ends of row and passing tree gaps in rows.
- Do not apply Abacus when weather conditions favor drift to aquatic areas. Do not apply within 100 ft. upwind of aquatic areas or when wind speed is above 8 mph.
- Do not apply during a temperature inversion.

Peppers (Includes bell pepper, chili pepper, cooking pepper, pimento, sweet pepper)

For control of *Liriomyza* leafminers, *Thrips palmi*, spider mites, and broad mites

Peppers	APPLICATION RATES
Pests	fl. oz. Abacus/A
<i>Liriomyza</i> leafminers Spider mites Broad mites <i>Thrips palmi</i>	8.0-16.0

Application Instructions

- Mix with water as indicated below and apply thoroughly by ground or air as a foliar spray to assure good upper and lower leaf coverage.
- For **broad mites** and **spider mites**, apply when mites first appear.
- For **leafminers**, apply when adult flies are first observed.
- For ***Thrips palmi***, apply when thrips are first observed. Use 8 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.
- In all cases, repeat applications as necessary to maintain control.

Use Restrictions - Peppers

- Do not exceed 48 fl. oz./A per growing season.
- Do not apply at less than 7-day intervals.
- Do not apply within 7 days of harvest.
- Do not apply in less than 20 gals. of water per acre by ground or less than 5 gals. of water by air.
- Do not make more than 2 sequential applications.
- For resistance management purposes, do not use on peppers being grown for transplanting.
- Do not apply by aircraft in New York state.

Note: Abacus may be used without any wetting agent.

When necessary to improve the wetting of foliage and to smooth out spray deposits, a nonionic surfactant is recommended.

Potatoes

For control of Colorado potato beetle, *Liriomyza* leafminers, and spider mites

Potatoes

APPLICATION RATES

Pests	fl. oz. Abacus/A
Colorado potato beetles Spider mites <i>Liriomyza</i> leafminers	8.0-16.0

Application Instructions

- Mix with water as indicated below and apply thoroughly by ground or air as a foliar spray to ensure thorough coverage on upper and lower leaf surfaces.
- Use 8 fl. oz./A for low to moderate infestations and 16 fl. oz./A for severe infestations.
- The addition of a nonionic surfactant or organosilicone-based surfactant, at the manufacturer's recommended rate is suggested for optimum spider mite and insect control.
- **Insect and spider mite** control may be reduced if Abacus is used in combination with a sticker or binder type product such as Bravo Weather Stik.
- For **Colorado potato beetle**, do not make more than 2 applications per crop. Make the first application after approximately 50% of the egg masses have hatched and larvae are present. If 2 applications are made, they should be restricted to a single Colorado potato beetle generation per crop and should not be made at less than 7-day intervals.
- For ***Liriomyza* leafminers**, make the first application when adult flies are first observed. Repeat applications as necessary to maintain control, but not at intervals less than 7 days.
- For **spider mites**, make the first application when mites first appear. Repeat application as necessary to maintain control, but not at intervals less than 7 days.

Use Restrictions - Potatoes

- Do not exceed 32 fl. oz. of Abacus per acre per crop for spider mite or Colorado potato beetle control.
- Do not exceed 48 fl. oz. of Abacus per acre per crop for leafminer control.
- Do not apply within 14 days of harvest.
- Do not apply in less than 20 gals. of water per acre by ground or less than 5 gals. Of water per acre by ground or less than 5 gals. Of water by air.
- Do not graze or feed treated foliage to livestock.
- Do not make more than 2 sequential applications.
- Do not apply by aircraft in New York state.
- Do not apply at less than 7 day intervals.

Strawberries

For control of two-spotted spider mites

Strawberries

APPLICATION RATES

Pests	fl. oz. Abacus/A
Two-spotted spider mites	16.0

Application Instructions

- Adjust spray volume and nozzle placement to assure maximum coverage of tops and undersides of leaves.
- Use 16 fl. oz. of Abacus per acre. Make 2 applications 7-10 days apart when mites first appear.
- Repeat this sequence of application if necessary to maintain control.

Use Restrictions - Strawberries

- Do not exceed 16 fl. oz./A per application or 64 fl. oz./A in a growing season.
- Do not apply within 3 days of harvest.
- For resistance management purposes, do not use in strawberry nurseries.
- Do not apply in less than 100 gals. of water per acre.
- Do not repeat treatment within 21 days of second application.
- Do not apply by aircraft.

Note: Abacus may be used without any wetting agent. When necessary to improve the wetting of foliage and to smooth out spray deposits, a nonionic surfactant is recommended.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Storage: Store in a tightly closed container in a cool, dry place.

Pesticide Disposal: Pesticide spray mixture or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal (Nonrefillable container 5 gallons or less): Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Offer for recycling, if available.

Residue Removal: Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call CHEMTREC AT 1-800-424-9300

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Revised by Notification (PR Notice 2007-4): 12/17/2007

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Captan® is a registered trademark of Tomen Agro, Inc.

Manufactured by:
Rotam Agrochemical Company Limited
7/F Cheung Tat Centre
18 Cheung Lee Street
Chai Wan, Hong Kong

[Base Container Label]

RESTRICTED USE PESTICIDE
TOXIC TO FISH, MAMMALS, AND AQUATIC ORGANISMS
FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR
PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE
USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

GROUP	6	INSECTICIDE
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ABACUSTM

Agricultural Insecticide/Miticide

ACTIVE INGREDIENT:

Abamectin (CASRN: 65195-55-3 and 65195-56-4).....	2.0%*
Other Ingredients:.....	98.0%
Total:.....	100.0%

* 0.15 lb. Abamectin per gallon

EPA Reg. No. 81578 - 4

EPA Est. No.: 069821-CHN-005

See additional precautionary statements and directions for use in booklet.

[GRAPHICS]

Manufactured by:
 Rotam Agrochemical Company Limited
 7/F Cheung Tat Centre
 18 Cheung Lee Street
 Chai Wan, Hong Kong

Net Contents: 1.0 GALLON (3.75 Liters)
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FIRST AID (Avermectin B₁)	
If In Eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20minutes. • Remove contact lenses, if present, after the first 5 minutes, the continue rinsing eye. • Call a poison control center or doctor for further treatment advice.
If Swallowed	<ul style="list-style-type: none"> • Do not induce vomiting unless told to do so by the poison control center or doctor. • Have person sip a glass of water if able to swallow. • Do not give anything by mouth to an unconscious person. • Call poison control center or doctor for treatment advice.
If Inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call poison control center or doctor for treatment advice.
If On Skin Or Clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for further treatment advice.
Note to Physician	
<p>Recommendations for Medical Treatment for ABACUS (Avermectin B₁) Acute Toxicity: Early signs of intoxication include mydriasis (dilated pupils), ataxia (unsteadiness), and muscle tremors. Toxicity follows accidental ingestion of the concentrate and can be minimized by inducing vomiting within one-half hour of exposure.</p> <p>If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant fluid and electrolyte imbalance should be gauged. Appropriate supportive parenteral fluid replacement therapy should be given, along with other required supportive measures (such as maintenance of blood pressure levels) as indicated by clinical signs, symptoms, and measurements.</p> <p>In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since avermectin is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic avermectin exposure.</p>	
(Avermectin B₁)	
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. For Medical Emergency treatment call your Local Poison Control Center for assistance.</p>	

KEEP OUT OF REACH OF CHILDREN WARNING/AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements Hazards to Humans and Domestic Animals

WARNING/AVISO

Causes substantial by temporary eye injury. Harmful if swallowed. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wear protective eyewear (goggles or faceshield). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Environmental Hazards

This pesticide is toxic to fish and wildlife. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from target areas. Do not contaminate water when disposing of equipment wash water or rinsate. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Use of this product may pose a risk to threatened and endangered species of fish, amphibians, crustaceans (including fresh water shrimp), and insects. All use of this product in the state of California should comply with the recommendations of the California Endangered Species Project. Before using this product in California, consult with your county agriculture commissioner to determine use limitations that apply in your area.

Physical or Chemical Hazards

Do not use or store near heat or open flame

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Storage: Store in a tightly closed container in a cool, dry place.

Pesticide Disposal: Pesticide spray mixture or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal (Nonrefillable container 5 gallons or less): Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Offer for recycling, if available.

Residue Removal: Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call CHEMTREC AT 1-800-424-9300

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