

# **National banana bunchy top virus management - phase 1**

Jim Pekin  
Australian Banana Growers Council Inc

Project Number: BA08020

## **BA08020**

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**National Banana Bunchy Top Virus  
Management Project  
Phase 1**

**Project Number: BA08020**

**Final Report**

**to**

**Horticulture Australia Limited**

**30 May 2012**

**by**

**David Peasley, Peasley Horticultural Services**

**Prepared for**



HAL Project No. BA08020

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**Purpose of the report:**

This report presents the results of the first three years of the National Banana Bunchy Top Project (Phase 1) which is aimed at protecting and reducing disease levels in commercial plantations. It comprises three projects, the original project BA08020

Funding was provided by Horticulture Australia Limited, via banana industry levy funds.

30 May 2012

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## Abbreviations

ABGC	-	Australian Banana Growers Council
BBTV	-	Banana Bunchy Top Virus
BGF	-	Banana Growers Federation
CRC	-	Cooperative Research Centre
DAFF-Q	-	Department of Agriculture, Fisheries and Forestry, Queensland
HAL	-	Horticulture Australia Limited
HRDC	-	Horticultural Research and Development Corporation
NSW DPI	-	New South Wales Department of Primary Industry
QAAFI	-	Queensland Alliance for Agriculture and Food Innovation, University Of Queensland
UQ	-	University of Queensland

## Acknowledgements

The skills, dedication and professionalism of the Bunchy Top inspectors – Joshua Chapman, Grant East, Tom Maher, Wayne Shoobridge, Samantha Stringer and Barry Sullivan have enabled the project to achieve major successes in this first Phase of the project.

Neville Sloss, ABGC Communications Consultant has provided invaluable input and support to the project to help achieve awareness and cooperation from growers and the public.

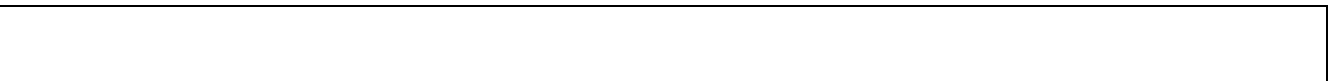
Dr John Thomas, Virologist, QAAFI, has actively supported the project team conducting field research into latency and provided technical guidance to the project.

Dr Ian Muirhead, Consultant Pathologist, conducted a thorough review of the project and provided valuable advice on the current program and the future direction.

Jenny Margetts, p2p Solutions Pty Ltd, prepared a thorough and timely external review of the management aspects of the financial and administrative aspects of the project providing recommendations on where improvements needed to be made.

New ABGC CEO Jim Pekin, the ABGC Board, Industry Advisory Committee and the Plant Health Subcommittee are to be commended for their foresight and courage in supporting this project.

Finally, thanks to the banana growers and the general public who have supported the project and to the local government and State agencies that have provided access to mapping and other information to assist in management decision making.



## Media Summary

The Australian banana industry has embarked on an ambitious program to rid Australia of the worst virus disease of bananas worldwide – Bunchy Top.

As the industry approaches the century of its costly fight against the disease which was introduced from Fiji in 1913 in infected planting material, a new science-based strategy, new surveillance and data recording technology and extra financial resources are giving the program every chance of success.

Bunchy Top could devastate the major production area in far north Queensland within ten years if it spread from its present infection zone in southeast Queensland and the far north coast of New South Wales where it has been confined for almost a century. Only by strict controls over the movement of planting material and eradication of minor outbreaks as far north as Innisfail, has the disease been kept under control.

To appreciate the value of preventing the spread of Bunchy Top to the major production area where over 90% of Australia's bananas are produced, a cost benefit analysis was conducted in 2012 by University of Western Australia Senior Economist Dr David Cook. His analysis calculated that the Australian industry could spend up to \$27 million annually to exclude Bunchy Top and this would still be a good investment.

The first three year phase of the ten year program ends in mid 2012 with some impressive gains in reducing the number of infections in commercial plantations particularly in New South Wales. The gains are a direct result of more frequent inspections targeting 'high risk' plantations every 4 weeks while maintaining regular inspections on every plantation within the infection zone.

State borders are no longer a barrier to the project team as the six specialist inspectors employed by the project are authorised to operate in both New South Wales and Queensland as the need arises.

Cooperation from the general public, particularly in the heavily populated areas of southeast Queensland is vital if the project is to achieve its goals. A detailed communication and public awareness plan is being developed as Phase 2 and 3 target the enormous task of finding and destroying infected plants in southeast Queensland.

## Technical Summary

Bunchy Top disease, caused by the Banana Bunchy Top Virus (BBTV) has the potential to destroy Australia's banana industry as it almost did in the 1920's and 1930's after it was introduced in infected planting material from Fiji in 1913. Fortunately Bunchy Top has been contained to well defined areas of northern New South Wales and southeast Queensland by strict controls on the movement of planting material.

While the Bunchy Top zone is well outside Far North Queensland where over 90% of Australia's bananas are produced there are significant economic benefits to be gained by excluding Bunchy Top from this major production area. An economic study by Dr David Cook, (March 2012) and others found that the value of production that could be saved by excluding Bunchy Top is calculated to be in the range of \$17.9 - 27 million annually.

The Australian Banana Industry, with funding from the national compulsory levy, now has the resources to further reduce the areas affected by Bunchy Top and eventually eliminate Bunchy Top from commercial plantations in Australia. The strategy and framework for the control and ultimate eradication of BBTV developed by Dr John Thomas (Virologist) and Dr Ian Muirhead (Consultant Plant Pathologist), involves intensive surveillance and destruction of infected plants within commercial plantations and eliminating infection from outside surrounding buffer zones. High definition remote imagery is now available to greatly enhance the surveillance efficiency in highly populated residential areas and bushland within the Bunchy Top zone.

There are now fewer plantations remaining in the Bunchy Top zone and these are further apart, providing a favourable environment for containing and eradicating this serious disease which is spread by a sole vector, the banana aphid (*Pentalonia nigronervosa*) and in planting material.

In northern New South Wales where there are 216 plantations totalling 807 hectares within the Bunchy Top zone, the strategy of trained professional disease detectors inspecting each plantation according to its history of BBTV and destroying plants and aphids by injection, has seen impressive gains.

Under this system, every plantation has been categorised into one of five risk categories, from A (no history of BBTV) to E (more than 10 infected plants in the previous 12 months). High risk plantations (Category D and E) are inspected every 4 weeks during the growing season and low risk areas still receive regular inspections.

The established system of contracted specialist inspectors has seen a reduction of 47.6% in the number of infected plantations in the high risk categories since reliable benchmark infection data was established in April 2010. Over this two year period to April 2012 the number of plantations in the high risk categories D and E fell from 42 to 22, a decrease of 47.6% and the number of clean plantations (Categories A and B) has increased from 128 to 143, an 11.7% increase.

Of particular significance is the low number of 'hot spot' plantations, now only 4 contributing to 63.3% of the NSW State total infections. Three heavily infected 'hot spot' plantations have been destroyed to reduce the risk to surrounding plantations.



In October 2010 this inspection strategy was introduced to southeast Queensland and the program now has a national focus with specialist inspectors from New South Wales now authorised to undertake inspections in strategic and commercial areas to assist the two Queensland inspectors appointed under the project.

New technologies are now available to greatly enhance the efficiency of surveillance particularly in urban, rural residential and feral situations. An inspector with specialist skills in mapping and remote sensing has been appointed to develop this technology as a management tool and to develop data recording units, software and a central data base to provide accurate information for decision making.

Improved methods of destroying infected plants and minimising spread of infected aphids have been developed in trials conducted in conjunction with New South Wales DPI. Injection of Glyphosate to kill the plant and Imidocloprid systemic insecticide to kill the aphid vector, applied as separate injections have greatly contributed to the reduction of BBTv within plantations and in urban backyards where there is sensitivity to the use of sprays. Outdated destruction methods involving cutting off the plant and spraying with kerosene or diesel are now being phased out in southeast Queensland and a common destruction method adopted nationally.

Establishing the geographic boundaries of Bunchy Top infection has been a major focus of this first phase of the project. Two infections outside the BBTv zone were detected in 2010/11 and all plants destroyed. One in New South Wales, northeast of Lismore required the destruction of 25,000 plants by the project team to prevent spread into the 'clean' zone. The other, in a backyard at Cooroy in southeast Queensland just north of the previous known infection at Yandina, north of Nambour was also destroyed.

While progress in reducing Bunchy Top in commercial plantations is proceeding well, the backyard and non-commercial situation is providing a major challenge to the ultimate goal of eradication, particularly in southeast Queensland. With over 800,000 backyards and a decline in regulatory support over the past decade, the non-commercial sector will require a major communication and education campaign strategy; the use of high definition remote sensing surveillance technology, increased regulatory activity and resources. These have been factored into Phase 2 of the project due to commence August 2012.

Cooperation between the project team and state government regulatory agencies is critical to the success of the project. The inclusion of Biosecurity managers from Queensland and New South Wales government regulatory agencies as members of the project management committee will assist in achieving this goal.

## Introduction

Banana Bunchy Top is considered to be the most important virus disease of banana worldwide, and continues to increase in geographic distribution. “Bunchy Top” was introduced into Australia from Fiji in 1913 in infected planting material and in the 1920’s and 30’s threatened the very existence of the Australian banana industry, and has only been managed through an intensive and strict control program. The disease is caused by the Banana Bunchy Top Virus (BBTV) and is transmitted by the banana aphid (*Pentalonia nigronervosa*) and in infected planting material, including micropropagated plants. Its distribution is restricted to southeast Queensland, from just north of Nambour on the Sunshine Coast to Byron Bay in northeast New South Wales.

The pioneering work of Australia’s Dr Magee into the causes of Bunchy Top in the 1920’s provided some of the most significant findings in early plant virology worldwide (Magee 1927). In the space of three years, he established that the causal agent was a virus transmitted by the banana aphid and in infected planting material. He also proposed management strategies that allowed the rehabilitation of the industry which still form the basis of Australia’s control programs today.

Different approaches to controlling Bunchy Top have been adopted in New South Wales and Queensland over the years. In New South Wales specialist detectors were employed from grower levy funds to find and destroy infected plants in all plantations in the Bunchy Top affected area. In Queensland it has been the growers’ responsibility to find and destroy infected plants. In both states, the state regulatory authorities provide regulatory support under the relevant Acts and Regulations.

Until 2007 disease control programs were managed by the Banana Industry Protection Board in Queensland and the Banana Industry Committee in New South Wales. These bodies, comprising industry representatives, scientists and regulatory staff provided the resources, technical direction and leadership for the disease control programs in each state. When they were disbanded Bunchy Top was no longer under active management.

A previous 5 year project funded by HRDC (HAL) from 1993-1998 (FR 626 and FR 06026), and the banana industry reduced Bunchy Top infection levels to the lowest in 60 years, however it failed to achieve eradication due to the withdrawal of further funding and downgrading of regulatory support in New South Wales and Queensland. As a result a resurgence of Bunchy Top has occurred particularly in southeast Queensland.

Following the end of the HRDC project in 1998 the level of infrastructure and expertise involved with Bunchy Top control declined to the extent that it was unlikely that the current level of control could be maintained. A similar situation has occurred historically. Eastwood (1946) and Magee (1936) noted that after the initial successes in the control of Bunchy Top in the late 1920s, infection levels again rose significantly in the early 1930s. A more complacent attitude had taken hold, combined with a period of overproduction, low prices, increased neglect of plantations and insufficient inspectors to oversee the scheme. These problems were addressed and inspectors employed through the BGF to

assist growers in Bunchy Top control, and management of the disease has remained effective until recent times in New South Wales.

Eradication of Bunchy Top from districts has been successful in the past. Separate eradications from Innisfail in north Queensland, Yarrahappini and Mororo districts of New South Wales, and recently the Richmond district of New South Wales.

This current project was proposed following the introduction of compulsory levies in 2007/08. It was based on the framework and strategies proposed by Dr Ian Muirhead and Dr John Thomas. The Muirhead report (2008) recommended that there was now a strong incentive to attempt another eradication program because of recent developments including –

1. There is now an opportunity to fund the program at an appropriate level.
2. New technologies provide an opportunity for more effective surveillance.
3. The number of banana plantations in northern New South Wales had declined over the last decade which meant that many of the remaining blocks are separated by greater distances and have a greater chance of remaining disease free.
4. Industry and regulatory agencies have an enhanced capability to conduct a successful eradication campaign. Eradication of Black Sigatoka and the Papaya Fruit Fly in north Queensland are recent examples which have not been achieved anywhere else in the world.

The report listed the following critical characteristics of BBTV which favoured the chances for eradication –

- BBTV attacks no other hosts except banana and its close relatives – plantain, enset and abaca.
- There are specific and limited methods of spread.
- There is a significant period after infection when the plant is not infective but symptoms are evident (the time that it takes for 3 leaves to emerge).
- An infected plant, once killed and dehydrated cannot act as a source of further infection.

The strategy for control and eradication of Bunchy Top recommended by Dr John Thomas in his review (May 2009) recommended that the major factors in successful control were –

- **Frequent infections** – preferably at the interval before 4 new leaves are produced (ideally at 2 new leaves).
- **Eradication of nearby external sources of infection** including intensive surveillance within 100-200 metres of infected plantings.

Under current levels of containment, Bunchy Top disease costs around \$800,000 annually in direct inspection, eradication costs, virus indexing and the provision of clean planting material.

Preventing spread to the major production areas in far north Queensland is a high priority. If an uncontrolled incursion occurred in north Queensland production losses of 90% could result over a period of 10 years. An independent economic analysis by Dr David Cook (et al) (2012), University of Western Australia and the CRC for National Plant Biosecurity, calculated the value of production that could be saved by excluding Bunchy Top from the major production area ranged from \$17.9 to \$27 million annually.

Phase 1 of the proposed 10 year time frame to eradicate Bunchy Top from Australia involves containing the spread of Bunchy Top and reducing its incidence within the known existing area of distribution.

Phase 2 commencing in August 2012 has an ambitious target of eradicating Bunchy Top from all commercial plantations by mid 2015. If that target can be achieved eradication of Bunchy Top from Australia will be considered achievable within the final 4 years of the project (Phase 3).

## Materials & Methods

Strategies for the control and eradication of BBTV for this project were proposed by Dr John Thomas (May 2009) in his review of the scientific basis for the current detection and eradication procedures used in New South Wales and Queensland.

Key findings of the review have shaped the current strategy. These include –

1. The average distance of spread by aphids is 15.2 metres.
2. About 66% of new infections occur within 20 metres of the nearest source of infection, and 99% occur within 86 metres (Allen 1987).
3. The average time between infection of a plant and spread by aphids from this plant was equivalent to the time taken for 3.7 leaves to emerge.
4. With a constant source of external infection from smallholder plantings (e.g., backyards), the incidence of Bunchy Top in commercial plantations could not be prevented, even with weekly inspection and eradication cycles.
5. Rogueing of plants within a 5 or 10 metre radius of an infected plant (a bullring) would not be required if inspections occur at interval required to produce 4 new leaves.
6. Separations of 100 metres or greater from the source of infection significantly limits recurring infection from outside the plantation.
7. Regular and efficient inspection cycles are the predominantly important factor in Bunchy Top control.
8. Bunchy Top symptoms are difficult to detect in the 1 – 2 leaf stage. Preventing spread from an infected plant will be achieved if Bunchy Top is detected and plants destroyed at this stage. Specialist detectors are trained to detect BBTV at this early stage.
9. Injections to kill the plant and prevent aphid spread should be further investigated.

From these findings modifications were introduced to improve the efficiency of the existing system for this project, notably –

- Abolishing ‘bullringing’ as this practise removes many healthy plants and creates gaps within the plantation, making management operations difficult. It is unpopular with growers and research shows that Bunchy Top can be reduced effectively by increasing the inspection frequency.
- Injection of Glyphosate herbicide and a systemic insecticide as separate injections will effectively kill banana plants and aphids without the disturbance created by the old ‘cut up and kero’ method of destruction.  
Trials were initiated to develop more effective and safer replacement for Dimethoate systemic insecticide.

- Inspections of buffer areas surrounding each commercial plantation for at least 100 metres. In high risk and strategically located areas buffer zones will be increased to 1-2km radius.
- Maintaining effective and visible decontamination of vehicles and equipment to prevent the spread of diseases, particularly Panama disease.

### ***Communication***

Gaining cooperation from growers, local authorities and the general public was identified as being essential to the success of the project and eradication of Bunchy Top will not be achieved in such a highly populated region without an effective and sustained communication strategy. A range of initiatives were planned including targeted local press, TV, radio, garden expos, weekend markets, nurseries, local councils, the Brisbane Ekka, grower meetings, leaflets for backyarders, industry newsletters, a Bunchy Top site located within the ABGC website and a Bunchy Top hotline for reporting of suspicious plants.

The Subtropical Communications Officer, Neville Sloss was identified as the major resource for these initiatives.

### ***New Technologies***

A range of new technologies, never before available for previous eradications programs have now emerged and are being evaluated as management tools to greatly improve the efficiency of surveillance and data collection. These include infrared spectral reflectance imagery, personal data assistance (PDA) units, digital signature identification of banana plants from high definition remote imagery, access to cadastral data bases from local councils and government agencies, etc.

With over 800,000 backyards in southeast Queensland, rural subdivisions and bushland, this technology will be essential in identifying banana plants remotely to expedite ground survey work.

## Results

The major success in the first phase of the project has been the reduction in Bunchy Top detections in New South Wales.

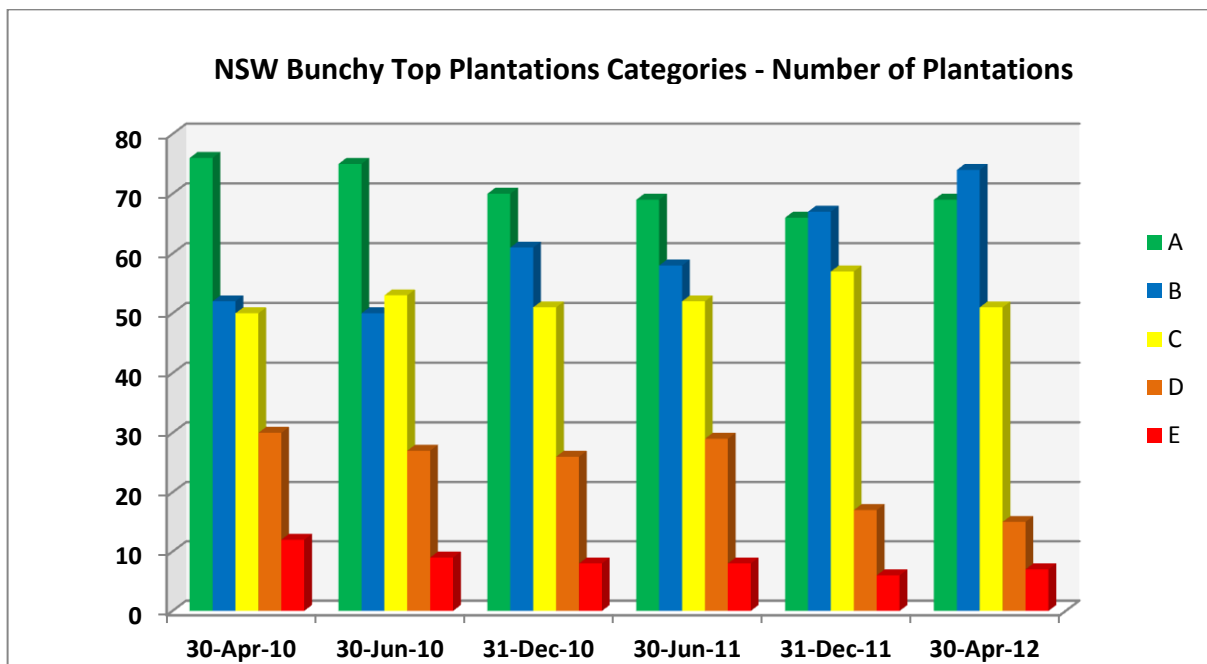
In New South Wales, each plantation within the Bunchy Top zone is assigned a category from A to E based on the past history of Bunchy Top and infection frequency assigned accordingly -

- A** No Bunchy Top ever recorded – disease free
- B** No Bunchy Top for the last 2 years – provisionally free
- C** No more than 1 Bunchy Top in the previous 12 months
- D** 1 to 10 Bunchy Top in the previous 12 months
- E** More than 10 Bunchy Top in the previous 12 months - ‘hot spot’ plantations.

Inspection frequency –

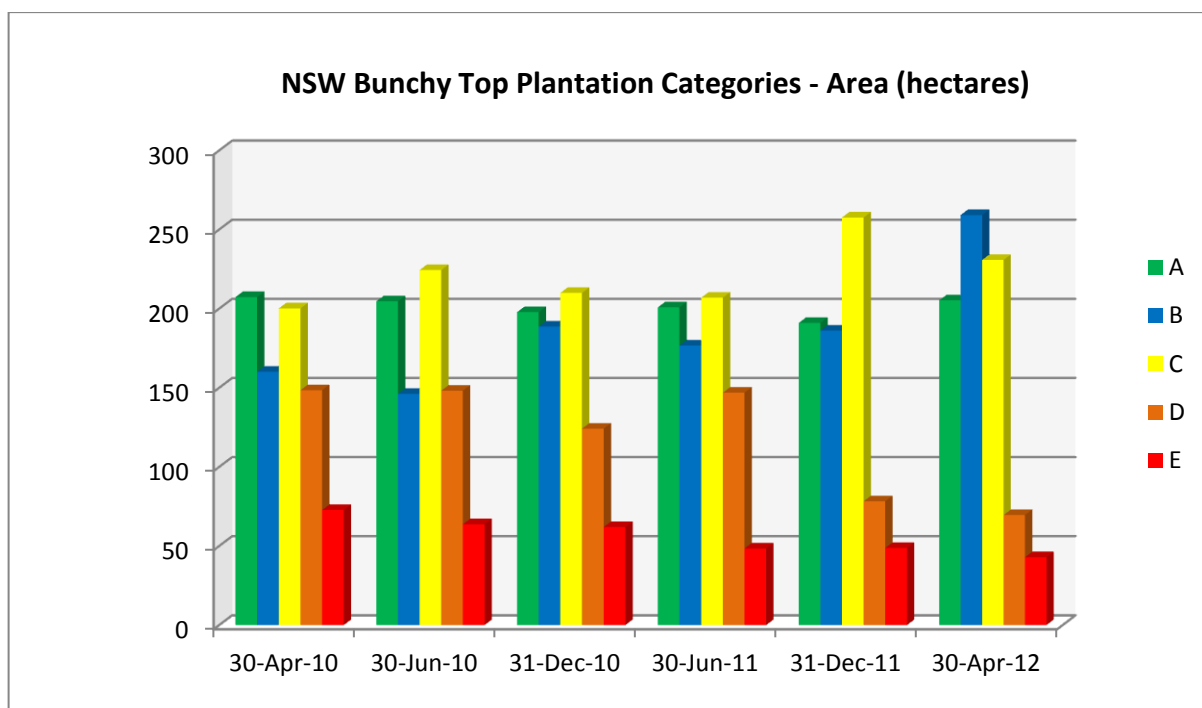
- A** One inspection per year
- B and C** 2 -3 inspections per year
- D and E** Every 4 weeks in growing season (9-10 inspections per year)

The best way to judge progress is to examine the number of plantations and areas which fall into these 5 categories over time. The results from April 2010 to April 2012 are shown below –



Category	A	B	C	D	E	Total
30-Apr-10	76	52	50	30	12	220
30-Jun-10	75	50	53	27	9	214
31-Dec-10	70	61	51	26	8	216
30-Jun-11	69	58	52	29	8	216
31-Dec-11	66	67	57	17	6	213
30-Apr-12	69	74	51	15	7	216

<div></div>	<b>A</b>	No Bunchy Top recorded
<div></div>	<b>B</b>	No Bunchy Top for 2 years (provisionally free)
<div></div>	<b>C</b>	No more than 1 Bunchy Top in previous 12 months
<div></div>	<b>D</b>	More than 1 Bunchy Top in previous 12 months
<div></div>	<b>E</b>	More than 10 Bunchy Top in previous 12 months



Category	A	B	C	D	E	Total
30-Apr-10	207.28	160.12	200.14	148.45	72.69	788.68
30-Jun-10	204.6	146.1	224.37	148.15	63.69	786.91
31-Dec-10	197.76	188.66	209.93	124.11	61.94	782.4
30-Jun-11	200.82	176.64	206.9	146.85	48.37	779.58
31-Dec-11	190.94	186.11	257.6	78.23	48.72	761.6
30-Apr-12	205.2	259.12	230.74	69.51	42.88	807.45



Over the 2 year period the number of Bunchy Top free plantations – (A and B) increased from 128 to 143, an 11.7% increase and the disease free area from 367 to 464 hectares, an increase of 97 hectares or 26.5%.

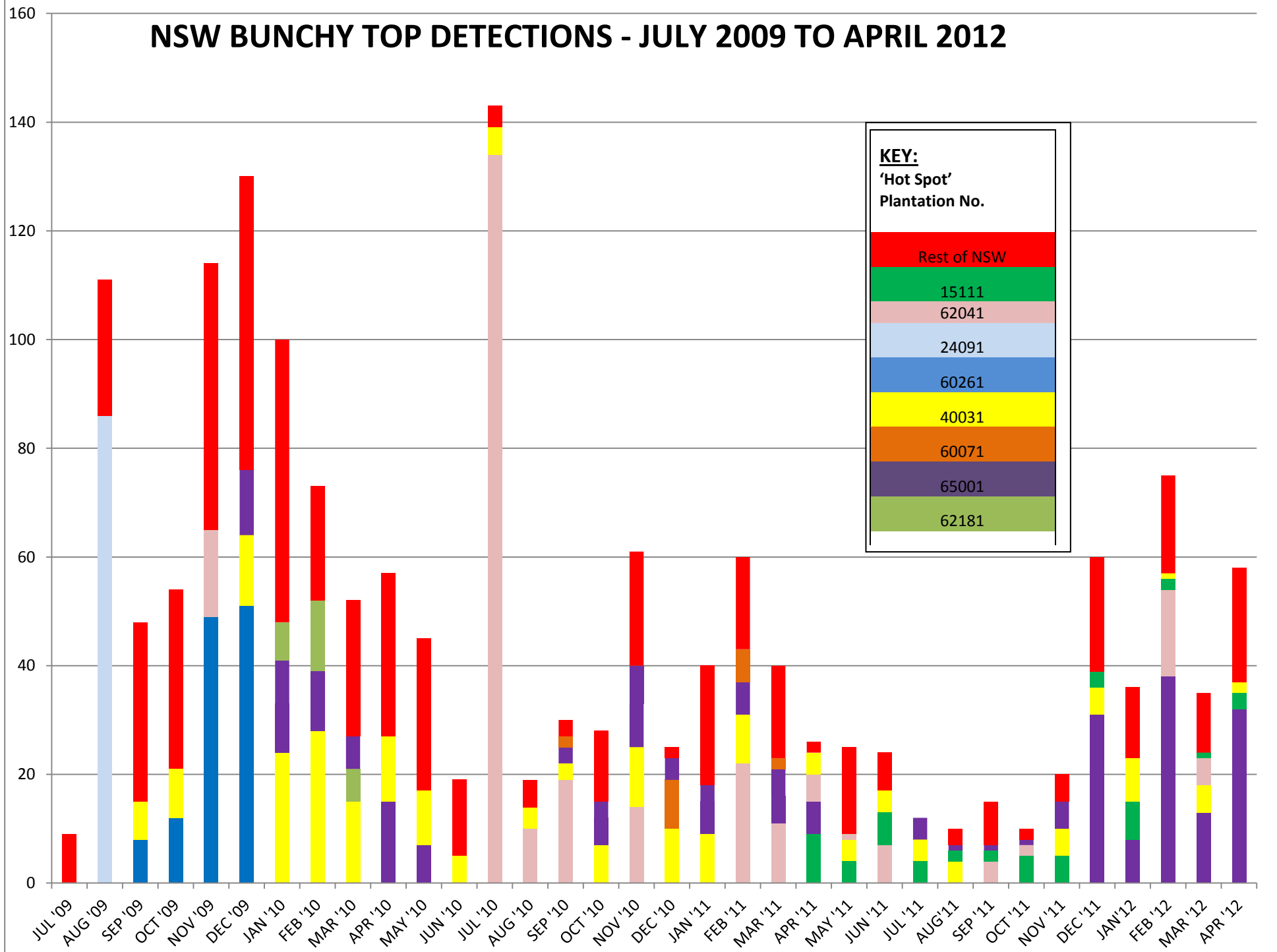
The number of ‘high risk’ plantations in categories D and E fell from 42 to 22. A decrease of 47.6%. The area of high infection decreased from 221 to 112 hectares, a decrease of 109 hectares or 49%.

More impressive is the reduction in high infection plantations in category E. Falling from 12 in April 2010 to seven plantations in April 2012, a 41.7% decrease. The area of category E plantations decreased from 72.7 to 48.7 hectares, a decrease of 24 hectares or 33%.

Of particular significance is the low number of ‘hot spot’ plantations, now only four which contribute 63.3% of the New South Wales State total of infections.

The following graph shows the significance of the number of Bunchy Top infected plants detected in ‘hot spot’ plantations in relation to the total for the rest of New South Wales shown in red.

# NSW BUNCHY TOP DETECTIONS - JULY 2009 TO APRIL 2012



In the southeast Queensland Bunchy Top zone the situation is quite different. There are only 34 commercial plantations totalling 107 hectares (compared to 216 plantations totalling 807 hectares in the Bunchy Top zone New South Wales).

The A – E category system was introduced in February 2012 and the number of clean plantations (Category A and B) totalled 25 with an area of 77 hectares and while there were 9 plantations in the ‘high risk’ plantations in Category D and E totalling 30 hectares when the benchmark date was established in April 2012.

In October 2010 NSW inspectors were authorised to commence regular inspection visits to southeast Queensland, having met the requirements to operate interstate and were granted the Authority to Inspect (with powers limited to entering property and destruction of infective plants.) Since then a total of 992 BBTv infected plants have been detected in 9 plantations. Of this total 778 infected plants were found in two plantations (78%).

Despite the concerning high numbers of infected plants being detected in commercial and non-commercial plantings, there has been significant progress in Queensland particularly over the past 12 months –

- Inspection gangs have now completed inspections of all commercial plantations and are now concentrating on the Bunchy Top infected plantations.
- The northern boundary of the affected area has been redefined and appears at this stage to be Cooroy and not Yandina.
- The major production area of Wamuran was Bunchy Top free at the first inspection of all plantations and one infected plant was detected in May 2012.
- Barry Sullivan is now employed by the project. His skills in mapping, data basing and remote sensing previous with Department of Natural Resources in Queensland will be invaluable in Phase 2 of the project particularly in the most challenging non-commercial backyard and urban situations.
- Samantha Stringer has demonstrated outstanding abilities in leading the project in southeast Queensland.

### ***Non-commercial and backyards***

With fewer commercial plantations in southeast Queensland and high populations of banana plants in backyards, rural residential areas and bushland the “backyard” category presents the major challenge facing the project.

Intensive inspections surveys have been conducted particularly in residential areas in the extremities of the Bunchy Top zone. This strategy will contract the infection areas towards Nambour in the north and protect the major production area around Wamuran.

High infections have been recorded in residential areas along and below the range to the west of the Sunshine Coast. Here as in most of southeast Queensland backyard situations it is commonly understood that –

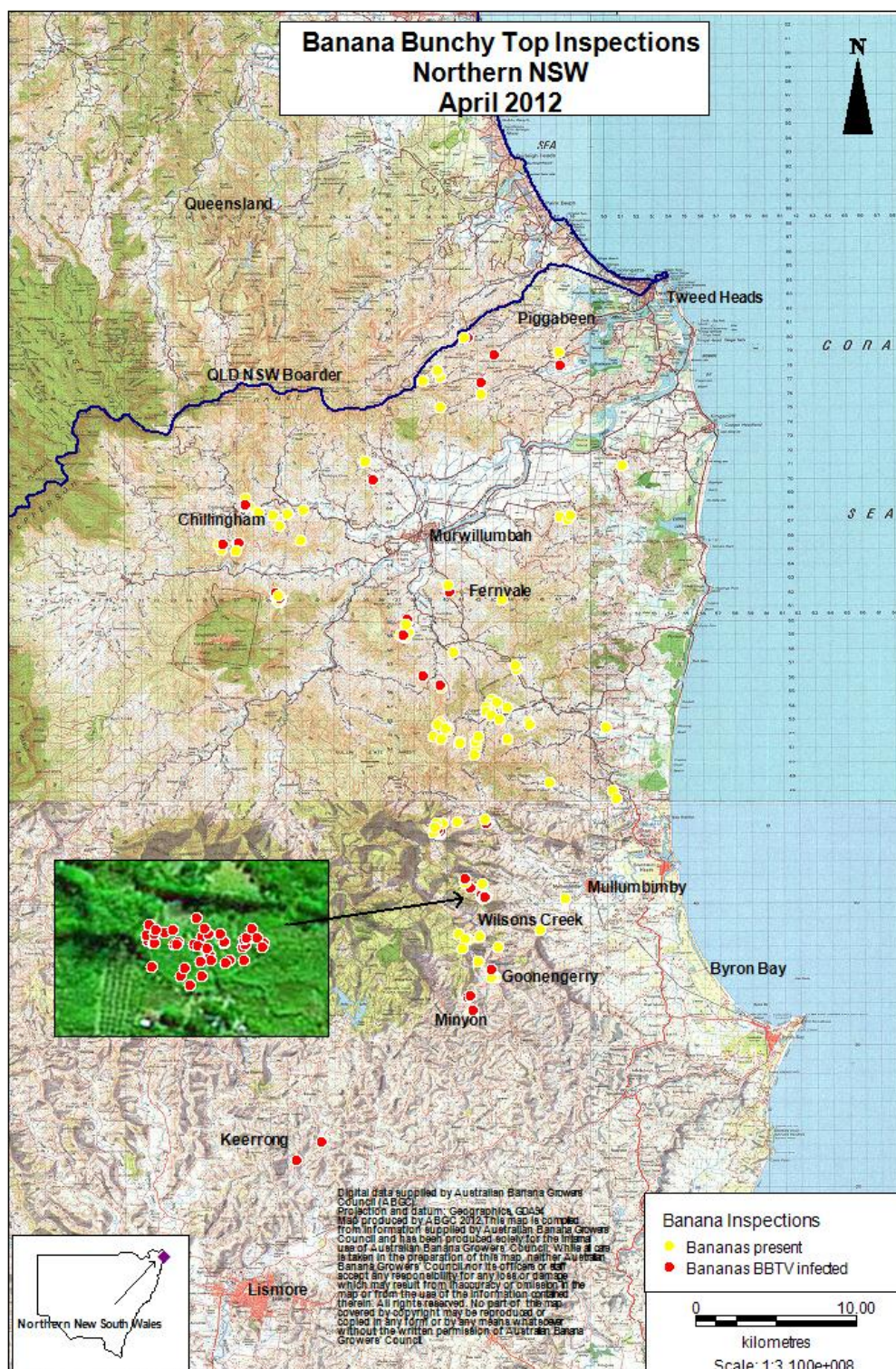
- a) Permits are no longer required to plant bananas.
- b) “Lady Fingers do not get Bunchy Top”.
- c) It is OK to obtain or swap banana planting material between neighbours.
- d) Cutting off an infective plant and spraying with kerosene is the accepted method of destruction.
- e) Roadside signs stating “Don’t take banana plants past this point” – means you can move planting material before the sign but you can’t take material past this point.

These practices have become common place since the demise of the Queensland Banana Industry Protection Board and the subsequent lack of regulatory action and extension by the regulatory authority.

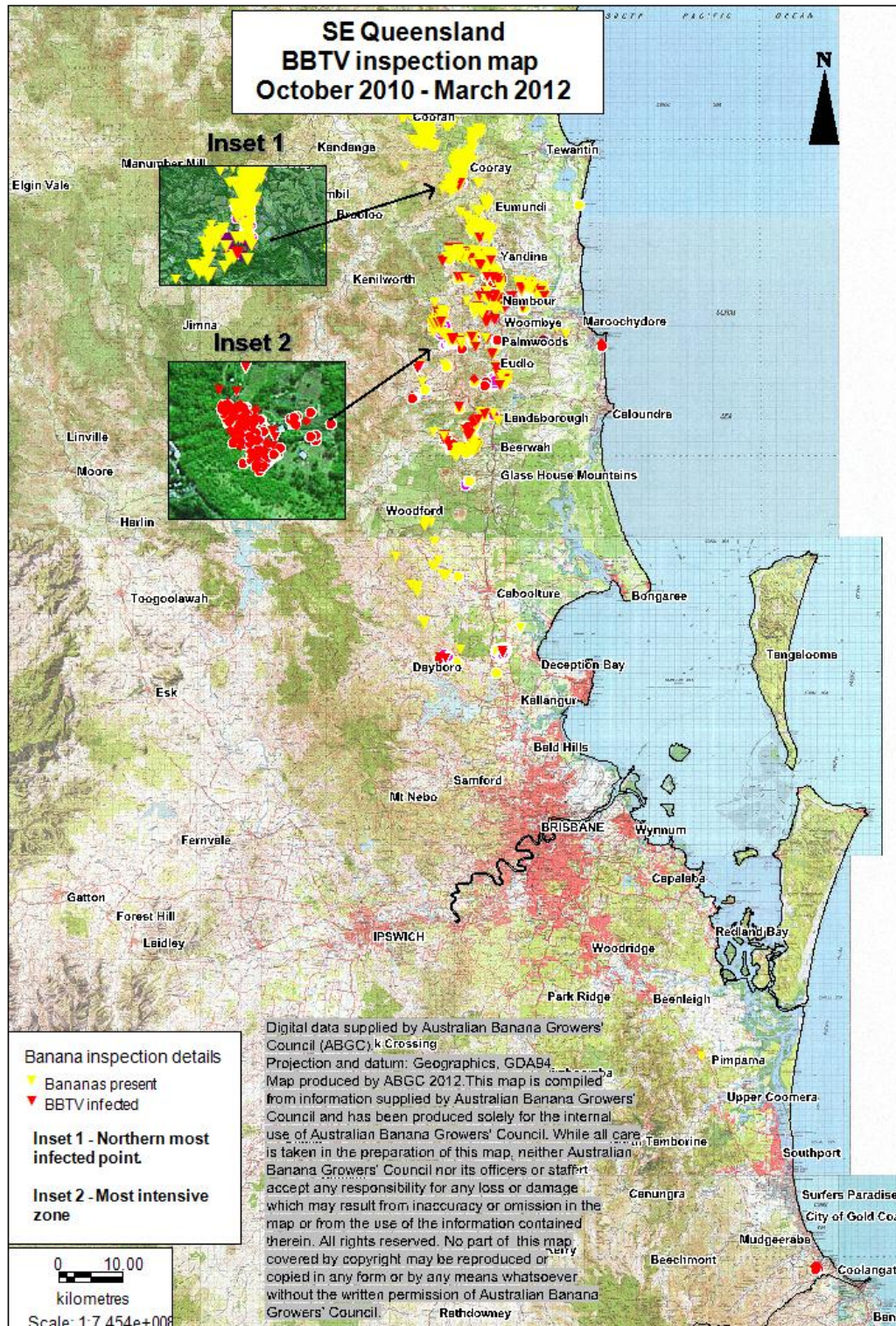
In NSW the inspection gangs have maintained inspections of backyards on wet days when plantation inspections are not effective or advisable.

In order to address the declining level of regulatory support in both states, a Project Management Committee meeting was organised for 16 April 2012 attended by Biosecurity Managers in New South Wales and Queensland who have now been appointed to the management committee to improve cooperation, communication and assistance with targeted surveillance publicity and regulatory support.

An example of the new mapping, GPS digital data collection units and software introduced by Barry Sullivan is presented in the following maps to illustrate the location of Bunchy Top infections in northern New South Wales and southeast Queensland -







## Discussion

The Muirhead review of Phase 1 of the project (January 2012) found that the project had met its objectives – containment to the known Bunchy Top areas and reduction within those areas.

While there were impressive gains in northern New South Wales there is an enormous task ahead in southeast Queensland to survey and identify banana plants in non-commercial, backyard and feral/bushland situations.

A detailed communication strategy will be required to change entrenched, outdated and uniformed attitudes about Bunchy Top and the need for cooperation and education if the eradication goal is to be realised.

Significant gains have been made in developing improved plant and aphid destruction methods which are safer and more readily adopted by the general public.

The introduction of new remote sensing technology and portable digital data recording units will improve surveillance and the accuracy of data entry enhancing the quality of decision making.

The question of latency or symptomless infection remains unresolved and must be answered before the decision to proceed with eradication is made. Field investigations by Dr John Thomas have found instances where symptoms of Bunchy Top have appeared on neighbouring plants many months after the destruction of the infected plant. This raises the possibility that a symptomless but infective plant – one with latent infection may be present.

Cross border cooperation has improved greatly during this project. New South Wales detectors, now able to inspect in Queensland have identified a major outbreak in Currumbin Valley adjacent to the New South Wales border which was responsible for infection spreading into plantations within two kilometres in New South Wales. The inspection gangs are now well known and respected in Queensland and have played a valuable part in training Queensland inspectors.

Similarly Queensland inspectors have assisted in coordinating a multi-agency cooperative action plan to eradicate the infestation of seeded bananas in the Nimbin area of New South Wales.

In Queensland the Plant Protection Act is currently being revised and the relative roles of industry and government Biosecurity is expected to change. Following several meetings the roles and responsibilities of state and project inspectors will hopefully be more clearly defined and state agency representatives have been involved in preparing the planning for Phase 2 of the project.

Maintenance of the inspection capacity and expertise has been achieved with the appointment of Joshua Chapman who recently completed his 12 month traineeship.

Joshua is now fully qualified in all aspects of the role. He will undertake the necessary training day and be authorised as an inspector with limited powers to operate in Queensland and New South Wales.



## Technology Transfer

The project team has made a consistent and effective effort to communicate with growers in the Bunchy Top zone and the wider banana industry through individual inspection visits, attending grower meetings, using radio, television, the SubTopics Banana Newsletter as well as the industry flagship publication “Australian Bananas”.

This effort has been rewarded with excellent cooperation from every section of the industry. The ABGC Communications Officer, Neville Sloss has provided enormous assistance to the project to inform, educate and create awareness of the project and its goal.

Cooperation with the non-commercial, urban and backyard growers presents an entirely different challenge. A specially designed colour leaflet was produced to illustrate the symptoms to look for, how the disease spreads, the legal responsibilities and obligations and what to do if a banana plant looks suspicious. A special 1800 hotline and Bunchy Top website service was established with the cooperation of ABGC to provide the public with a convenient reporting and information service. Both the hotline and the website have been well utilised and have provided valuable leads to infected plants in rural and residential areas.

Garden Expos, targeted local newspaper articles, weekend markets and major events such as the Brisbane Ekka have been excellent avenues for communicating with backyarders to report and understand Bunchy Top. Southeast Queensland has been the major focus of this activity due to the high percentage of backyards with banana plants and the lack of awareness of their regulatory obligations.

A detailed communication strategy is being developed for Phase 2 of the project due to commence in August 2012. New ABGC communications specialist Rhyll Cronin and Neville Sloss will be assisting the project team to develop the strategy which will have special emphasis on innovative ways to communicate to the ‘feral’ folk or alternate lifestyleers who do not use conventional media.

The project team has been heartened by the cooperation of the general public in wanting to know about Bunchy Top and how they can help protect ‘their’ banana industry.

## Recommendations

The Muirhead review recommended the initiatives following and these are fully supported by the project management team –

- 1. A follow-up project should proceed, provided it has a specific aim and measurable milestones, as Phase 2 of the broader Bunchy Top Management Project.**

Reasons

- Without such a project, the disease will undoubtedly return to pre-2008 levels, and many years of effort and resources will be lost.
- The risk of Bunchy Top spreading to other growing regions increases if the disease is allowed to expand in its current locations.

- 2. The project should aim to eliminate Bunchy Top from all commercial plantations and defined buffer area by 2015.**

Reasons

- Total eradication is not possible within 3 years because of the vast (but unknown) number of bananas, diseased or healthy, outside commercial plantations.
- The disease can be eliminated from commercial plantations in 3 years; this would be a great achievement and would provide evidence that total eradication is possible.
- A three year target for clearing commercial plantations may be too ambitious. Eradication from commercial plantations may take longer, perhaps 5 years. However the project needs an ambitious goal against which progress can be measured. Elimination from commercial plantations is a target designed to motivate and to give a sense of urgency for everybody – project staff, growers, managers.
- Within this goal, annual targets should be set so that progress can be measured, and the 3 year target adjusted if necessary.
- The project must have milestones which are well defined and much more specific than in the previous project.
- The clear plantations, buffer areas need to be cleared as well. The width of buffer zones should not be defined in kilometres because every plantation is different, and buffers should be established as appropriate.
- The project should also aim to declare defined areas – one in each State – disease-free.

- 3. The resources required to undertake such a project should ideally be no lower than currently allocated. If the resources are not available, then the aim of the project should be lowered accordingly.**

#### Reason

- The resources required for the current project were underestimated from the start, and this has created financial difficulties. It is better to design a project with aims that can be achieved than to attempt to stretch resources beyond their limit and risk failure.

#### **4. The Project Management Team should be re-constituted, with membership from key stakeholders (ABGC management, influential growers from New South Wales and southeast Queensland, Biosecurity Managers from both States, and the Program Coordinator. It should meet twice a year and have a membership of no more than seven.**

#### Reasons

- This is a flagship project for ABGC and its importance justifies the time and resources needed to manage it.
- The Program Coordinator should continue to manage day-by-day issues, but he needs input and support from key stakeholders when important decisions need to be made.
- The Project Management Team should act as a forum in which stakeholders are informed and joint decisions are taken on the following matters:
  - Budget monitoring and adjustments.
  - Progress towards milestones.
  - Communications.
  - Regulatory support.
- Scientists and others can be co-opted when required.

#### **5. Remote sensing and databasing should be priority issues.**

#### Reasons

- The task of finding remote plantations, feral bananas and bananas in backyards would be simplified enormously if satellite or other technology can be employed.
- The project currently employs a person with the requisite skills to undertake the task. There is evidence emerging from the current project that the technology is likely to be useful.
- The tasks of covering every backyard could not be achieved in a Phase 3 eradication project unless such technology is developed. There is time to develop, ground-truth and become familiar with this technology during this proposed Phase 2 project.

- It is essential that an effective database be maintained, for day-to-day management, monitoring progress, and to demonstrate area freedom in due course.

**6. The roles of State Biosecurity agencies and their inputs into the project need to be re-negotiated.**

Reasons

- Government Biosecurity agencies have a responsibility for biosecurity in the banana industry, as they have with other industries.
- Their involvement in the program is vital but minimal – mainly providing backup when enforcement is needed.
- The relationship between industry and biosecurity agencies with respect to industry biosecurity priorities may need re-negotiation.
- The tensions between project staff and biosecurity agencies in both states are relatively minor but potentially damaging if they persist.
- The issues can be overcome by negotiation, writing the Biosecurity agencies into the project, clearly defining roles, and giving the Biosecurity agencies credit for their involvement.

**7. The Program Coordinator should take on a strategic role in managing the project.**

Reasons

- This strategy should provide more effective management of the whole project.
- Now that the operational aspects of the work are progressing well, and as more plantations become disease-free, there should be a reducing need for as many field visits.
- This recommendation is not designed to discourage the Coordinator from visiting farms, and it must be recognised that much of the current success derives from such visits in the past. It is aimed more at providing a remit to plan such visits on a more strategic basis and to delegate some of the responsibility.

**8. The question of latency (long-term symptomless infected plants) should be resolved.**

Reasons

- As mentioned previously, the chances of ever eradicating Bunchy Top are reduced if plants carry the virus without showing symptoms.
- It would probably be better if this research was separated from the Phase 2 project, for budgetary reasons.

**9. A Phase 2 project should be Stateless, i.e. managed as one entity (except for regulatory activities). Specifically:**

- Inspectors should operate wherever required, regardless of State boundaries.
- The A-E system of classifying plantations should be used in Queensland.
- Methods of destroying diseases plants and other operational matters should be harmonised.

**10. During Phase 2, non-commercial plantings in backyards, peri-urban areas and in creeks should still be monitored.**

Reasons

- It would be counter-productive to ignore these areas totally.
- Some activity and publicity raises public awareness.
- Remote sensing should make the task easier.

**Additional recommendation from the Project Manager/Author of this report –**

In addition a detailed communications strategy should be produced to achieve cooperation and action across all sectors from growers, hobby farmers, peri-urban dwellers, backyards, in villages, towns and the alternate folk in communes, multiple occupancies, etc.

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