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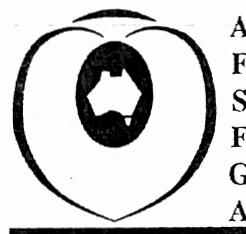
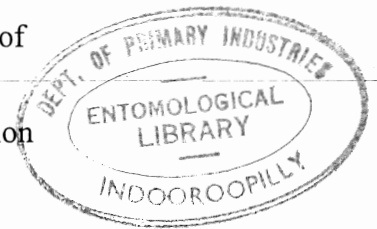
**FINAL PROJECT REPORT
FOR SF97016
DIMETHOATE RESIDUE
MANAGEMENT
IN PEACHES**

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INDUSTRY SUMMARY

Over the past few years several instances were recorded of dimethoate residues in peaches exceeding the maximum residue limit (MRL) of 2mg/kg (fruit). Post-harvest dipping with dimethoate is a requirement of entry for all stonefruit produced in areas infested with fruit fly into markets which are "fruit fly sensitive". Previous registered label directions for the post-harvest use of dimethoate on stone fruit (including peaches) is for a one minute immersion of fruit in a 400 mg/L emulsion. This level controls Queensland fruit fly in all stone fruit.

In order to ensure that the residues of dimethoate in stone fruit (especially peaches) comply with the requirements of the Food Standards Code, it became necessary to review current Good Agricultural Practice in relation to this use. Following applications submitted to NRA in August 1997, an original off-label permit was issued for the use of a 200 mg/L emulsion for treatment of all stonefruit, with fruit to be dipped or immersed for one minute. Further to this was an increase in the MRL for peaches from 2 mg/kg to 3 mg/kg. Additional permit conditions were also notified, being the requirement for all peaches to be defuzzed prior to treatment and that postharvest treatment with dimethoate could not be used if stonefruit had been subjected to preharvest dimethoate applications.

Approaches were made to the NRA with particular reference to the defuzzing requirement, indicating that this was not a commercially applicable practice. The NRA subsequently modified the off-label permit, removing the defuzzing the requirement and also raising the MRL for peaches to a temporary level of 5 mg/kg. This modified permit (PER 1068) was issued on the understanding that full scale residue analysis trials be conducted on peaches dipped in dimethoate at 200 mg/L in order to establish a more substantive MRL for peaches and address the issue of defuzzing of peaches.

At the same time, parallel work was being undertaken to establish effective in-line flood spray systems which could be used for postharvest treatment of stonefruit. Utilising the fruit fly efficacy data generated by this work and the residue information derived from Project SF97016, application was made to NRA to enable growers to implement the following in relation to postharvest treatments using dimethoate:

1. Use of dimethoate as a postharvest dip at 200 mg/L (as opposed to the previous registered rate of 400 mg/L)
2. Use of dimethoate as a postharvest dip at 200 mg/L irrespective of the preharvest use of dimethoate
3. Flood sprays using the same concentration of dimethoate as the dip (200 mg/L) can be used as an alternative to dipping for control of Queensland fruit fly in stonefruit (including peaches)
4. The current temporary MRL of 5 mg/kg for peaches can be reduced to 3 mg/kg and approved as a full MRL on the basis of the residue studies submitted. (It is not desired to change the MRL for other stonefruit from 2 mg/L)
5. That there is no need to remove the superficial hair on peaches (defuzz) before dipping/flood spraying as fuzz does not affect residue levels

NRA issued Permit 1851 on the 15th September 1998, allowing the use of either postharvest dipping or flood spraying using a solution of 200mg/L of dimethoate. The requirements for defuzzing of peaches was removed, while the MRL for dimethoate in peaches was confirmed at 3 mg/kg (all other stonefruit retain an MRL of 2 mg/kg).

The NRA considered that there was not sufficient data to accept that preharvest use of dimethoate did not increase residues to an unacceptable level when combined with postharvest treatments. Therefore, the only condition remaining on Permit 1851 is that fruit treated preharvest with dimethoate cannot be subjected to postharvest dimethoate treatment. Further discussions have been held with NRA on this issue, who have advised that full additional residue trials would be required to establish the impact of preharvest dimethoate use when combined with postharvest use.

Given the implications of procedures which need to be developed under the Interstate Certification Assurance (ICA) scheme, it is proposed that any work conducted to establish and accredit the preharvest use of dimethoate be extended to incorporate residue work, including residues of fruit subjected to both pre- and post-harvest dimethoate use.

TECHNICAL SUMMARY

In order to ensure that the residues of dimethoate in stone fruit (especially peaches) comply with the requirements of the Food Standards Code, it became necessary to review current Good Agricultural Practice in relation to this use. Following applications submitted to NRA in August 1997, an original off-label permit was issued for the use of a 200 mg/L emulsion for treatment of all stonefruit, with fruit to be dipped or immersed for one minute. Further to this was an increase in the MRL for peaches from 2 mg/kg to 3 mg/kg. Additional permit conditions were also notified, being the requirement for all peaches to be defuzzed prior to treatment and that postharvest treatment with dimethoate could not be used if stonefruit had been subjected to preharvest dimethoate applications.

Approaches were made to the NRA with particular reference to the defuzzing requirement, indicating that this was not a commercially applicable practice. The NRA subsequently modified the off-label permit, removing the defuzzing the requirement and also raising the MRL for peaches to a temporary level of 5 mg/kg. This modified permit (PER 1068) was issued on the understanding that the QDPI carry out full scale residue analysis trials on peaches dipped in dimethoate at 200 mg/L in order to establish a more substantive MRL for peaches and address the issue of defuzzing of peaches.

Full trial protocols were established to ensure that data generated would be of an acceptable standard for chemical registration purposes. A copy of the trial protocol is contained in Appendix 1 of this report.

At the same time as conducting the work on residues in postharvest dipped peaches, parallel work was being undertaken through another project aimed at establishing systems for in-line flood spray treatment. This treatment system resolved that exposure of fruit for 12 seconds to a 200 mg/L solution of dimethoate at the rate of 32 L / square metre /minute produced an efficacy in excess of the 99.5% mortality required. Residue data for this treatment system was not collected, as it can be logically argued that in-line flood sprays result in lower exposure of fruit to applied chemical than that expected from dipped fruit. Therefore, provided residue levels for dipped fruit were within acceptable limits, there should be no reason to expect that residue levels for flood spray treated fruits would exceed these.

Data was submitted in support of the following alterations to Good Agricultural Practice as defined by the initial permit (PER1068):

1. Use of dimethoate for pre-harvest treatment of stonefruit (including peaches) followed by postharvest dipping with a 200 mg/L solution of dimethoate
2. Use of dimethoate as a postharvest dip at 200 mg/L (as opposed to 400 mg/L) irrespective of the preharvest use of dimethoate
3. Flood sprays using the same concentration of dimethoate as the dip (200 mg/L) can be used as an alternative to dipping for control of Queensland fruit fly in stonefruit (including peaches)
4. The current temporary MRL of 5 mg/kg for peaches can be reduced to 3 mg/kg and approved as a full MRL on the basis of the residue studies submitted. It is not desired to change the MRL for other stonefruit from 2 mg/L

INTRODUCTION

Over the past few years, several instances have been recorded of dimethoate residues in peaches exceeding the maximum residue limit (MRL). Post-harvest dipping with dimethoate is a requirement of entry for all stonefruit produced in areas infested with fruit fly into markets which are "fruit fly sensitive".

In response to this and in an attempt to provide the stonefruit industry with an opportunity to reduce its post-harvest chemical usage, preliminary trials were conducted in early 1996 to establish dimethoate residue levels in peaches using dipping concentrations of 200 ppm. Applications based on this were subsequently submitted to NRA.

The permit issued by NRA provided for the use of dimethoate post-harvest dips at the rate of 200 ppm, but introduced conditions which provided significant practical difficulties for industry to implement.

The two major conditions imposed under this permit were:

1. That dimethoate not be used in pre-harvest (in-field) treatment of stonefruit crops which were to be dipped post-harvest in dimethoate.
2. That all peaches be defuzzed prior to dipping or wetting with dimethoate.

This project became necessary to meet the conditions under which NRA issued a temporary permit (PER 1068) for the 1997/98 season. The conditions under which NRA issued this temporary permit were:

1. That full scale dipping and residue analysis trials be undertaken to provide further data for the establishment of a more permanent MRL, dipping rate level and treatment conditions.
2. That a series of 20 fruit samples be analysed during the current season, representing a range of pre- and post- harvest treatments with dimethoate. Data from these will be further used to resolve the issue of pre-harvest treatment using dimethoate.

Data generated from this work has been submitted to NRA and a new series of permit conditions and details have been negotiated between NRA, the stonefruit industry and relevant Government agencies (through the Interstate Plant Health Regulation Working Group).

MATERIALS AND METHODS

The project undertook to analyse residue levels in peaches treated in both commercial and controlled laboratory situations. This was determined necessary to establish that fruit treated properly under commercial conditions was not resulting in MRL breaches, and to demonstrate that commercial conditions (and the residue levels which resulted) were comparable to controlled laboratory treatments.

COMMERCIAL RESIDUE MONITORING 1997/98 SEASON

As negotiated with NRA, a condition for the issue of a temporary permit (PER 1068) covering post-harvest dimethoate treatment of peaches during the 1997/98 production season was that a samples be taken during the season to establish residue levels of peaches treated under the conditions of this temporary permit.

These samples were taken from peaches with a known / traceable production and treatment history, which included no "defuzzing" treatment and post-harvest dipping with dimethoate at 200 ppm solution.

Peaches collected during this monitoring schedule were subjected to standardised base residue testing for dimethoate to establish the residue level relative to the temporary MRL set at 3 mg/kg.

All other pre- and post-harvest treatment, handling and packaging were applied as per normal commercial practices. Full details were recorded in the Field Record Sheet which formed part of the Trial Protocol developed for this project.

LABORATORY TREATMENT RESIDUE ANALYSIS

Peaches were obtained during the 1997/98 production season and were subjected to post-harvest dipping with dimethoate to provide the data required for application to NRA for a treatment permit to cover dimethoate use for interstate trade.

The peaches used for these treatments represent the major commercial varieties used for interstate trade to Victoria, and were also selected to provide a range of fuzz "densities" to enable evaluation of the effect of fuzz level on residue retention following post-harvest treatment.

Peaches were also obtained which had been subjected to pre-harvest (in field) applications of dimethoate for fruit fly control during the growing season. These were analysed for residues of dimethoate to establish a "base" residue level of peaches prior to dimethoate post-harvest dipping.

Samples obtained were subjected to post-harvest dipping at 200 ppm dimethoate solution for 1 minute (industry standard practice). 200 ppm solution was used as this level has accepted levels of efficacy for both Queensland Fruit Fly (QFF) and Papaya Fruit Fly (PFF) control.

Each of the three (3) complete residue trails consisted of 12 trays of stonefruit which were assembled through sampling of a consignment from one grower. This enabled two replicates of six (6) trays in each trial. All fruit was subjected to normal commercial production and handling practices, with the exception of postharvest dipping in any chemical.

Fruit was transported from the packing shed to the treatment laboratory at Indooroopilly in cool conditions which reflected normal commercial practice. Fruit was held in cold store (5 - 10 degrees Celsius) for a minimum of 12 hours prior to dipping treatments being applied. All conditions and treatments to which the fruit was subjected prior to dipping in dimethoate was recorded on an approved Field Record Sheet.

Four trays from each group of six were dipped under controlled conditions at the Indooroopilly fruit fly research laboratory. Dipping was for one (1) minute in a dimethoate emulsion of 200 ppm of active constituent. Samples were taken of the dip solution and analysed to accurately determine the concentration of dimethoate in the treatment solution. Fruit was air dried to an extent which also replicates commercial conditions prior to repacking into clean new styrofoam trays.

Fruit from the remaining two un-dipped trays was used for control analysis and for reference control and recovery studies.

Fruit was repacked into clean new commercial styrofoam trays with plastic tray liners after dipping, and was transferred immediately to the analysis laboratory at Indooroopilly. Fruit sampled from one tray in each replicate was analysed on the same day as dipping (Day 0). The remaining fruit was held in the analysis laboratory at approximately 20 - 22 degrees Celsius to represent commercial retailing conditions under which the fruit would be held. One tray each from the remaining three dipped trays of fruit was analysed on Day 1, Day 2 and Day 5 after dipping.

All samples were analysed according to standardised protocols for dimethoate residue levels. Residue samples were analysed for dimethoate and omethoate

Analytical results (unadjusted for % recoveries) were determined for:

1. Dimethoate *per se* residues levels on peaches on a fresh weight basis
2. Omethoate *per se* residues levels on peaches on a fresh weight basis
3. Calculated dimethoate *per se* residue levels on whole fruit (residue in the flesh divided by weight of flesh + stone).
4. Calculated omethoate *per se* residue levels on whole fruit (residue in the flesh divided by weight of flesh + stone).
5. Calculated residue levels of dimethoate (sum of dimethoate and omethoate, expressed as dimethoate - Australian residue definition) on whole fruit.

Each laboratory sample was analysed in duplicate (ie. two sub-samples were taken for analysis after a laboratory sample was prepared).

The dimethoate concentrate formulation was analysed for dimethoate content.

Treatment solutions were also analysed for dimethoate content.

The water was characterised according to a standard water analysis, including pH and hardness.

Residue samples were analysed by method Organophosphate Residues in Plant Material - Method PPQ - 02

Treatment solutions were analysed by method Dimethoate Dip and Spray Solutions, - Method PPQ - 40

Formulation samples were analysed by CIPAC method - CIPAC Handbook E, Dimethoate Emulsifiable Concentrates 59/EC/M3; (Dimethoate Formulations PPQ - 15)

Validation data was undertaken for linearity of calibration, repeatability, limit of determination and recoveries.

A limit of determination of .0.02 mg/kg was achieved on a fresh weight basis.

Procedural recovery samples were run with each batch of analyses.

A submission to the National Registration Authority was prepared according to the current guidelines. The main document consisted of a proposal and supporting data for dimethoate MRLs and any pre-treatment conditions, the laboratory report and the treatment report. Copies of all other documents relating to the project were included as attachments to the NRA submission.

A copy of the NRA Application Summary is attached in Appendix 2. The full NRA submission is not included in this report, as it extends to 286 pages.

RESULTS

Laboratory Residue Studies

Three trials were conducted for which full Field Record Sheets and Laboratory Residue Reports are available. These trials were identified numbers DP097-01, DP097-02 and DP097-03. Characteristics of the fruit were recorded in the Field Record Sheets and are summarised in Table 4, as are all pre- and post-harvest chemical sprayings.

Trial DP097-01 : Residual concentrations of dimethoate when used as a post-harvest dip for the control of Queensland fruit fly in peaches

Location: Kumbia

Experimenter: C.J. Adriaansen

Peaches selected for this trial had been subjected to normal commercial production and handling practices, with the exception of post harvest dipping in any chemical. Twelve trays were selected from a consignment from this grower. This allowed for two replicates of six trays per replication. Characteristics of the fruit are recorded in Table 4, as are all pre- and post-harvest chemical sprayings. It should be noted that peaches in this experiment were given a medium fuzz rating. There were no pre-harvest applications of pesticide.

The crop was picked at 12.00 pm on 10/11/97 and packed at 5.00 pm on the same day after spraying with Rovral (1mL/L iprodione). The peaches were stored for approximately 14 hours at 4°C prior to transport to the treatment laboratory at Indooroopilly. The temperature during transport varied between 5-8°C, and the trip took 3 hours. These conditions reflected normal commercial practice.

Upon arrival at the testing laboratory at Indooroopilly, the peaches were stored at 5-10°C for at least 12 hours prior to dipping. Four trays of each group of six were dipped for one minute in a dimethoate emulsion at a nominal concentration of 200 mg/L active constituent. The fruit was then air dried and repacked into new styrofoam trays lined with plastic tray liners to simulate normal commercial practice. Fruit from the remaining two undipped trays was used as a control.

After repackaging the dipped fruit, fruit from one tray was analysed for dimethoate and omethoate on the same day as dipping. The remaining fruit was held at the laboratory at approximately 20-22°C to represent commercial retail conditions under which the fruit might be kept. One tray each from the remaining three dipped trays of fruit was analysed on Day 1, Day 2 and Day 5 days after dipping.

Table 1: Summary of Residue Results for Trial DP097-01

DAYS AFTER DIPPING	OMETHOATE RESIDUE CONCENTRATION (MG/KG)	DIMETHOATE RESIDUE CONCENTRATION (MG/KG)
0 (CONTROL)	NDR	NDR
0	NDR	1.39
1	NDR	1.27
2	NDR	1.20
5	NDR	1.14
5*	NDR	1.04

NDR = No detectable residue. Limit of quantitation = 0.023 mg/kg for dimethoate and 0.039 mg/kg for omethoate

* This was a reanalysis of the Day 5 sample after storage at -20°C for 32 days. This test was carried out in case samples could not be analysed on the designated day and had to be held in the freezer.

Trial DP097-02 : Residual concentrations of dimethoate when used as a post-harvest dip for the control of Queensland fruit fly in peaches

Location: Ballandean

Experimenter: C.J. Adriaansen

Peaches that were selected for this trial had been subjected to normal commercial production and handling practices, with the exception of post harvest dipping in any chemical. Twelve trays were selected from a consignment from this grower. This allowed for two replicates of six trays per replication. Characteristics of the fruit are recorded in Table 4, as are all pre- and post-harvest chemical sprayings. It should be noted that peaches in this experiment were given a medium fuzz rating. There were three pre-harvest applications of dimethoate and one of fenthion (see Table 4).

The crop was picked 12/1/98 and packed on the same day after spraying with Rovral (1 mL/L iprodione). In order to determine the effects of low fuzz on the retention of dimethoate by peaches, these were defuzzed by passing through six sets of brushes. The temperature during transport to Indooroopilly averaged 8°C, and the trip took 10 hours. These conditions reflected normal commercial practice.

Upon arrival at the testing laboratory at Indooroopilly, the peaches were stored at 5-10°C for at least 12 hours prior to dipping. Four trays of each group of six were dipped for one minute in a dimethoate emulsion at a nominal concentration of 200 mg/L active constituent. The fruit was then air dried and repacked into new styrofoam trays lined with plastic tray liners to simulate normal commercial practice. Fruit from the remaining two undipped trays was used as a control.

After repackaging the dipped fruit, fruit from one tray was analysed for dimethoate and omethoate on the same day as dipping. The remaining fruit was held at the laboratory at approximately 20-22°C to represent commercial retail conditions under which the fruit might be

kept. One tray each from the remaining three dipped trays of fruit was analysed on Day 1, Day 2 and Day 5 days after dipping.

Table 2: Summary of Residue Results for Trial DP097-02

DAYS AFTER DIPPING	OMETHOATE RESIDUE CONCENTRATION (MG/KG)	DIMETHOATE RESIDUE CONCENTRATION (MG/KG)
0 (CONTROL)	NDR	0.06
0	NDR	1.08
1	NDR	1.05
2	NDR	0.87
5	NDR	0.85

NDR = No detectable residue. Limit of quantitation = 0.023 mg/kg for dimethoate and 0.039 mg/kg for omethoate

Trial DP097-03 : Residual concentrations of dimethoate when used as a post-harvest dip for the control of Queensland fruit fly in peaches

Location: Ballandean

Experimenter: C.J. Adriaansen

Peaches that were selected for this trial had been subjected to normal commercial production and handling practices, with the exception of post-harvest dipping in any chemical. Twelve trays were selected from a consignment from this grower. This allowed for two replicates of six trays per replication. Characteristics of the fruit are recorded in Table 4, as are all pre- and post-harvest chemical sprayings. It should be noted that peaches in this experiment were defuzzed by 6 sets of brushes. There were no pre-harvest applications of dimethoate but carbaryl and fenthion were used as pre-harvest sprays (see Table 4).

The crop was picked on 12/1/98 and packed on the same day after spraying with Rovral (1mL/L iprodione) and Peach Lustre (a vegetable wax). The peaches were also defuzzed by passing through six sets of brushes before packing. The temperature during transport to Indooroopilly averaged 8°C, and the trip took 10 hours. These conditions reflect normal commercial practice.

Upon arrival at the testing laboratory at Indooroopilly, the peaches were stored at 5-10°C for at least 12 hours prior to dipping. Four trays of each group of six were dipped for one minute in a dimethoate emulsion at a nominal concentration of 200 mg/L active constituent. The fruit was then air dried and repacked into new styrofoam trays lined with plastic tray liners to simulate normal commercial practice. Fruit from the remaining two undipped trays was used as a control.

After repackaging the dipped fruit, fruit from one tray was analysed for dimethoate and omethoate on the same day as dipping. The remaining fruit was held at the laboratory at approximately 20-22°C to represent commercial retail conditions under which the fruit might

be kept. One tray each from the remaining three dipped trays of fruit was analysed on Day 1, Day 2 and Day 5 days after dipping.

Table 3: Summary of Residue Results for Trial DP097-03

DAYS AFTER DIPPING	OMETHOATE RESIDUE CONCENTRATION (MG/KG)	DIMETHOATE RESIDUE CONCENTRATION (MG/KG)
0 (CONTROL)	NDR	NDR
0	NDR	1.33
1	NDR	1.14
2	NDR	1.21
5	NDR	1.10

NDR = No detectable residue. Limit of quantitation = 0.023 mg/kg for dimethoate and 0.039 mg/kg for omethoate

Full details pre-harvest, harvest, packing and transport treatments for all fruit used in the above three trials have been recorded on the Field Record Sheet accompanying each trial. This information is summarised in the attached Table 4 for reference.

Table 4. Summary of the commercial production and handling practices for peaches used in residue trials DP097-01, DP097-02 and DP097-03

		<i>Trial DP097-01</i>	<i>Trial DP097-02</i>		<i>Trial DP097-03</i>	
Fruit Details	Variety	Florda Gold	ROYAL GEM		DIAMOND PRINCESS	
	Harvest date	10/11/97	7/12/97		12/1/98	
	Maturity	Ripe	Ripe		Mature	
	Fuzz	Medium	Medium		Low (defuzzed)	
	Average weight	158.5g	129.5g		124.5G	
	Grade	2 nd	1 st		1 st	
Pre-harvest Pesticide Applications	Date(s) Applied	Nil	4/10/97; 21/10/97; 12/11/97	27/11/97	3/12/97	18/12/97; 1/1/98
	Chemical Applied	Nil	Dimethoate	Fenthion	Carbaryl	Fenthion
	Mixing rate (kg or l/ha)	Nil	All at 750mL/100 0L	1000mL/ 1000L	2000mL/ 1000L	Both at 1000mL/ 1000L
	Application rate (kg or l/ha)	Nil	All at 1050mL/ha	1400mL/ha	2800mL/ha	Both at 1400mL/ha
	Spray volume (l/ha)	Nil	All at 1400L/ha	1400L/ha	1400L/ha	Both at 1400L/ha
Post-harvest Handling or Treatment	Packing date	10/11/97	9/12/97		12/1/98	
	Storage temp. & duration Other treatments	4°C 14 hrs Rovral wash & foam rollers	0 - 2°C 52 hrs Nil		2 - 3°C 26 HRS Fruit defuzzed through 6 sets of brushes	
Post-harvest Chemical Treatment^A	Date of application	10/11/97	9/12/97		12/1/98	
	Chemical name	Rovral	Rovral	Fruit wax	Rovral	Peach Lustre (vegetable wax)
	Chemical rate	1mL/L	1mL/L		1mL/L	
	Method of application	Jet spray	Flood spray	Flood spray	Flood spray	Flood spray
Transport Conditions	Temperature & duration	3 HRS AT 5-8°C	5 HRS AT 2-5°C		10 HRS AT 8°C	
Arrival at Indooroopilly	Time & date delivered to laboratory	4.15pm; 11/11/97	8.30am; 10/12/97		8.30am; 14/1/98	

^A Postharvest chemical treatments other than dimethoate.

Commercial Fruit Residue Studies

Three more trials were conducted for which full Field Record Sheets are available but for which only a single dimethoate analysis was performed, no omethoate analyses were done and for which there are no detailed records of laboratory analyses. These trials have numbers SRDP97-01, SRDP97-02 and SRDP97-03. These trials were conducted to determine the dimethoate residue levels of commercially-treated fruit in comparison with fruit treated under controlled laboratory conditions.

Trial SRDP97-01 : Residual concentrations of commercial fruit treated with dimethoate as a post-harvest dip for the control of Queensland fruit fly in peaches

Location: Gatton

Experimenter: C.J. Adriaansen

Peaches that were selected for this trial had been subjected to normal commercial production and handling practices. Characteristics of the fruit are recorded in Table 5, as are all pre- and post-harvest chemical sprayings. It should be noted that peaches in this experiment were given a low fuzz rating due to light brushing to remove excess fuzz. There were no pre-harvest applications of dimethoate.

The crop was picked on 17/11/97 and sprayed with a vegetable wax and dipped in dimethoate on the farm on 18/11/97. Dipping was for one minute in a dimethoate emulsion at a nominal concentration of 200 mg/L active constituent. The treated fruit was air dried, packed and transported to Indooroopilly for analysis. The temperature during transport to Indooroopilly averaged 6-14°C, and the trip took 2 hours. These conditions reflect normal commercial practice.

The fruit was held at the laboratory under similar conditions to fruit of the previous experiments (DP097-01, -02 and -03) ie at approximately 20-22°C to represent commercial retail conditions under which the fruit might be kept. Fruit was analysed for dimethoate and fenthion 8 days after spraying.

Summary of Results

DATE OF ANALYSIS	CHEMICAL COMPONENT	RESIDUE CONCENTRATION (MG/KG)
26/11/97	Dimethoate	0.41
26/11/97	Fenthion	0.02

Trial SRDP97-02 : Residual concentrations of commercial fruit treated with dimethoate as a post-harvest dip for the control of Queensland fruit fly in peaches

Location: Glasshouse Mountains

Experimenter: J. Campbell

Peaches that were selected for this trial had been subjected to normal commercial production and handling practices. Characteristics of the fruit are recorded in Table 5, as are all pre- and post-harvest chemical sprayings. It should be noted that peaches in this experiment were given a medium fuzz rating. There were no pre-harvest applications of dimethoate.

The crop was picked on 16/11/97, and dipped in Rovral and in dimethoate on the farm on 17/11/97. Dipping in dimethoate was for one minute in an emulsion at a nominal concentration of 200 mg/L active constituent. The treated fruit was air dried, packed and transported to Indooroopilly for analysis. The temperature during transport to Indooroopilly averaged 6-8°C, and the trip took 1.5 hours. These conditions reflect normal commercial practice.

The fruit was held at the laboratory under similar conditions to fruit of the previous experiments (DP097-01, -02 and -03) ie at approximately 20-22°C to represent commercial retail conditions under which the fruit might be kept. Fruit was analysed for dimethoate and fenthion 9 days after dipping

Summary of Results

DATE OF ANALYSIS	CHEMICAL COMPONENT	RESIDUE CONCENTRATION (MG/KG)
26/11/97	Dimethoate	1.11
26/11/97	Fenthion	0.02

Trial SRDP97-03 : Residual concentrations of commercial fruit treated with dimethoate as a post-harvest dip for the control of Queensland fruit fly in peaches

Location: Eumundi

Experimenter: J. Campbell

Peaches that were selected for this trial had been subjected to normal commercial production and handling practices. Characteristics of the fruit are recorded in Table 5, as are all pre- and post-harvest chemical sprayings. It should be noted that peaches in this experiment were given a low fuzz rating. There were no pre-harvest applications of dimethoate.

The crop was picked on 17/11/97, and dipped in Rovral, Chemwet 60 (a wetting agent) and in dimethoate on the farm on the same day. Dipping in dimethoate was for one minute in an emulsion at a nominal concentration of 200 mg/L active constituent. The treated fruit was air dried, packed and transported to Indooroopilly for analysis. The temperature during transport to Indooroopilly averaged 6-8°C, and the trip took 2.5 hours. These conditions reflect normal commercial practice.

The fruit was held at the laboratory under similar conditions to fruit of the previous experiments (DP097-01, -02 and -03) ie at approximately 20-22°C to represent commercial retail conditions under which the fruit might be kept. Fruit was analysed for dimethoate 9 days after dipping

Summary of Results

DATE OF ANALYSIS	CHEMICAL COMPONENT	RESIDUE CONCENTRATION (MG/KG)
26/11/97	Dimethoate	1.30

Table 5. Summary of the commercial production and handling practices for peaches used in commercial residue trials SRDP9701, SRDP9702 and SRDP9703

		<i>SRDP97-01</i>	<i>SRDP97-02</i>	<i>SRDP97-03</i>
Fruit Details	Variety Harvest date Maturity Fuzz Average weight Grade	New Belle 16/11/97 Ripe Low 105g 2 nd	Ripe Medium Not available 1 st	TROPIC SWEET 17/11/97 RIPE LOW Not available 1 st
Pre-harvest Pesticide Applications	Date(s) Applied	Not available	Not available	Not available
	Chemical Applied Product name Mixing rate (kg or l/ha) Application rate (kg or l/ha) Spray volume (l/ha)	Fenthion Not available Not available Not available Not available	Fenthion Not available Not available Not available Not available	Fenthion Not available Not available Not available Not available
Post-harvest Handling or Treatment	Packing date	19/11/97	18/11/97	17/11/97
	Storage temp. & duration Other treatments	6°C 18 hrs DEFUZZ & WAXING	5°C 72 hrs Nil	5.5°C 46 hrs Nil
Post-harvest Chemical Treatment^A	Date of application	18/11/97	17/11/97	17/11/97
	Chemical name Chemical rate Method of application	Fruit Wax Flood spray	ROVRAL 1mL/L Dip, 1 minute	ROVRAL CHEMWET 60 1mL/L 50mL/100L Dip, 1 minute Dip, 1 minute
Transport Conditions	Temperature & duration	2 HRS AT 6-14°C	1.5 HRS AT 6-8°C	2.5 HRS AT 6- 8°C
Arrival at Indooroopilly	Time & date delivered to laboratory	1.00pm; 19/11/97	1.00pm 19/11/97;	1.00pm; 19/11/98

^A Postharvest chemical treatments other than dimethoate.

DISCUSSION AND RECOMMENDATIONS

In summarising the three residue trials (DP097-01, DP097-02 and DP097-03), it should be noted that the results from trial number DP097-01 provide the baseline data against which the other two should be compared. This is because the fruit in DP097-01 had a normal fuzz rating and did not receive any preharvest applications of dimethoate.

On the other hand, peaches in trial DP097-02 had a normal fuzz rating but received three preharvest applications of dimethoate and peaches in trial DP097-03 were defuzzed but received no preharvest dimethoate applications.

On the basis of the results obtained, the following arguments were incorporated into the NRA Permit Application:

- the combination of three preharvest applications of dimethoate (200mg/L) plus a postharvest dip in dimethoate (200mg/L; DP097-02) did not raise the residue level above that for a postharvest dip alone (DP097-01)
- The removal of fuzz (DP097-03) may have reduced dimethoate retention by peaches but the effect was small and was not consistent with time after dipping. In any case, the maximum residue concentration was only 1.39 mg/kg.

Three more trials were conducted for which full Field Record Sheets were completed but for which only a single dimethoate analysis was performed, no omethoate analyses were done and for which there are no detailed records of laboratory analyses (trials SRDP97-01, SRDP97-02 and SRDP97-03).

None of the peaches in these trials received any preharvest applications of dimethoate. All were dipped on farm for 1 minute in dimethoate at a nominal concentration of 200 mg/L. The fuzz rating ranged from low (SRDP97-01 and -03 to medium (SRDP97-02). The low fuzz rating was artificial (SRDP97-01) and natural (SRDP97-03). The following can be concluded:-

- Residue levels in peaches that were dipped on farm were lower than in peaches dipped in the laboratory
- Fuzz rating had no consistent effect on residue retention.
- The highest concentration of dimethoate was only 1.30 mg/kg which was similar to that in the DP experiments reported above

This information was also reported to NRA within the documentation attached to the Permit Application.

A full Permit Application was prepared and submitted to NRA on 17th July 1998. This submission contained full reports of treatments, residue results and arguments on which to base the issuing of a Permit covering postharvest dimethoate treatment of peaches. A copy of this full submission is held at Applethorpe Research Station in Queensland, and runs to some 286 pages in length.

NRA issued Permit 1851 on the 15th September 1998, allowing the use of either postharvest dipping or flood spraying using a solution of 200mg/L of dimethoate. The requirements for defuzzing of peaches was removed, while the MRL for dimethoate in peaches was confirmed at 3 mg/kg (all other stonefruit retain an MRL of 2 mg/kg).

The NRA considered that there was not sufficient data to accept that preharvest use of dimethoate did not increase residues to an unacceptable level when combined with postharvest treatments. Therefore, the only condition remaining on Permit 1851 is that fruit treated preharvest with dimethoate cannot be subjected to postharvest dimethoate treatment. Further discussions have been held with NRA on this issue, who have advised that full additional residue trials would be required to establish the impact of preharvest dimethoate use when combined with postharvest use.

Given the implications of procedures which need to be developed under the Interstate Certification Assurance (ICA) scheme, it is proposed that any work conducted to establish and accredit the preharvest use of dimethoate be extended to incorporate residue work, including residues of fruit subjected to both pre- and post-harvest dimethoate use. The generation of this additional data should be at a level which will enable the one remaining condition imposed on Permit 1851 to be removed.

TECHNOLOGY TRANSFER

The results and outcomes of this work have been communicated to growers, industry and other affected parties through a range of means, including:

1. Stonefruit InfoFax : Utilising the fax-modem and computer database held by Queensland Horticulture Institute, direct fax advice was sent to all Queensland stonefruit growers indicating conditions and requirements for treatment under the permit issued by NRA.
2. F & V News Article : An article outlining the outcomes of the project and details of the permit issued by NRA was prepared for and published in the Queensland Fruit and Vegetable Growers "F & V News".
3. Research Reports : Outcome reports on the project were prepared for both the QFVG Research Report and the HRDC Hort Report.
4. Advice on the outcomes of the project, in particular the requirements and provisions of the NRA issued permit, was communicated to all Queensland Plant Health Inspectors, enabling them to adequately advise all growers wishing to treat and/or certify fruit for shipping to fruit fly sensitive markets (principally Victoria and South Australia).
5. Communications to all interstate controlling agencies (eg. Victorian Agriculture) identifying treatment conditions under the NRA issued permit and gaining acceptance of fruit treated under these provisions has been managed through the Interstate Plant Health Regulation Working Group. This has ensured that fruit treated in accordance with the issued permit will gain unimpeded access to relevant interstate markets.
6. A presentation detailing the outcomes of this project and the parallel work on flood spray treatment was delivered to the National Stonefruit Industry Conference in August 1998.

ACKNOWLEDGEMENTS

The assistance of the following people in the completion of this project is gratefully acknowledged :

Mr Bruce Simpson and Mr Alan Noble, Resource Sciences Centre, Department of Natural Resources, Indooroopilly; and
Mr Denis Hamilton, Chemical Services Section, Animal and Plant Health Group, Department of Primary Industries, Brisbane
for assistance in the development of the residue trials protocol.

Mr Bob Corcoran and Ms Pauline Peterson, Fruit Fly Disinfestation Unit, Queensland Horticulture Institute, Indooroopilly
for conducting controlled laboratory fruit treatments.

Mr Alan Noble, Resource Sciences Centre, Department of Natural Resources, Indooroopilly
for completion and reporting of the residue analysis phase of the project.

Mr Don Hay, Agvet Chemical Consultancies, for assistance in bringing together the masses of paper required for submission of a permit application to the National Registration Authority.

Ms Jodie Campbell, formerly of Queensland Horticulture Institute, Nambour
for assistance in sourcing fruit for both controlled and commercially treated fruit.

The following stonefruit growers, whose supply of fruit for the project at nil or minimal cost reduced the amount of industry funding required to complete the project:

Ivan Dascombe, Kumbia; Neil Mungall, Ballandean; Ian Ferris, Ballandean; Ross Stuhmcke, Gatton; Graham Dann, Glasshouse Mountains; and Steven Butler, Eumundi.

Other Departmental staff , growers and industry leaders who offered assistance and advice.

APPENDIX 1 :
PROTOCOL FOR SUPERVISED
RESIDUE TRIALS

PROTOCOL

SUPERVISED RESIDUE TRIALS FOR POSTHARVEST USE OF DIMETHOATE ON PEACHES

Name of organisation

Queensland Department of Primary Industries

Study Director

Chris Adriaansen, Program Leader (Deciduous)

Queensland Horticulture Institute

Applethorpe Research Station

Study Number: DP 097

Full address

Qld Horticulture Institute
Qld Dept Primary Industries
P O Box 501
STANTHORPE Q 4380

17 pages

Protocol date: 22nd October 1997

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GENERAL CONSIDERATIONS

Personnel and responsibilities

Study director:	Mr Chris Adriaansen
Laboratory operations:	Mr Bruce Simpson & Mr Alan Noble
Pre-treatment operations	Mr Chris Adriaansen
Treatment operations:	Dr Bob Corcoran
NRA submission:	Mr Chris Adriaansen
Protocol planning:	Mr Denis Hamilton & Mr Chris Adriaansen

Background

Over the past few years, several instances have been recorded of dimethoate residues in peaches exceeding the maximum residue limit (MRL). Post-harvest dipping with dimethoate is a requirement of entry for all stonefruit produced in areas infested with fruit fly into markets which are "fruit fly sensitive".

In response to this and in an attempt to provide the stonefruit industry with an opportunity to reduce its post-harvest chemical usage, preliminary trials were conducted in early 1996 to establish dimethoate residue levels in peaches using dipping concentrations of 200 ppm. Applications based on this were subsequently submitted to NRA.

The permit issued by NRA provided for the use of dimethoate post-harvest dips at the rate of 200 ppm, but introduced conditions which provided significant practical difficulties for industry to implement.

The two major conditions imposed under this permit were:

1. That dimethoate not be used in pre-harvest (in-field) treatment of stonefruit crops which were to be dipped post-harvest in dimethoate.
2. That all peaches be defuzzed prior to dipping or wetting with dimethoate.

This project has become necessary to meet the conditions under which NRA issued a temporary permit for the current 1997/98 season, including the requirement that full scale dipping and residue analysis trials be undertaken to provide further data for the establishment of a more permanent MRL, dipping rate level and treatment conditions.

Study objectives

The objective of the study is to provide valid dimethoate residue data for post-harvest treatment of stonefruit to the National Registration Authority so that an MRL and postharvest treatment protocol for dimethoate on peaches can be established.

Treatment portion of the study

The objective is to generate samples of peaches treated with dimethoate as a postharvest dip (1 minute immersion of a 200 ppm dimethoate solution) under controlled commercially-relevant conditions and to document the field data. The peaches used in this study will have varying inherent "fuzz" levels so that the data generated can be used to establish the impact of peach fuzz on dimethoate residue levels.

Laboratory portion of the study

The objective is to analyse the samples of peaches for dimethoate residue level and document the laboratory data.

Residue submission to NRA

The objective is to assemble the documentation and prepare the case for submission to NRA which will establish an MRL for dimethoate on peaches related to the conditions of dipping in a 200 ppm dip shown to be efficacious for quarantine control of fruit-fly.

Number of trials

A minimum of two (2) trials will be conducted on peaches of differing fuzz levels. Depending on the results (residue levels) obtained from these trials, a third and possibly additional trials may be required.

The trial identification numbers are:

DP 097-01 for trial 1

DP 097-02 for trial 2. [DP 097-03, -04, ETC, IF REQUIRED.]

Communication of variations to the agreed protocol

After the protocol is agreed, variations may be made by agreement with the study director. Variations will be in writing and will describe the changes required and will state the effect on the project validity and results.

Confidentiality

The work will be considered confidential until it has been evaluated by the National Registration Authority. The work will then be published in an Australian scientific journal under joint authorship. Full information will also be delivered to the stone fruit industry through a range of methods once the outcome of NRA applications are known.

Copy of all correspondence

Copies of all correspondence and attachments will be sent to the study director, who will maintain a comprehensive file for the project.

Fund code

The work is being done under the sponsorship of the Australian Fresh Stone Fruit Growers Association (AFSFGA), who are to provide funding via the Horticultural Research and Development Corporation (HRDC).

The fund code to be used for all aspects of this work will be established once commitment to fund the work is received from HRDC. Details of this fund code will be provided to all trial personnel in accordance with the project budget submitted to HRDC.

Statistical methods

No statistical methods are required.

Storage of raw data

At the completion of the study a copy of all notebooks, charts, worksheets, correspondence and other documents will be archived in the files of scientific data held at Queensland Horticultural Institute's Applethorpe Research Station.

NRA Guidelines

The Study Director will obtain NRA Guidelines relevant to the conduct of the trial(s). They will be made available to personnel involved. The relevant NRA Guidelines will be identified in the final report.

TREATMENT PORTION OF STUDY

Treatment notebooks

Treatment personnel will maintain a separate notebook for each trial. Each page will be numbered and headed with the trial number, date of the entry and name of the person making the notebook entry. Entries will be made in black pen or at least in a colour which photocopies clearly. Copies of all notebook pages will be included in the compiled submission to NRA.

Locations of test sites

All dipping treatments will be undertaken at the Department of Primary Industries' fruit fly research laboratory at Indooroopilly.

Treatment machinery

Treatment personnel will record relevant data about the treatment machinery, including:

- brand name
- full description of the specific process (eg. flood spray, dip) and equipment
- rate of throughput

Payment for samples

The supplier of the fruit used for the dipping trials will be paid a fair price for the fruit taken as samples

Test substance - active ingredient and formulation

Active ingredient common name:	dimethoate
Active ingredient systematic name:	O,O-dimethyl S-methylcarbamoylmethyl phosphorodithioate
Active ingredient CAS number:	[60-51-51]
Formulation name :	to be recorded by officer responsible for treatment operations
Formulation type :	emulsifiable concentrate (EC)
Formulation brand :	to be recorded by officer responsible for treatment operations
Formulation batch number :	to be recorded by officer responsible for treatment operations

Formulation date of manufacture : to be recorded by officer responsible for treatment operations

A material safety data sheet (MSDS) will accompany the formulation. Personnel will follow safety instructions and guidelines on the MSDS.

Treatment personnel will take a sample of formulation (approximately 100 mL) into a clean glass bottle for subsequent analysis and will record the date of sampling. The sample will be labelled (see section "Labelling of samples") and will be sent to Mr Alan Noble, the officer in charge of laboratory operations at Agricultural Chemistry Laboratory, Department of Natural Resources, Indooroopilly. The formulation sample must NOT be in the same package or container as spray samples or residue samples.

Test substance - storage

The formulation used in the trials will be stored in an approved pesticide store. Treatment personnel will record the conditions (temperature) of storage.

Post-harvest use pattern - approved or label instructions

The current substantive approval for the postharvest use of dimethoate in peaches is for a one minute immersion of fruit in a 400 ppm emulsion. Following applications submitted to NRA in August 1997, an original off-label permit was issued for the use of a 200 ppm emulsion for treatment of all stonefruit, with fruit to be dipped or immersed for one minute. Further to this was an increase in the MRL for peaches from 2 mg/kg to 3 mg/kg. Additional permit conditions were also notified, being the requirement for all peaches to be defuzzed prior to treatment and that postharvest treatment with dimethoate could not be used if stonefruit had been subjected to preharvest dimethoate applications.

Approaches were made to NRA with particular regard to the defuzzing requirement, indicating that this was not a commercially-applicable practice. NRA subsequently modified the off-label permit, removing the defuzzing requirement and also raising the MRL for peaches to a temporary level of 5 mg/kg. This modified permit was issued subsequent to a commitment given by QDPI that full residue analysis trials would be undertaken on peaches dipped in dimethoate at 200 mg/kg. The results will be used to establish a more substantive MRL for peaches and address the issue of defuzzing of peaches.

Post-harvest use pattern proposed for trials

Peaches which have been subjected to normal commercial production and handling practices (and for which these practices can be fully recorded) will be subjected to dipping for one minute in a 200 ppm emulsion of dimethoate. Fruit will be held in overnight cold storage (minimum of 10 hours at 8 degrees C) prior to dipping. Fruit will be drained and air dried until "touch dry" (ie. no visible moisture remaining on fruit surface).

Further analyses will be undertaken on Thursday 11th (Day 1), Friday 12th (Day 2) and Monday 15th December (Day 5).

The calendar for additional trials will be negotiated if it is required that these be undertaken.

Treatment Dip

Treatment personnel will prepare the dip solution as accurately as possible to contain 200 mg active ingredient per litre.

Treatment personnel will take two samples of well stirred or agitated dip into clean glass bottles (500 mL). One sample will be taken just prior to treatment and one just after. Samples will be labelled (see section "Labelling of samples") and will be sent to the officer in charge of laboratory operations. Spray samples must NOT be in the same package or container as residue samples.

Treatment personnel will take a sample (1 litre) of the water used for preparation of the dip. The sample will be labelled (see section "Labelling of samples") and will be sent to the officer in charge of laboratory operations. The water sample may accompany the dip samples.

Treatment personnel will record:

- additives or other components of the spray solution
- method of preparing the spray solution
- exact measured volumes of formulation and water used to prepare the dip
- time of day the dip was prepared and the time elapsing until treatment.
- temperature of dip solution.
- ambient temperature and humidity

Pre-Treatment Records

All pre-treatment details will be recorded using the attached Field Record Sheet (DPI-FRS-97.1 23/10/97). Information to be recorded includes details of the grower and packer, particulars of the fruit, preharvest treatments (particularly chemical treatments), and postharvest handling and treatments.

Labelling of samples

Formulation

- unique sample number
- trial number
- date of collection
- person collecting sample
- description of sample (formulation, batch)

Dip solutions

- unique sample number
- trial number
- date of collection
- person collecting sample
- description of sample (prior or post treatment, expected concentration)

Residue samples

- unique sample number
- trial number
- date of collection
- person collecting sample
- description of sample

Water samples

- unique sample number
- trial number
- date of collection
- person collecting sample
- description of sample (water for producing dip)

Sample containers

<u>Formulation:</u>	glass bottle or jar with secure screw-cap lid.
<u>Spray solution:</u>	glass bottle with secure screw-cap lid
<u>Residue samples:</u>	styrofoam fruit trays with plastic tray liners
<u>Water:</u>	glass bottle with secure lid or stopper.

Treatment personnel will obtain suitable sample containers and labels.

Residue samples - Treatment study

In each trial, treatment personnel will supply four (4) trays of dipped peaches and two (2) trays of undipped peaches to the analytical laboratory on the day of treatment. See also *Experimental design* page 9. Each tray will be labelled as required for the labelling of residue samples. See *Labelling of samples*, page 11.

Laboratory personnel will randomly select two (2) laboratory samples each of 2 kg peaches for analysis on each sampling occasion.

Despatch of samples to laboratory

Post-treatment storage is to take place in the laboratory

Styrofoam fruit trays with plastic tray liners of treated fruit will be labelled (see section "Labelling of samples") and will be sent to the officer in charge of laboratory operations to arrive on the day of treatment in sufficient time for the laboratory to extract samples for analysis. Prior arrangement and close consultation with the officer in charge of laboratory operations is essential. Residue samples must NOT be in the same package or container as dip or spray samples. As the treatment and analysis laboratories are located at the same site complex and transport between these two will occupy a matter of minutes, it is not expected that this transfer will impact upon the samples or the integrity of residue analysis.

Quality assurance

The Study Director will ensure that personnel involved in the study are conversant with their roles and have the skills to be effective. He will inspect or arrange for another person to inspect the documentation of the study during its execution to ensure that notes and results are correctly and consistently recorded without delay.

LABORATORY PORTION OF STUDY

Laboratory notebooks

Laboratory personnel will maintain a separate notebook for each trial. Each page will be numbered and headed with the trial number, date of the entry and name of the person making the notebook entry. All relevant worksheets and instrument charts will be annotated the same way. Entries will be made in black pen or at least in a colour which photocopies clearly. Copies of all notebook pages, work sheets and instrument charts will be included in the compiled submission to NRA.

Sample identification list

Laboratory personnel will produce a table showing for each sample in the project the trial identification, treatment number, laboratory number, and sample description (type of sample, date of treatment and date of sampling).

Residue samples - laboratory study

Residue samples will be analysed for dimethoate and omethoate

Analytical results (unadjusted for % recoveries) will show

1. Dimethoate *per se* residues levels on peaches on a fresh weight basis
2. Omethoate *per se* residues levels on peaches on a fresh weight basis
3. Calculated dimethoate *per se* residue levels on wholefruit (residue in the flesh divided by weight of flesh + stone)..
4. Calculated omethoate *per se* residue levels on wholefruit (residue in the flesh divided by weight of flesh + stone)..
5. Calculated residue levels of dimethoate (sum of dimethoate and omethoate, expressed as dimethoate - Australian residue definition) on whole fruit.

Analyses

The flesh of the peach will be analysed and the residue result will be expressed on a whole commodity basis.

All residue samples will be analysed for dimethoate and omethoate.].

Each laboratory sample will be analysed in duplicate. This means that two sub-samples will be taken for analysis after a laboratory sample has been prepared.

The formulation will be analysed for dimethoate content.

Spray solutions will be analysed for dimethoate content.

The water will be characterised according to a standard water analysis, which will include pH and hardness.

Analytical methods

Residue samples will be analysed by method Organophosphate Residues in Plant Material - Method PPQ - 02

Spray solutions will be analysed by method Dimethoate Dip and Spray Solutions, - Method PPQ - 40

Formulation samples will be analysed by an AOAC or CIPAC method - CIPAC Handbook E, Dimethoate Emulsifiable Concentrates 59/EC/M3; (Dimethoate Formulations PPQ - 15)

Analytical method validation

Validation data will be available for linearity of calibration, repeatability, limit of determination and recoveries.

A limit of determination of .0.02 mg/kg will be achieved on a fresh weight basis.

Procedural recovery samples will be run with each batch of analyses.

Storage conditions, dates and times for samples

Laboratory personnel will record the date and time for:

- Sample receipt in laboratory
- Sample preparation
- Sample analysis. (Also record the number of days freezer storage before analysis).

Laboratory personnel will record the storage conditions of samples pending analysis (temperature, sample container, sample chopped or unchopped).

Anticipated analyses for one trial

Nature of sample	Treatment	Replicate	Replicate
Formulation		*	*
Spray	Pre	*	*
Spray	Post	*	*
Water			
Fruit	Control	**	**
Fruit	Day 0	**	**
Fruit	Day 1	**	**
Fruit	Day 2	**	**
Fruit	DAY 5	**	**

* * duplicate analyses on sample.

Laboratory capacity

The officer in charge of laboratory operations will ensure that the laboratory workload is compatible with the sample preparation, analyses and documentation required for the trial.

Quality assurance

The officer in charge of Laboratory Studies will ensure that all relevant Quality Assurance procedures are observed to ensure the validity and reliability of operations and results. The procedures applied will form part of the laboratory report provided to the Study Director.

DOCUMENTATION OF NRA SUBMISSION

A submission to the National Registration Authority will be prepared according to the current guidelines. The main document will consist of a proposal and supporting data for dimethoate MRLs and any pre-treatment conditions, the laboratory report and the treatment report. Copies of all other documents relating to the project will be included in attachments.

FIELD RECORD SHEET (DPI-FRS-97.1 23/10/97)

The following sheet is to be completed in relation to all samples sourced for dimethoate treatment and residue analysis.

FULL DETAILS AS REQUESTED ON THIS SHEET ARE ESSENTIAL FOR THE INTEGRITY OF TESTING AND DATA TO THE STANDARD REQUIRED TO MEET NRA REQUIREMENTS.

Study number..... Trial number.....

Grower Details

Trading Name

Name of Contact

Address Postcode.....

Telephone Fax

Packer Details (if different to Grower)

Trading Name

Name of Contact

Address

Telephone Fax

Fruit Details

Fruit Variety

Harvest Date / Time / / am / pm

Maturity / Ripeness (eg "picking ripe")

Assessment of fuzz level Low Medium High

Fruit Size: Count number Average fruit weight grams

Grade / Quality

Pre-Harvest Pesticide Applications

Date	Chemical(s) applied Product name	Mixing rate kg or litres product per 1000 litres)	Application rate (kg or litres product per hectare)	Spray volume, litres per hectare

Post-Harvest Handling and Treatment

Packing Date / Time / / am / pm

Storage Temperature and Duration av temp hours

Other handling treatments (eg. washing)

Post-harvest Chemical Treatments

Date and time of application	Chemical name	Chemical rate	Application method

Transport Conditions: Temperature Duration hours

Supply

Date / Time delivered to Treatment Laboratory / / am / pm

Responsible Officer. NAME.....SIGNATURE.....DATE.....

APPENDIX 2 :
NATIONAL REGISTRATION AUTHORITY
PERMIT APPLICATION SUMMARY



National Registration Authority

For Agricultural & Veterinary Chemicals

First Floor, 10 National Circuit, Barton, ACT 2600

PO Box E240, Kingston, ACT 2604 Australia

Tel: +61 6 272 5158 Fax: +61 6 272 4753

URL - <http://www.dpie.gov.au/nra/welcome.html>

Application for a PERMIT for Agvet Chemicals

Clearly indicate the type of permit application by marking the appropriate boxes

1. Application is for a	
<input type="checkbox"/> trial permit to conduct a	<input type="checkbox"/> small scale trial
	<input type="checkbox"/> field trial
	<input type="checkbox"/> product evaluation trial
OR -----	
<input checked="" type="checkbox"/> off-label permit is for	<input checked="" type="checkbox"/> a minor use
	<input type="checkbox"/> possession and supply for export
	<input type="checkbox"/> miscellaneous use
	<input type="checkbox"/> an emergency use
2. Use involves an	
<input checked="" type="checkbox"/> agricultural chemical	OR <input type="checkbox"/> veterinary chemical
which is either	
<input checked="" type="checkbox"/> registered	OR <input type="checkbox"/> unregistered
(Note: Tick both boxes if permit is to cover both registered and unregistered products.)	
3. If the product is unregistered will it be supplied to another person (not a direct employee of the manufacture, permit holder, applicant etc..)?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO <i>Not Applicable</i>
4. A fee is	
<input type="checkbox"/>	attached. Please specify amount - \$
<input type="checkbox"/>	required but not attached. Please specify reason:
<input checked="" type="checkbox"/>	exempt. (Applicant is a primary producer or an officer of the Crown.)
<input type="checkbox"/>	I wish to claim exemption. Please specify reason:

5. Applicant's name		Queensland Department of Primary Industries for the State of Queensland	
Street address		Postal address	
Head Office: 80 Ann Street BRISBANE QLD 4000 Contact Address: Queensland Horticulture Institute New England Highway APPLETHORPE QLD 4378		Head Office: GPO Box 46 BRISBANE QLD 4001 Contact Address: Queensland Horticulture Institute PO Box 501 APPLETHORPE QLD 4378	
Name and position of contact person		Chris Adriaansen, Program Leader (Deciduous)	
Telephone	(076) 811 255	Facsimile	(076) 811 769

6. Product, chemical, substance or organism

Clearly indicate the active constituents and/or products to be included in the permit.
For unregistered products include the entire formulation of the product.

Actives constituents, including concentration.

Product name, including formulation type.
(Name includes trade name or experimental code if applicable.)

400 g/L dimethoate

Any registered product containing 400 g/L dimethoate as the only active constituent

7. Is the product or active constituent subject to an additional standard or requirement (apart from those of the NRA)?

YES (Provide details below)

NO

Standard or requirement (e.g. GMO, imported biological, antibiotic, etc.):

Not Applicable

8. Is the product or active constituent being imported?

YES (Provide details below)

NO

Quantity being imported:

Port or location entering Australia:

Not Applicable

9. Justification for Proposed Use or Trial.

Off-Label: Give a brief statement justifying the need for a permit. If a product is currently registered for the use outline the advantages of using the proposed product.

Trial: Give a brief statement justifying the scale of the trial. Include the reason for renewing a trial permit, if this is the case.

Over the past few years several instances were recorded of dimethoate residues in peaches exceeding the maximum residue limit (MRL) of 2mg/kg (fruit). Post-harvest dipping with dimethoate is a requirement of entry for all stonefruit produced in areas infested with fruit fly into markets which are "fruit fly sensitive". Current registered label directions for the post-harvest use of dimethoate on stone fruit (including peaches) is for a one minute immersion of fruit in a 400 mg/L emulsion. This level controls Queensland fruit fly in all stone fruit.

In order to ensure that the residues of dimethoate in stone fruit (especially peaches) comply with the requirements of the Food Standards Code, it became necessary to review current Good Agricultural Practice in relation to this use. Following applications submitted to NRA in August 1997, an original off-label permit was issued for the use of a 200 mg/L emulsion for treatment of all stonefruit, with fruit to be dipped or immersed for one minute. Further to this was an increase in the MRL for peaches from 2 mg/kg to 3 mg/kg. Additional permit conditions were also notified, being the requirement for all peaches to be defuzzed prior to treatment and that postharvest treatment with dimethoate could not be used if stonefruit had been subjected to preharvest dimethoate applications.

Approaches were made to the NRA with particular reference to the defuzzing requirement, indicating that this was not a commercially applicable practice. The NRA subsequently modified the off-label permit, removing the defuzzing the requirement and also raising the MRL for peaches to a temporary level of 5 mg/kg. This modified permit (PER 1068) was issued on the understanding that the QDPI carry out full scale residue analysis trials on peaches dipped in dimethoate at 200 mg/L in order to establish a more substantive MRL for peaches and address the issue of defuzzing of peaches.

The data submitted as part of this application supports the following alterations to Good Agricultural Practice as defined by the current permit (PER1068):

1. Use of dimethoate for pre-harvest treatment of stonefruit (including peaches) followed by postharvest dipping with a 200 mg/L solution of dimethoate
2. Use of dimethoate as a postharvest dip at 200 mg/L (as opposed to 400 mg/L) irrespective of the preharvest use of dimethoate
3. Flood sprays using the same concentration of dimethoate as the dip (200 mg/L) can be used as an alternative to dipping for control of Queensland fruit fly in stonefruit (including peaches)
4. The current temporary MRL of 5 mg/kg for peaches can be reduced to 3 mg/kg and approved as a full MRL on the basis of the residue studies submitted. It is not desired to change the MRL for other stonefruit from 2 mg/L
5. That there is no need to remove the superficial hair on peaches (defuzz) before dipping/flood spraying as fuzz does not affect residue levels

10. Use or trial details			
Crop/animal/situation	Pest/purpose	Rate/dose	Critical comments, method of application
Stonefruit (including fruit treated pre-harvest with dimethoate in accordance with registered labels) Peaches may be fuzzed or defuzzed	Queensland Fruit Fly	Dip or Flood Spray with a concentration of 200 mg/L	Immerse fruit in dip for 1 minute or flood spray for 12 seconds at 32 L/min/m ² . Ensure that fruit remains wet for 1 minute
	Papaya Fruit Fly	Dip with a concentration of 200 mg/L	Immerse fruit in dip for 1 minute. Ensure that fruit remains wet for 1 minute

Special precautions for safety to target crop/animal

Not Applicable. Products already approved at a higher rate.

Maximum number of applications and proposed withholding period (WHP)

Maximum number of applications: *Once only application*

Period (WHP) between last application and harvest, grazing, etc.: *Not applicable - Post-harvest*

11. Starting and finishing dates of use or trial

Proposed first date of use: *Proposed for use in the 1999 season*

Anticipated last date of use (if applicable): *Not Applicable*

12. Area or quantity of crop, commodity or number of animals to be treated

Permit is intended to apply to all peaches produced in Queensland and destined for interstate markets which are 'fruit fly sensitive'.

13. States and locations

Clearly indicate the State and the specific location within each State in which use is proposed.

- All states
 ACT NSW NT QLD
 SA VIC TAS WA

Specific locations:

Not applicable

14. Details of persons to be covered by the permit

Include the details of all potential persons, whether for use or trial.

Estimated number of persons applying or administering the product:

Complete one of the following:

Names and addresses of persons are given below. (If insufficient space, include an attachment.)

OR -----

Not yet finalised. Specify reason.

OR -----

Too many persons to identify individually. If applicable, specify the collective persons (e.g. 'persons generally', 'pest control officers only', etc.)

Farmers producing peaches in Queensland for marketing interstate.

Persons who hold an animal research licence for the purpose of conducting a trial (veterinary chemicals only).

Not Applicable

Identify the Animal Care and Ethics Committee that will be supervising the persons conducting the research.

Not Applicable

15. Person supplying unregistered product (if applicable). If the same as applicant, write 'applicant'.

Not Applicable

16. Labelling and packaging of the product (if applicable)

- Two copies of the draft proposed label (for a product not currently registered) or an information leaflet (if product is registered) are attached

Not Applicable

- I certify that the containers for the product comply with section 18(1) of the *Agricultural and Veterinary Chemicals Code Regulations*

17. Food residues and fate of produce

Please mark the appropriate boxes.

- Situation is 'non-food' producing.

OR -----

- Food producing.
However, produce is disposed in a manner that will **NOT** result in consumption by humans or animals. Please specify method of disposal.

OR -----

- Food producing.
Produce **WILL** be supplied or otherwise made available for consumption by humans or animals.

NOTE: DATA TO SUPPORT A NEW FULL MRL OF 3mg/kg FOR THIS USE HAS BEEN SUBMITTED

Complete the following by indicating where applicable:

- Current** maximum residue limit (MRL) will not be exceeded when the product is used as proposed.
Specify the current MRL for the commodities involved and include data or evidence to show non-violation of the MRLs. (Attach if insufficient space.)

OR -----

- A **temporary** MRL is proposed for the commodities involved.
Residue data is attached to support its establishment.
Specify the proposed MRL and expiry date.

OR -----

- The proposed use will not result in any detectable or quantifiable residues. Please detail.

Indicate if produce is being exported

- YES (Provide details below) NO

Countries and appropriate residue limits:

18. The NRA in considering an application for a permit, must evaluate the permit against criteria set out in the Agvet Codes. The NRA issues a permit if it is satisfied that by issuing the permit the use would:

- not be an undue hazard to users of the products;
- not be likely to have an unintended direct or indirect effect that is harmful to humans;
- not be likely to have an unintended effect that is harmful to animals, plants or to the environment;
- not unduly prejudice trade; and
- be effective for the intended purpose (*off-label permits only*).

Please indicate, by marking the appropriate box, whether any evidence, data or argument has been submitted with the application to support the proposed uses with regard to:

- efficacy
- chemistry and formulation details *Not Applicable*
- crop or animal safety
- human and occupational health *Not Applicable*
- environmental safety *Not Applicable*
- trade implications *Not Applicable*
- residues

19. I declare that the information contained in this application and accompanying documentation is complete and true to the best of my knowledge.

Printed name: Chris Adriaansen Position: Program Leader, Queensland Horticulture Institute,
Department of Primary Industries

Signature: _____ Date: 17th July, 1998

NOTE: If there is insufficient space for any item, please attach additional information with your name/company name at the top of each page. Any supporting documentation should have your name/company name on the front page in case it becomes separated from the application.