A report prepared for

Vegetable

G Walker, N Berry, T Heppenstall & L Cheetham

31 March 2000

Bests in brassicas—For period ending

TBC Project: Sustainable control of insect
Progress by Objectives

Summary

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Budget

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Objectives 1: Refinement of thresholds

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Objectives 3: Development of rotation strategy

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crop scouting

2.4

Objectives 5: Demonstration sites

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Objectives 6: Monitoring insecticide resistance in diamondback moth

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other three regions and resistance assays are beginning. However, it is unknown if these results are consistent with the
number of attempts. More data collection from California could not be
in good condition. Additional data collection efforts are needed, and
assays. Indications are that the resistance is about 100-fold. Despite a
reduction in use of broad spectrum insecticides there has been a marked
increase in control failure after applying a synthetic pyrethroid insecticide.

In the FPM demonstration sites it has been notable that due to the
window from the beginning because they lift the region.
Training of scouts has continued. One scout team in each district
were the insulated.

Two new scouting tactics for next season have been
selected and are working as fast as possible to register one or two new
location strategies. The regional agricultural companies have been
success for use against large pests in the last window period of the
crop. They have completed that these is no selective advantage to
targeted surveys for determining the new pest weekly. The registered
percentage of premium cauliflower heads compared with broccoli
are the six objectives are outlined below.

The key infected part of vegetable brassicas, and integrates this approach with
the control of other pests.

This is the sixth report on the Project "IPM in Brassicas". The project focuses on
developing sustainable control measures for cruciferous plants (Brassica sp.)

Summary
Threshold for broccoli
demonstrating that treatment is likely to be the optimum action

This season’s results are consistent with the previous year’s.

(percentage)
insoluble sugars (two sprays compared with five sprays (calendar
acceptable broccoli heads (95%) and resulted in significant
earlier leaves only) protected the crop (70%) and the highest % of

- Treatment 3 (seedling 2+ seedling 3) (90%) 6-8 true leaf to first initiation (20%)
- Preliminary results (not statistically analyzed) for broccoli indicated

have been collected and are currently being analyzed.
The data between broccoli and cauliflower
between broccoli and cauliflower were planted in a split plot design to ensure


spraying plots by treatment

4. Refeeded Threshold 2: Seedling (50%), 6-8 true leaf to first initiation (no

- “heat leaves” only) protect the crop (10%)

3. Refeeded Threshold 1: Seedling (30%), 6-8 true leaf to first initiation (20%)

2. Calendar (insoluble application every 10 days)

1. Control (no insoluble application)

Cauliflower:

% spray, protect the crop (10%)

4. Refeeded Threshold 2: Seedling (50%), 6-8 true leaf to first initiation (no

- “heat leaves” only) protect the crop (10%)

3. Refeeded Threshold 1: Seedling (30%), 6-8 true leaf to first initiation (20%)

2. Calendar (insoluble application every 10 days)

1. Control (no insoluble application)

Broccoli:

as follows:

therefore; treated this season. Treatments for the second year that were
the same and been grown by some growers and consultants and were,

Post assumptions that broccoli and cauliflower thresholds should be

crops as well as those previously developed for cabbage.

These new. Prowan action thresholds developed for broccoli
training sessions (peach) 4) schools and growers are learning to use
in the current IPM manual and used in this year’s soil

The results from the refinement of thresholds fall from year 1 have been

Objective 1: Refinement of thresholds

Progress by objectives
Objective 3: Development of Rotation Strategy

- Overwintering and dispersal strategies are continuing in all three regions.
- Dispersal is about 30 km per year from the original establishment site.
- The region shows that the pathologist has dispersed another 10 km from its
- Previous collection of broodcolloid phase was persisted by the new pathologist
- West of Hamilton. No pathologist was recovered from the other overwintering
- Regions. Collection made in late January at one of the overwintering sites in south
- Bay, a single specimen of C. nebulosa was recovered from
- The pathologist was not recovered from four separate large collections
- Suggests that it has not spread very far through the district.
- Surveys in neighboring bassica
- The east coast of the North Island. Surveys in neighboring bassica
- Region show. This is the first establishment record for this pathologist on
- Hawkes’ Bay. C. nebulosa has persisted at the lawn and crop A Food
- Region. In Hawkes’ Bay, no overwintering recoveries were made from three separate
- Summer surveys have continued in all three regions (Gisborne, Hawkes’

Objective 2: Spread of the white butterfly pathologist

- Action thresholds will be incorporated into the IPM manual.
- Exceptional results will be statistically analyzed and any recommendations to the
- broodcolloid (65% premix, 10% acceptable) with 81% (27% premix, 54% acceptable) compared with 99% for
- For example, the % of acceptable cauliflower heads from heading 3
- Any treatment was not the same between broodcolloid and cauliflower. Preliminary results also indicate that the % of acceptable heads for
Objective 2.5: Demonstration sites

Research is required on the presence of pests, diseases, and weeds in commercial farms to provide recommendations for growers. Further, the identification of pests and diseases is essential to control their spread and minimize crop damage. The programme aims to train farmers in the identification and control of pests, diseases, and weeds to improve crop yields and farm profitability.

Monitoring and the crop health improvement significantly improve crop yields.

Training of scouts and growers in scouting techniques is essential for efficient pest and disease control. The programme helps scouts in identifying pests and diseases in crops and training farmers in scouting techniques to monitor crop health effectively.

Objective 2.4: Training crop managers in insect and disease management

Success (phased)

Insecticides, resistance pressure may be placed on the new chemical insecticides, hence the need for careful use in the following season. Without the addition of a new insecticide, resistance pressure may be placed on the new chemical. The programme aims to provide assistance and guidance to farmers on the selection and use of insecticides to control pests and diseases effectively.

The identification of pests, diseases, and weeds in commercial farms is critical to improving crop yields and farm profitability. The programme provides training and guidance to scouts and growers on the use of insecticides and disease management practices.

The objective is to identify recommendations that growers switch from Dik products to other environmentally-sound, selective insecticides and disease management practices.
Objective 6: Monitoring Insecticide Resistance in Diamondback Moth

Monitoring and record when the crop is being sprayed.

1.10-fold. A resistance assay testing 10x the needs to be repeated.

Resistance assay testing higher levels of resistance (about 10-fold). Initial results indicate higher levels of resistance to DBM from Hawke's Bay, with confirmed SP resistance in this population of DBM from Hawke’s Bay. The use of a new, more effective, and more selective spray, "Pherocon-X", has been successful.

In Hawke's Bay, one grower suspected high levels of resistance with a new product used at a lower rate. This prompted additional testing.

In central and northern regions, collections from Canterbury and Waikato have not yet been collected. The moth has been collected from four new regions.

Establishing laboratory colonies from the field has provided difficulties.

The reference culture of diamondback moth has been maintained and increased in size.

Diamondback moth

Objective 6: Monitoring Insecticide Resistance in

Describe the "how-on" effects of changing to new products.

This is a very positive development and illustrates the need for more education and awareness of the problems. From the recent activity by growers and the recent decline in the use of non-selective sprays, many more growers are now aware of the reduction in the use of non-selective sprays. However, this is not enough to prevent the spread of new products. The need for careful monitoring and efficient "switching" is still evident.
2. Crop loss due to implementation of IPM (opposite 2):

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>3,000.00</td>
<td></td>
</tr>
<tr>
<td>7,000.00</td>
<td></td>
</tr>
<tr>
<td>3,000.00</td>
<td></td>
</tr>
<tr>
<td>5,600.00</td>
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</tr>
<tr>
<td>2. Crop loss due to unspayed crops (pesticide release sites)</td>
<td></td>
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</table>

Summary of in-kind contributions from:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (GST exclusive)</td>
<td>$22,900.00</td>
</tr>
<tr>
<td>Crop loss (pesticide overwintering sites)</td>
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</tr>
<tr>
<td>148 hrs @ 50.00 =</td>
<td>$7,400.00</td>
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</table>

2) In-kind contributions:

<table>
<thead>
<tr>
<th>Item</th>
<th>Hours charged</th>
<th>Rate</th>
<th>Total (GST exclusive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td></td>
<td></td>
<td>$5,907.00</td>
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<tr>
<td>Wages</td>
<td></td>
<td></td>
<td>$2,474.00</td>
</tr>
<tr>
<td>T. Hermann</td>
<td>$2.95/hr</td>
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<td>$2.95</td>
</tr>
<tr>
<td>N. Berry</td>
<td>$4.97/hr</td>
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<td>$4.97</td>
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<tr>
<td>G. Walker</td>
<td>$1.95/hr</td>
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<td>$1.95</td>
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<tr>
<td>P. H. Cheek</td>
<td>$1.95/hr</td>
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<td>$1.95</td>
</tr>
<tr>
<td>G. R. Steele</td>
<td>$2.00/hr</td>
<td></td>
<td>$2.00</td>
</tr>
<tr>
<td>Item</td>
<td>Hours charged</td>
<td>Rate</td>
<td>Total (GST exclusive)</td>
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<tr>
<td>Full Cost</td>
<td></td>
<td></td>
<td>$10,907.00</td>
</tr>
</tbody>
</table>

The figures below are the actual hours and costs rounded (GST exclusive).

The figures below are the actual hours and costs rounded (GST exclusive).
Phone calls and visits, overwintering surveys (2) 2 hours Cham Long

Mike Parker
10 mins
14 January
(NB)

Peter Arnes
15 mins
14 January
(NB)

Colin Young
15 mins
13 January
(NB)

Michelle Carter
45 mins
12 January
(NB)

Sue visit, training (4)
(NB)

Michelle Carter
10 mins
12 January
(NB)

Dene
(NB)

Aleanna Greece
10 mins
10 January
(NB)

Peter Arnes
30 mins
6 January
(NB)

Colin Young
20 mins
5 January
(NB)

In-kind contributions: January 2000

In-kind contributions (excluding crop losses)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone calls, demonstration crop (5)</td>
<td>$20 900.00</td>
</tr>
<tr>
<td>Phone calls, demonstration crop (5)</td>
<td>$7 400.00</td>
</tr>
</tbody>
</table>

TOTAL: 14 hrs @ $50 = $700.00

Phone calls, demonstration, and organizing demonstration sites.
Updating the collection strategy: organizing overwintering surveys for the white
Grass, phone calls, and meetings, scout training and discussions.
Robert Joe
1 hr
30 mins

David Edwards
1 hr
1 hr

Linda Hughes
1 hr

Tony Klichak
1 hr

Scott Lawson
PM demo site, pasture (2.4) 1 hour
26-29 January

H Bay scouts
30 mins

Scott Lawson
10 mins

Robert Joe
20 mins

Parasite (2.4.5)
Phone call, field surveys, meeting scouts in H Bay, training and demo sites.
26 January

Colin Young
10 mins

Peter Aarts
20 mins

(CW)

Phone call, fax reply (4.5)
25 January

Charm Leong
15 mins

(DW)

Phone call, Brassica diseases
21 January

Howe Young

Gavin Stevenson

John van Leeuwen

10 mins
From Call

(DW)

Phone calls, vegetable funding

(ND)

10 mins
Colin Young

(DW)

Phone call, demonstration crop (5)
20 January

Alaina Grace-Date

Jason Dark

Colin Young

2 hours
Peter Aarts

1 hour
Tim Sam

(ND)

(TMEETING (4)

(GW)
Phone call, collecting DBM, parasite survey (2'6) 10 mins Mike Amend
8 March

1.5 hours Colin Young
Peter Aarts

Meeting, set up demonstration crop (4'5) 2 hours
7 March
In-kind contributions, March 2000

Anne Raulich 15 mins
Phone call, consultants day, field day
28 February

Peter Aarts 10 mins
Phone calls, demonstration crop (4'5)
25 February

Linda Haughey
David Edwards
Robert Joe
Tony Kuhlenschmidt

Meeting, H. Day, Disease IPM Seminar 3.5 hrs
22 February

Colin Young 10 mins
Phone calls, demonstration crop (4'5)
16 February

Mike Amend 2 hours
Phone calls, parasite, DBM collections from Giobome (2'6)
4 February

Peter Aarts 15 mins
Phone calls, demonstration crop (5)
1 February
In-kind contributions, February 2000
Peter Aarts
10 mins
Phone calls, demonstration crop (5)
22 March

(NB)

Colin Young
20 mins
Meeting at demonstration crop (4.5)
21 March

1 hr
2 S. lady reps.
Ian Gold, Du Pont
30 mins
Scott Lawson
30 mins
Tony Kukitchen
30 mins
Robert Joe

(GW, TH)

Meeting in Hawke's Bay (2.3.4.5.6)
20.22 March

(NB)

John van Lelient
10 mins
DBM collection (6)

(NB)

Colin Young
10 mins
Phone calls, demonstration crop (5)
20 March

(NB)

Peter Aarts
10 mins
Phone calls, demonstration crop (5)
17 March

(GW)

Robert Joe
15 mins
Phone calls, training, DBM resistance (4.5.6)
15 March

(NB)

Colin Young
10 mins
Phone calls, demonstration crop (5)
9 March

(NB)

Peter Aarts
10 mins
Phone calls, demonstration crop (5)
Total: 10.4 Hrs @ $50 = $5200

occasion: all Hawke Bay, 4 scouts x 1 hr x 13 occasions
Gower/Scout training scouting time in Pukerake, 4 scouts x 1 hr x 13
Total: 44 hrs @ $50 = $2200

David Buckey (GW, TH)
Meeting with Leederhand, Gisborne (12.3/4.5.6) 1 hr
Mike Arnold
24 March