

**TRAINING WORKSHOP:
WEED MANAGEMENT PROJECT DESIGN
AND IMPLEMENTATION**

**POHNPEI, FEDERATED STATES OF MICRONESIA
23 FEBRUARY – 4 MARCH, 2009**

TECHNICAL REPORT



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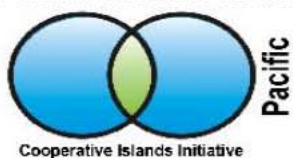


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1.0 INTRODUCTION

The Pacific Invasives Initiative (PII) recognised the need for effective data management as part of successful project management and initiated planning for such a workshop in 2006. Demand for training in data management was identified during a skill-sharing survey undertaken by PII later in 2006. Subsequent discussions with David Moverley (Technical Officer and Contract Manager for Te Ngahere, a New Zealand ecological restoration company), Joel Miles (Palau OERC) and Sean Austin (TNC Micronesia) led to the recognition that a more comprehensive weed management project design and implementation workshop was needed. A pilot workshop was facilitated and evaluated by Bill Nagle (PII) and technical content was designed and delivered by David Moverley.

Following the pilot workshop in Palau, a further workshop was delivered in Pohnpei, Federated States of Micronesia from the 23rd of February to the 4th of March 2009. This report discusses the aims, methods, outcomes and recommendations of this workshop on weed management project design and implementation.

2.0 OVERVIEW

The workshop was designed to -

- Show how data is used as part of successful project management.

- Give weed control personnel the skills and confidence necessary to collect and manage data for project planning, implementing, monitoring, evaluating and accountability purposes.

- Provide an efficient and effective data collection and management system that is easy to use and maintain and is adaptable to similar projects across the Pacific.

Participant evaluation of the workshop suggested that both outcomes had been met (see PII evaluation for details www.issg.org/cii/PII). This report provides an analysis of each component of the workshop and recommendations for proposed actions to reinforce the training provided.

Weed management project design and implementation is a complex intricately layered process. This workshop condensed twenty years of weed management experience into eight days of intense activity for the participants. Many components of a comprehensive successful project design and implementation programme were covered. This basic structure was well received by the participants and should lead to more effective and efficient weed management programmes. Another benefit of this workshop was the recognition that further gains can be made by building on this basic structure with customised training specific to the needs identified within each organisation. These are detailed within the recommendations and proposed actions section.

The workshop takes the participants sequentially through the principle components of planning, implementation, and monitoring and evaluation, focusing on one selected plant pest (Appendix one). Each section builds on the previous section and utilises the results of that section to progress. In this way implementation is a result of planning, and monitoring and evaluation is a result of implementation. All these sections are intimately linked to provide a well designed project built on good decision making and resulting in measurable results.

3.0 ACKNOWLEDGMENTS

Thanks to the locals who made us extremely welcome and looked after us during our stay and to the following organisations who contributed to the success of the workshop.

Chuuk Invasive Species Taskforce (CIST)

Conservation Society of Pohnpei (CSP)

German Government Life Web Initiative

Kosrae Invasive Species Taskforce (KIST)

Marshall Islands Invasive Species Taskforce (MIST)

Micronesia Regional Invasive Species Council (MRISC)

Palau National Invasive Species Committee (NISC)

Pacific Invasives Initiative (PII)

Pohnpei Invasive Species Taskforce (PIST)

The Nature Conservancy (TNC)

Yap Invasive Species Taskforce (YIST)



Thanks to Joel Miles and Bill Nagle for a lot of the photographs and assistance.

4.0 PARTICIPANT PROJECTS

4.1 Aim

For all attendees to acknowledge and understand participants projects as they currently stand. To broaden participants' experience and knowledge of weed project management.

4.2 Method

Participants presented a powerpoint presentation of their projects. David Moverley presented examples of weed control projects from New Zealand to demonstrate the different approaches that can be used, how and why they are used, how they are recorded and how success is measured. These examples provide an overview of the workshop.

4.3 Outcome

Attendees are aware of each others' projects and have a broader knowledge base of weed management. Attendees have been introduced to the workshop content and concepts.

4.4 Recommendation

This is a valuable, important and enlightening session. It should remain as the first session to further workshops.



Figure 1: Bejay Obispo giving a presentation on the false sakau project for the Conservation Society of Pohnpei.

5.0 PLANNING

One species was selected by each organisation to complete this section of the training. It is important to determine how each module may influence other pest plants that are determined to be priorities for each organisation.

5.1 PROJECT OBJECTIVES

5.1.1 Aim

For the participants to determine what their objective was and for what reasons achieving their objective was important for their country or state. For the participants to determine whether the programme to achieve the objective was site-led or weed-led.

5.1.2 Method

Instructor-led powerpoint presentation providing New Zealand examples of different projects with different objectives ranging from eradication of single pest species (weed-led) projects to the ecological restoration of sites with many pest species (site-led). The objectives and their reasoning were emphasised. Workbooks were completed by each agency for this section and discussed amongst workshop participants.

5.1.3 Outcome

Participants determined and justified their objective to themselves and others, and whether it was suited to either a site-led or weed-led programme. A record of this was captured within their workbook. All participants evaluated their objective as eradication through a weed-led programme, and was necessary due to negative environmental, economical and cultural effects. Site-Led projects are expected to increase in the future under the "Micronesian Challenge" which aims to protect twenty percent of terrestrial habitats.

5.1.4 Recommendation

That participants continue to determine their objectives and the type of programme required for each of their pest species or identified sites, and their justification of why the objective is important for their country or state.

5.2 PLANT CHARACTERISTICS

5.2.1 Aim

For the participants to determine what the characteristics of the plant were that are important for the species spread and control. These included the dispersal vectors, dispersal distance, maturity rate, natural inhibitors to growth, maturity and spread, seed viability and whether the plant can be effectively controlled.

5.2.2 Method

Instructor-led powerpoint presentation providing examples of different species, their lifestyle, dispersal vectors, characteristics of spread, seed viability and different control methodologies. Workbooks were completed by each agency for this section and discussed amongst workshop participants.

5.2.3 Outcome

Participants identified the important lifestyle events and those that were unknown, their dispersal vectors, characteristics of their spread and a control method for their species.

Each group created a simple chart to capture the information about their respective species which can later form the basis of a weed database. It was very useful to have participants from throughout Micronesia to share each others experience of particular species, especially for those groups who had limited knowledge of their species.

5.2.4 Recommendation

That participants continue to determine what the characteristics are of other pest plants in their country that are important for each species spread and control. Including the dispersal vectors, dispersal distance, maturity rate, natural inhibitors to growth, maturity and spread, seed viability and whether each plant can be effectively controlled. That participants continue to search for information which is lacking through networking amongst each other and using online resources such as PESTNET and the Global Invasive Species Database.

Project Type	Combination: species-led & site-led.
Dispersal Vectors	Wind, animals, water, people, machinery.
Dispersal Distance	Unlimited if spread by people & machinery.
Maturity Rate	One year.
Natural Inhibitors to Growth	
Seed Viability	Unknown (look on PESTNET, etc.)
Control Method	Garlon4, manual uprooting.
Can you control them faster than they spread?	Yes. Infestation is limited.
Time when dormant or faster/slower ?	Unknown (look on PESTNET, etc.)
What time of year is maturity ?	Unknown (look on PESTNET, etc.)

Figure 2: The Chuuk teams table summarising the plant spread characteristics.

5.3 PROJECT SITE CHARACTERISTICS

5.3.1 Aim

For the participants to determine what the characteristics of the project site were and how the site influenced implementation of control, where the “front”, “stratified” and “long distance” dispersal zones were and which areas within the site were more favourable to plant spread.

5.3.2 Method

Instructor-led powerpoint presentation providing examples of how the project site characteristics influence how a project should be implemented to utilise the positive and negative influences the project site has on the dispersal and control of the pest species, how to distinguish between the different zones within an infestation and what areas of the project site are categorised as which zones.

Workbooks were completed by each agency for this section and discussed amongst workshop participants.

5.3.3 Outcome

A common site characteristic amongst the participants that affected control was access, providing both positive and negative effects. Positive effects were generated by features such as Palau's Compact road providing easy access to sites but also providing a vector for weed spread at the same time. Access was difficult for many nations due to the large area that fell under their jurisdiction such as the Marshall Islands which is spread over 560 kilometers of ocean. The most common characteristic of all nations was the close proximity of weed sites to valuable crops, raising the risk of using herbicides. Another very common characteristic was the difficulty of getting approval from land owners to control weeds on their land.

All groups appeared to understand the different parts or zones of an invasion and acknowledged that most of the long distance dispersal events in Micronesia are determined by moving plants and contaminated machinery around by humans.

5.3.4 Recommendation

That participants continue to determine what the characteristics of the project site are for other pest plants, how they influence implementation of control, where the “front”, “stratified” and “long distance” dispersal zones are and which areas within the sites were more favourable to plant spread.

5.4 TIMING

5.4.1 Aim

For the participants to determine what significant time variables were important within the life cycle of the plant while implementing the control strategy and whether control can be implemented faster than the plant can spread.

5.4.2 Method

Instructor-led powerpoint presentation providing examples of significant time variables that were important within the life cycle of plants that influenced its spread and examples of how these life style characteristics can be used within a weed management project to improve the success of the project.

Workbooks were completed by each agency for this section and discussed amongst workshop participants. The work schedule was introduced and groups shaded in the months that were important in controlling each species.

5.4.3 Outcome

Where time variables were not known by each group other participants shared their knowledge. This was an excellent outcome and one which will hopefully be repeated now that participants know each other around the region. Some participants doubted whether they could control some of their pest plants faster than they could spread given their current resources and changed their objective to controlling to reduce spread instead of eradication. This shows a certain amount of maturity in their thinking and is very promising.

5.4.4 Recommendation

That participants continue to determine what significant time variables are important within the life cycle of other pest plants while implementing their control strategy and whether control can be implemented faster than the plant can spread.

6.0 IMPLEMENTATION

One species was selected by each organisation to complete this section of the training. It is important to determine how each module may influence other pest plants that are determined to be priorities for each organisation.

6.1 METHODS AND MEANS

6.1.1 Aim

For the participants to determine what methods of control they would use on the pest plant to be most effective and efficient, while utilising a lowest toxicity policy. For participants to determine who would implement the control operations, at what interval and time of year, and what tools and materials would be required.

6.1.2 Method

Instructor-led powerpoint presentation providing examples different plants and situations when cut stump and foliar applications are best suited or a combination of both. A simple chart to determine who was available to do the implementation was introduced as was a programme schedule to determine what parts of the calendar year were most suited to control. A primary framework for pest plant control was introduced.

All participants contributed to completing a document which summarised the current best practice methods being used in Micronesia for each particular species. A list of equipment was constructed following group discussion.

Workbooks were completed by each agency for this section and discussed amongst workshop participants.

6.1.3 Outcome

In their groups, countries identified what method of control they would use, who would do the work, and what time of the year it would be done. All nations are dependant on just two herbicide types with the active ingredients glyphosate and triclopyr. It was concerning to see that amongst some organisations triclopyr was viewed as non-toxic. Time was spent going through different active ingredients contained in various herbicide brands along with the risks they posed to humans and the environment. This appeared to be quite an “eye-opening” experience for some and will probably lead to other herbicides being sought for specific tasks. The exposure to and the thoroughness and rigidity of the “Hazardous Substances and New Organisms Act” in New Zealand hopefully fostered a greater interest in which chemicals the nations were using and the safety aspects which are important when using these substances.

6.1.4 Recommendation

That time be spent with organisations in “their field” introducing new herbicides and improving their decision making towards what methods and herbicides to use in different situations and for different types of plants.

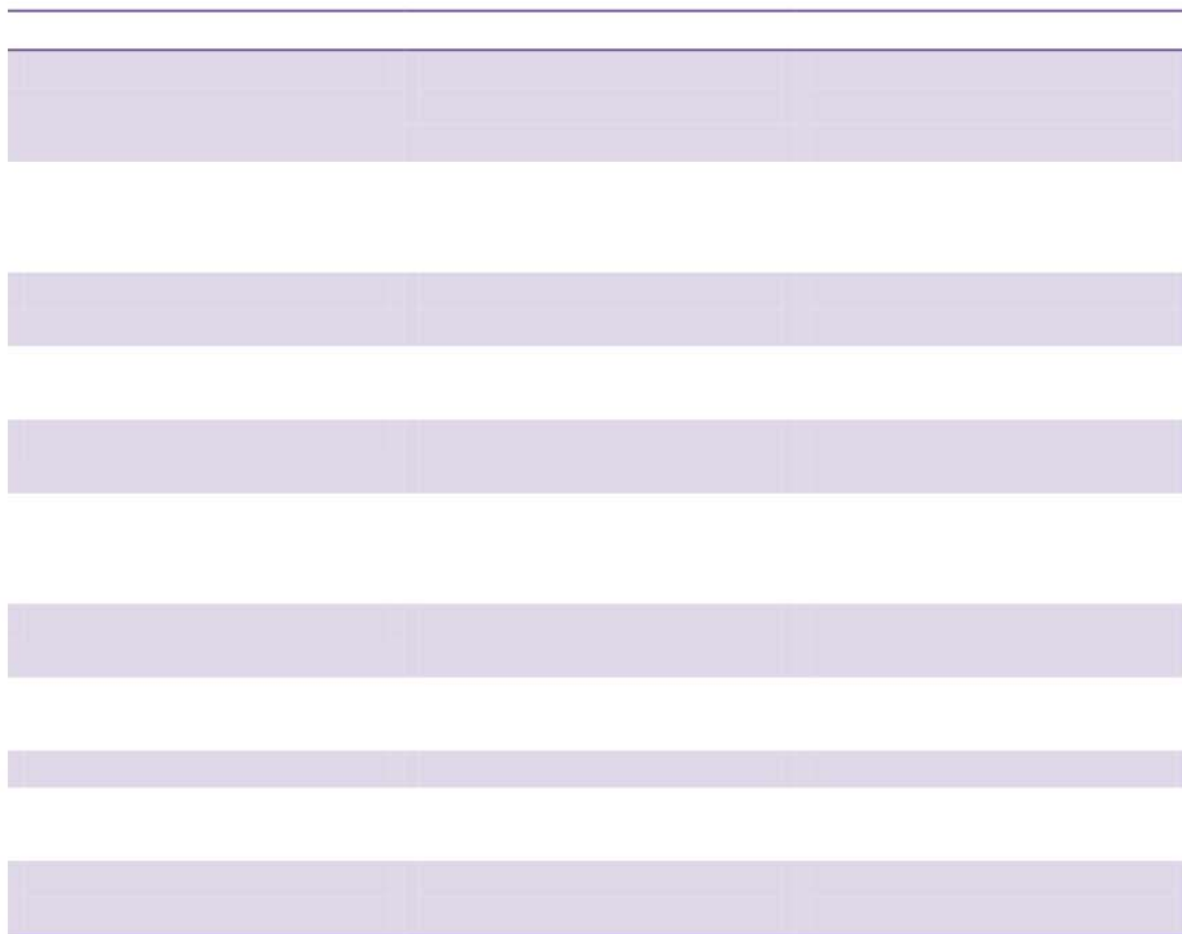


Figure 3: The best practice methods determined through group discussion currently being used within the Micronesian region.

6.2 MAPPING

6.2.1 Aim

For the participants to determine what defines a “site” or how they visualise a “site”, how it is best represented spatially as a polygon or a point, how they will reference or fix the site spatially both on the ground and on a map and how they will measure its size.

6.2.2 Method

Instructor-led powerpoint presentation introducing the concept of “spatial data” and providing examples of how pest plants should be mapped by using either polygons or points and given a unique identification. Examples of how this information can be used advantageously were provided including the use of GIS and GPS tracklogs, and the use of historical information. A short exercise on determining the size of an infestation was completed to ensure the estimation of square metres/feet was understood. Basic screenshots of a GPS were provided and discussed including how GPS works, how to determine how accurate a reading is by looking at where satellites are on the screen and checking the accuracy reading, how to turn the tracklogs off and on, etc. Workbooks were completed by each agency for this section and discussed amongst workshop participants.

6.2.3 Outcome

Although participants showed an understanding of the principles, all organisations were at a very basic level of accomplishment at the beginning of this module, except those from Palau and Yap who had had earlier exposure and experience through the earlier workshop and follow up training. Pohnpei had produced GIS maps of their sites using point locations but had not utilised the information to portray any further information except location.

GPS is not new to these islands because they are often used at sea, however this appears to be as a guide to location as opposed to actually getting data out. Palau and Yap progressed very quickly in follow up training with using a GPS in “their field”.

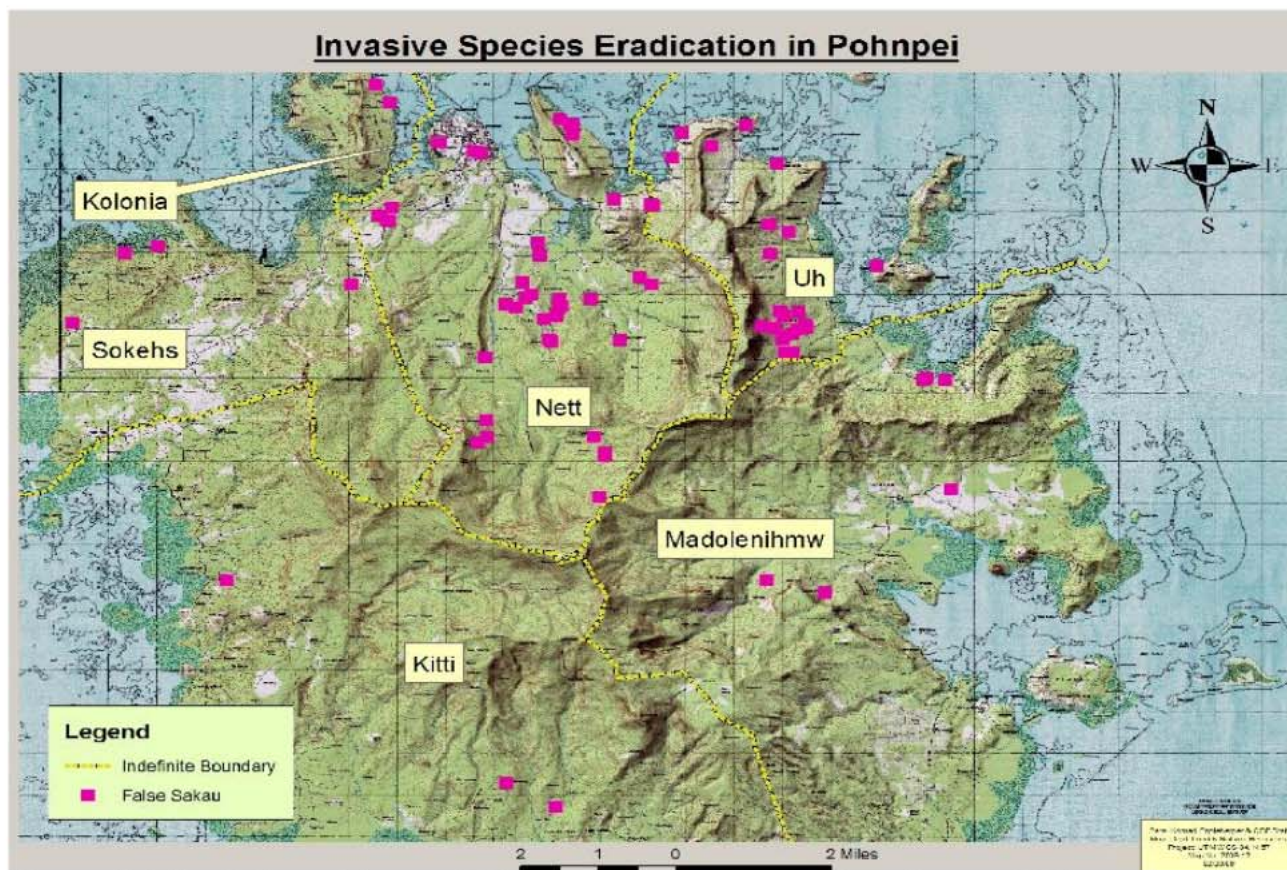


Figure 5: The Pohnpei teams GIS map showing known locations of false sakau.

6.3 HUMAN RESOURCES

6.3.1 Aim

For the participants to determine what human resources they have for use on an annual basis, how much was required to implement the required control at each site or groups of sites, and what the key skills each employee required to complete their tasks effectively and safely from basic control operations through to managing the project.

6.3.2 Method

Instructor-led powerpoint presentation providing examples of how to complete a simple spreadsheet to analyse the amount of human resource they had available to them and what they required to complete their planned works, how to analyse the results to determine a surplus of resources, or whether they needed to build capacity. Another spreadsheet was introduced to analyse the different skills that personnel needed to complete the project, how well their organisation was equipped with the required skills, or whether they needed to build further capacity.

Workbooks were completed by each agency and spreadsheets completed on the computers. The results were discussed amongst workshop participants.

6.3.3 Outcome

The participants created spreadsheets for scheduling current operations and the skills required. The financial year and seasons were defined and time resource estimates were entered for each site or group of sites. The time resource estimates were compared to actual resources available.

Season	Season	Wet	Dry					wet				
Financial Year	1st October											30th September
Month	October	November	December	January	February	March	April	May	June	July	August	September
Sites												
Chromolaena (CHO)	12	12	12	12	12							12
Leuceana (LEL)	12	12	12	12	12							12
Wedillia trilobata												
Merremia												
Hours per month	24	24	24	24	24	0	0	0	0	0	0	24
Available hours	24	24	24	24	24							24
Residual hours	0	0	0	0	0	0	0	0	0	0	0	0

Figure 6: The Marshallese have very limited resources but by spreading them out at targeted times of the year they can successfully fulfill requirements.

SEASON FINANCIAL YEAR CALENDAR YEAR SITE	MIXED 1st OCT	MIXED NOV	MIXED DEC	DRY JAN	DRY FEB	DRY MARCH	DRY APR	MIXED MAY	WET JUNE	WET JULY	WET AUG	MIXED 30-Sep SEPT
IMP001 (AIRPORT)	8	8	8	8	8	8	8	8	8	8	8	8
IMP002 (MELEKEOK)	8	8	8	8	8	8	8	8	8	8	8	8
IMP003 (GRAVEL)							8					
ECHANG (MIK)										48	16	16
MEYUNS (MIK)									16	8	8	8
MALAKAL (MIK)									16	8	8	8
LONG ISLAND (MIK)									2	2	2	2
MEDALAI (MIK)								48	16	16	16	16
NGERBECHED (MIK)								48	16	16	16	16
ITECHETII (MIK)									16	8	8	8
NGERBECHESAU (MIK)									48	16	16	16
AIRAI (MIK)									16	8	8	8
NGATPANG (MIK)									16	8	8	8
NGKEKLAU (MIK)										48	16	16
PELELIU (MIK)												16
AFTULIP (3 SITES)	16	16	16	16	16	16	16	16	16	16	16	16
PRAXELIS	16	16	16	16	16	16	16	16	16	16	16	16
RATTAHN PALM		16	16	16	16	16	16	80				16
CHAIN OF LOVE (3 SITES)	8	8	8	8	8	8	8	8	8	8	8	8
MALELUKA								48				48
CHINA BERRY									32			32
MERREMIA	48	48	48	48	48	48	48	48	48	48	48	48
HOURS PER MONTH	104	120	104	120	104	128	232	232	250	290	242	216
AVAILABLE HOURS	320	320	320	320	320	320	320	320	320	320	320	320
RESIDUAL HOURS+FL	216	200	216	200	216	192	88	88	70	30	78	104

Figure 7: The Palauans have targeted Mikania just before flowering season to limit the quantity of seed produced, although capacity will be stretched particularly in August once the requirements for treating the Peleliu sites are added.

SEASON FINANCIAL YEAR CALENDAR YEAR SITE	TYPHOON 1ST OCT	TYPHOON NOV	WET DEC	WET JAN	WET FEB	WET MARCH	DRY APR	DRY MAY	DRY JUNE	DRY JULY	DRY AUG	TYPHOON 30-Sep SEPT
AFT01	2	2	2	2	2	2	2	2	2	2	2	2
AFT02	8	8	8	8	8	8	8	8	8	8	8	8
AFT03	12	12	12	12	12	12	12	12	12	12	12	12
AFT04	12	12	12	12	12	12	12	12	12	12	12	12
AFT05	1	1	1	1	1	1	1	1	1	1	1	1
COL01	24	24	24	24	24	24	24	24	24	24	24	24
COL02	8	8	8	8	8	8	8	8	8	8	8	8
COL03	8	8	8	8	8	8	8	8	8	8	8	8
COL04	8	8	8	8	8	8	8	8	8	8	8	8
IMP01	84	84	84	84	84	84	84	84	84	84	84	84
IMP02	10	10	10	5	5	5	10	10	10	10	10	10
IMP03	10	10	10	5	5	5	10	10	10	10	10	10
IMP04	10	10	10	5	5	5	10	10	10	10	10	10
IMP05	10	10	10	5	5	5	10	10	10	10	10	10
IMP06	10	10	10	5	5	5	10	10	10	10	10	10
HOURS PER MONTH	217	217	217	192	192	192	217	217	217	217	217	217
AVAILABLE HOURS	320	320	320	320	320	320	320	320	320	320	320	320
RESIDUAL HOURS+FL	103	103	103	128	128	128	103	103	103	103	103	103

Figure 8: The Yapese can manage all currently targeted sites now that they have increased their capacity.

Season			Typhoon	Typhoon	Typhoon	Typhoon	Typhoon					
	Wet	Wet	Dry	Dry	Dry	Wet	Wet	Wet	Wet	Wet	Wet	
Financial Year	Oct. 1st										Sep. 30	
Calendar Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Site:												
1107-Mwan1	56	56	56					56	56	56		
1104-Mwan7	56	56	56					56	56	56		
1107-Nantaku	56	56	56					56	56	56		
Hours Per Month	168	168	168	(1)	(1)	(1)	168	168	168	(1)	(1)	(1)
Available Hours	560	560	560	560	560	560	560	560	560	560	560	560
Residual Hours(+/-)	397	397	397	561	561	561	397	397	397	561	561	561
	NOTES:											
	* CERTIFICATION TRAINING REQUIRED PRIOR TO CONTRACT IMPLEMENTATION											
	* OCTOBER AND APRIL ARE THE REPORTING MONTHS.											

Figure 9: The Chuukese have considerable resources available for further projects off the main island.



Figure 10: The Pohnpeians can easily manage known remaining False Sakau sites with their current resource.

Financial Year	1st Oct											30-Sep
Calendar Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Site												
Luc(Lelu Marina)	18	18	18	18	18	48	48	24	24	24	24	24
Luc(Finsos, Tan)						6	6	6				
Luc(Finsrifang, Tan)						6	6	6				
Luc(Finfoko, Tan)							6	6	6			
Luc(Inem, Tofol)							6	6	6			
Luc(KHS campus)						6	6	6				
Luc(P. W., Tofol)	6					12	12	6	6	6	6	6
Luc(KVR, Teya)						6	6	6				
Luc(Kwesron, Malem)						6	6	6				
Luc(UWMP, Utwe)						6	6	6	6			
CLQ (26)	39	39	39	39	39	30	30	30	39	39	39	39
MIK	18	18	18	18	18	9	9	9	9	18	18	18
Hrs Per month	81	75	75	75	75	135	147	117	96	87	87	87
Avail. Hours	372	372	372	372	372	372	372	372	372	372	372	372
Residual Hrs	291	297	297	297	297	237	225	255	276	285	285	285

Figure 11: The Kosraeans appear to have plenty of resource available but this may change as true resource quantities are inserted to replace the estimates.

All organisations appeared to have enough human resource to implement the control of the sites that are in the current programme but capacity would need to be built if further plant pest species were added, or efficiencies in the current programme would need to be increased. It is also noted that these resources have been estimated and that they should be updated as true quantities are recorded upon implementation.

The skills required for the project were similar in all organisations spreadsheets. The organisations with the largest skill sets available were Yap, Palau and Pohnpei. Chuuk had a fairly good mix of skills between all staff, while the Marshall Islands and Kosrae had many large gaps within their skill

base. The latter two organisations would have trouble building capacity at present.

Organisation Work Skills Register					
Staff		Francis L.	Henry L.	John P.	Francis R.
Experience (Years)		4	6	1	8
Highest Education		AS degree	HS	2 yrs. (MOC)	AS degree
STAFF POSITIONS	SKILLS				
Project Manager	Planning				
	Managing Resources				
	Managing Finance				
	Report				
	Analyse				
Leader	GIS				
	People management				
	Office Skill				
Team Support	Advance Skills				
	Navigation Skills				
	GPS skill				
	Site Records				
Field Technician	Daily records				
	Planting methods				
	4-wheel driving				
	Herb. Certification				
	Drivers license				
	First Aid Certification				
	Chainsaw safety & Maintenance				
	Foliar spray appl.				
	Cut stump appl.				
	Ring chopping & treatment				
	Herbicides Pro.				
	Site survey and searching				
	Weed ID				
	Hand tool skills				
	Health & safety				
Employee induction					

Figure 12: The Yap team has built capacity recently and has benefited from both in-house training complemented by follow up training this year.

ORGANISATION WORK SKILLS REGISTER 2009					
STAFF POSITIONS	SKILLS				
PROJECT MANAGER	Planning	[Green]		[Green]	
	Managing Resources	[Green]		[Green]	
	Managing Finances	[Green]		[Green]	
	Report	[Green]		[Green]	
	Analyze	[Green]		[Green]	
LEADER	GIS	[Green]		[Green]	
	People Management Skills	[Green]		[Green]	
	Office Skills	[Green]		[Green]	
TEAM SUPPORT	Advanced Plant ID	[Green]			
	Navigation Skills	[Green]			
	GPS Skills	[Green]			
	Site Records	[Green]			
FIELD TECHNICIAN	Daily Records	[Green]			
	Planting Methods & techniques	[Green]			
	4 Wheel Driving	[Green]			
	Drivers License	[Green]			
	First Aid Certification	[Green]			
	Chainsaw Operation	[Green]			
	Chainsaw safety & Maintenance	[Green]			
	Foliar Spray Application	[Green]			
	Cut Stump Application	[Green]			
	herbicide Properties	[Green]			
	Site survey/ searching	[Green]			
	Weed ID	[Green]			
	Hand tool skills	[Green]			
Health & Safety	[Green]				
Employee Induction	[Green]				
STAFF		JOE	DINO	JOEL	PUA
EXPERIENCE (YEARS)			13	5	25
HIGHEST EDUCATION		UOG(AG.)	H.S. DIP.	P.h.d. WSc	AS.D. Ag.

Figure 13: The Palau team has benefited from customised follow up training recently. This provides an opportunity to address individual organisational issues to improve the effectiveness and efficiency of their projects.

Staff Position	Skills					
Project Manager	Planning					
	Managing Resources					
	Managing Finances					
	Report					
	Analyze					
Leader	GIS					
	People Management Skills					
	Office skills					
Team Support	Advanced Plant ID					
	Navigation					
	GPS					
Field Technician	Site Record					
	Daily Record					
	Planting Method & Techniques					
	Drivers License					
	First Aid Certification					
	Chainsaw Operation					
	Chainsaw Safety & Maintenance					
	Foliar Spray Application					
	Cut Stump Application					
	Herbicide Properties					
Staff Position	Site Survey/Searching					
	Weed ID					
	Hand Tools Skills					
	Health & Safety					
	Employee Induction					
	Experience (Years)		Karness Kusto	Carlos Lajkam	Kenear Anmortha	Wesley Beasha
	Highest Education		1	3	3	1
			B.S Degree	High School	HighSchool	A.S. Degree

Figure 14: The Marshall Islands team is lacking many of the basic skills and would benefit from customised follow up training.

Marshalls

PROJECT MANAGER	PLANNING						
	MANAGING RESOURCES						
	MANAGING FINANCES						
	REPORT						
	ANALIZE						
LEADER	GIS						
	PEOPLE MANAGEMENT SKILLS						
	OFFICE SKILLS						
TEAM SUPPORT	ADVANCED PLANT ID						
	NAVIGATION SKILLS						
	GPS SKILLS						
FIELD TECHNICIAN	SITE RECORDS						
	DAILY RECORDS						
	PLANTING METHODS & TECHNIQUES						
	4 WHEEL DRIVING						
	DRIVERS LICENSE						
	FIRST AID CERTIFICATION						
	CHAINSAW OPERATION						
	CHAINSAW SAFETY & MAINTENANCE						
	FOLIAR SPRAY APPLICATION						
	CUT STUMP APPLICATION						
STAFF	HERBICIDE PROPERTIES						
	PESTICIDE CERTIFICATION						
	SITE SURVEY/SEARCHING						
	WEED ID						
	HAND TOOL SKILLS						
	HEALTH & SAFETY						
	EMPLOYEE INDUCTION						
	EXPERIENCE (YEARS)		JASON	ERICK	REMOS	ANDREW	KERSIN
	HIGHEST EDUCATION		2	10	10	6	6
			B.A degree	A.S Degree	A.S Degree	certificate	certificate

Figure 15: The Kosrae team is lacking many of the basic skills and would benefit from customised follow up training.

Staff Positions	Skills	Sleeper Sared	Quarantine	Tumunu Makaichy	Curtis Graham
Project Manager:	Planning	High	High	High	High
	Managing Resources	High	High	High	High
	Managing Finances	High	High	High	High
	Report	High	High	High	High
Leader:	Analyze	High	High	High	High
	GIS	High	High	High	High
	People Management Skills	High	High	High	High
Team Support:	Office Skills	High	High	High	High
	Advanced Plant ID	High	High	High	High
	Navigation Skills	High	High	High	High
Field Technician:	GPS Skills	High	High	High	High
	Site Records	High	High	High	High
	Daily Records	High	High	High	High
	Planting Methods & Techniques	High	High	High	High
	4 Wheel Driving	High	High	High	High
	Drivers License	High	High	High	High
	First Aid Certification	High	High	High	High
	Chainsaw Operation	High	High	High	High
	Chainsaw Safety & Maintenance	High	High	High	High
	Foliar Spray Application	High	High	High	High
Cut Stump Application	High	High	High	High	
Herbicide Properties	High	High	High	High	
Site Survey/Searching	High	High	High	High	
Weed ID	High	High	High	High	
Hand Tool Skills	High	High	High	High	
Health & Safety	High	High	High	High	
Employee Induction	High	High	High	High	
Boat Operation	High	High	High	High	
Herbicide Certification	High	High	High	High	
Experience (years):		5	1	0	6
Education:		1 Yr College	BA	H.S. Degree	BA

Figure 16: The Chuuk team is fairly well skilled amongst the whole team. They would benefit greatly from customised follow up training.

STAFF POSITION	REQUIRED SKILLS								
Project Manager	Planning								
	Managing resources								
	Managing finance								
	Report								
	Analyze								
Leader	GIS								
	People management skills								
	office skills								
Team suport	advanced plant ID								
	navigation skills								
	climbing skills								
	GPS skills								
	site records								
Field Technician	daily records								
	planting methods & techniques								
	4 wheel driving								
	drivers license								
	First Aid Certification								
	chainsaw operation								
	chainsaw safety and Maintenance								
	foliar spray application								
	cut stump application								
	herbicide properties								
	site survey/searching								
	weed ID								
	hand tools skills								
	healtha & safety								
	employee induction								
	certified herbicide applicator								
			Reagan	Nixon	Rudy	Bejay	Roseo	Conrad	John
		3	7	1	3	8	25	10	3

Figure 17: The Pohnpei team has exceptional skills in some areas. Customised follow up training should acknowledge this and focus on the processes as per the workshop.

6.3.4 Recommendation

The operational schedules should be updated by the participants following implementation to ensure the estimates are a true measure of time required for each site or group of sites. Improvement in control methods could reduce the regularity that many of these sites need to be visited, allowing further resources to be used on new species. Skills identified as being required but not met should be addressed during customised follow up training.

6.4 RECORDING

6.4.1 Aim

For the participants to determine what measurable site-records during each control operation they would collect, how they would collect the data, what would happen to the data and where it would be stored and backed up.

6.4.2 Method

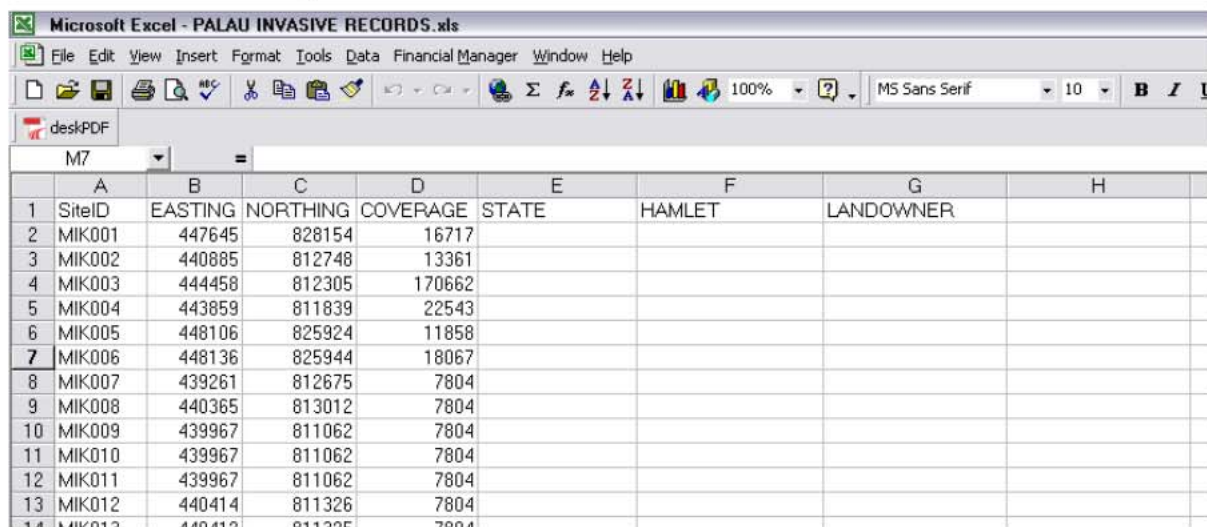
Instructor-led powerpoint presentation providing examples of expensive monitoring techniques conducted separate to control operations and efficient monitoring techniques focussed on measuring success while control is being implemented. Keeping it simple was reinforced and the essential records required to measure success were discussed, along with how they should be recorded on either a flat or relational database. Who would enter the data and where it would be stored was also determined. Common TLA's (three letter abbreviations) were determined for the main pest species to be use throughout Micronesia so data can later be put into one master database and to maintain data simplicity throughout the region.

Workbooks were completed by each agency for this section and historical data was entered and formatted on Microsoft Excel. The results were discussed amongst workshop participants.

6.4.3 Outcome

The participants identified key data needed to measure success and created their own flat databases in Microsoft Excel. The Palauans and Yapese managed to complete this task with ease because it is now part of their daily routine and already have a database. Each organisation created a project with an Excel worksheet for each species for recording treatment records, another sheet for observational information, one for species information, and one for site information.

The structure and format allows the database to be very simple and easy to enter data but also allows the data to be easily inserted into a relational database at a later date.



	A	B	C	D	E	F	G	H
1	SiteID	EASTING	NORTHING	COVERAGE	STATE	HAMLET	LANDOWNER	
2	MIK001	447645	828154	16717				
3	MIK002	440885	812748	13361				
4	MIK003	444458	812305	170662				
5	MIK004	443859	811839	22543				
6	MIK005	448106	825924	11858				
7	MIK006	448136	825944	18067				
8	MIK007	439261	812675	7804				
9	MIK008	440365	813012	7804				
10	MIK009	439967	811062	7804				
11	MIK010	439967	811062	7804				
12	MIK011	439967	811062	7804				
13	MIK012	440414	811326	7804				

Figure 18: The Site Information table records the Site ID, location, and other relevant information pertaining to each site.

SITE ID	AGE CLASS (M J S)	COVERAGE SQUARE FT.	HERBICIDE USED	SPRAY VOLUME (GALLONS)	PERSON HOURS	NOTES	TREATED
1	FRX0C1	M	E0C GARLON	1		INITIAL TREATING	N
2	FRX0C1	M	E0C GARLON	2			
3	FRX0C1	M	E0C GARLON	2			
4	FRX0C1	M	E0C GARLON	2			
5	FRX0C1	M	E0C GARLON	2		RAIN AFTER SPRAY	
6	FRX0C1	M	E0C GARLON	2			
SITE ID	AGE CLASS (M J S)	COVERAGE SQUARE FT.	HERBICIDE USED	SPRAY VOLUME (LITRES)	PERSON HOURS	NOTES	TREATED
1	FRX0C1	M	E0C GLYPHOSATE	20		INITIAL TREATMENT WITH 2% GLY	N

Figure 19: The treatment records table records information about each treatment and includes all the information required to create the success measures.

CODE	Family	Genus	Species	Common	Local	Preferred Control	Herbicide	Rate	Preferred Control	Herbicide 2	Rate 2	Seed Viability	Origin
AFT		Spathodea	campanulata	African tulip									Africa
CLC		Clodendrum	quadricolor	Bronze-leaf									
COI		Antigonon	leptopus	Chain-of-love									
VEA		Melia	azedarach	Chinaberry									
CHO		Chromolaena	odorata	Chromolaena									
ULH		Cleome	hirta	Koster's curse									
FSK		Pisonia	auriculata	False sakau									
HDR		Clodendrum	chinense	Honolulu rose									

Figure 20: The species table records relevant information about the species.

Common	Local	Preferred Control	Herbicide	Rate	Preferred Control	Herbicide 2	Rate 2	Seed Viability	Origin	Flowering Time	Time to Maturity	Dispersal Vectors
African tulip									Africa			
Bronze-leaf												
Chain-of-love												
Chinaberry												
Chromolaena												
Koster's curse												
False sakau												
Honolulu rose												

Figure 21: The species table also records information about plant characteristics and dispersal information.

RISC TLA	Common name	Family	Genus	species
AFT	African tulip	Bignoniaceae	Spathodea	campanulata
CLQ	Bronze-leaf	Lamiaceae	Clerodendrum	quadriloculare
COL	Chain-of-love	Polygonaceae	Antigonon	leptopus
MEA	Chinaberry	Sapindales	Melia	azedarach
CHO	Chromolaena	Asteraceae	Chromolaena	odorata
CLH	Koster's curse	Melastomataceae	Clidemia	hirta
FSK	False sakau	Piperaceae	Piper	auritum
HOR	Honolulu rose	Lamiaceae	Clerodendrum	chinense
IMP	Imperata	Poaceae	Imperata	cylindrica
IVG	Ivy gourd	Cucurbitaceae	Coccinia	grandis
FAM	Kerosene tree	Fabaceae	Falcataria	moluccana
LEL	Leucaena	Fabaceae	Leucaena	leucocephala
MEQ	Melaleuca	Myrtaceae	Melaleuca	quinquenervia
MEP	Merremia	Convolvulaceae	Merremia	peltata
MIK	Mile-a-minute	Asteraceae	Mikania	micrantha
OCT	Octopus tree	Araliaceae	Schefflera	actinophylla
PRX	Praxelis	Asteraceae	Praxelis	clematidea
RAT	Rattan palm	Arecaceae	Calamus	spp.

Table 6.1: The RISC TLA's for the species identified during the workshop.

6.4.4 Recommendation

That the database is used daily to record site visits, further required attributes are added to the site and species record tables as required. Each new site should be added to the database with a unique identification, and TLA's should be used consistently throughout Micronesia.

7.0 MONITORING AND EVALUATION

One species was selected by each organisation to complete this section of the training. It is important to determine how each module may influence other pest plants that are determined to be priorities for each organisation.

7.1 MEASURING SUCCESS

7.1.1 Aim

For the participants to determine which “key performance indicators” or “measures of success” they would use, how they would achieve these measures and who would be responsible for ensuring they were completed.

7.1.2 Method

Instructor-led powerpoint presentation providing examples of monitoring, from qualitative photo-points to quantitative key performance indicators. Francis Ruegorong talked about Yap's success measures that they now use.

Workbooks were completed by each agency outlining which success measures they would use. Graphs were constructed to measure success of their projects to-date from historical records. The results were discussed amongst workshop participants.

7.1.3 Outcome

The teams from Kosrae, Chuuk and the Marshall Islands had no data on their projects. Hopefully now given the knowledge and skills they will be capable in the future. The team from Pohnpei had much data pertaining to the false sakau sites but it had been collected in an “unfriendly-user” format. This meant that to gain any meaningful measures much time would be needed to reformat the data. This achieved an overall project indicator but lacked more precise sit-by-site information.

1	INVASIVE ERADICATION 2009										
2	ID-NO.	TYPE OF INVASIVE	DATE VISIT	VISITOR	NAME OF THE OWNER	COMMENTS	COMPLIMENTS	AREA SIZE	HEIGHT	NO. OF PLANTS	NO. OF PLANT
3	1	FALSE SAKAU	1/5/2009	Konrad M. Iv Reagan Form	Anak's Setra	Need follow up	OLD	2sq.ft	15'	3	
8	2	FALSE SAKAU	1/5/2009	Konrad M. Iv Reagan Form	Maria J. A. A. A. A.	Need follow up	OLD	2sq.ft	15'	3	
12		CHAIN OF LOVE	1/6/2009	Konrad M. Iv Reagan Form	KASTER KOSTIKA/delonAwak	Need follow up	NEW	4sq.ft	9FT	12	

Figure 22: The reformatted Pohnpei data requiring excessive data entry, excessive formatting and lacking many success measures that available for pest projects.

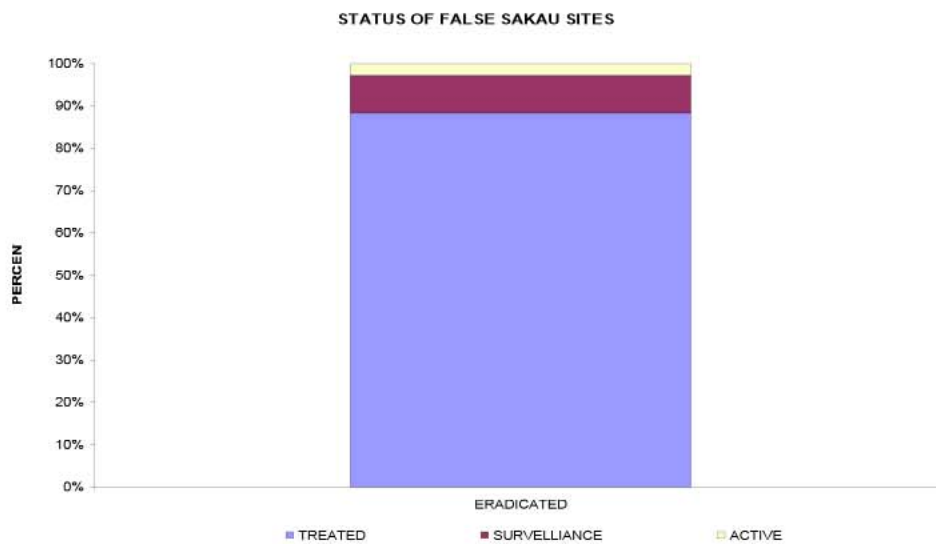


Figure 23: The Pohnpei data did allow the measure of sites that were under surveillance (none found), still active, and yet to be treated.

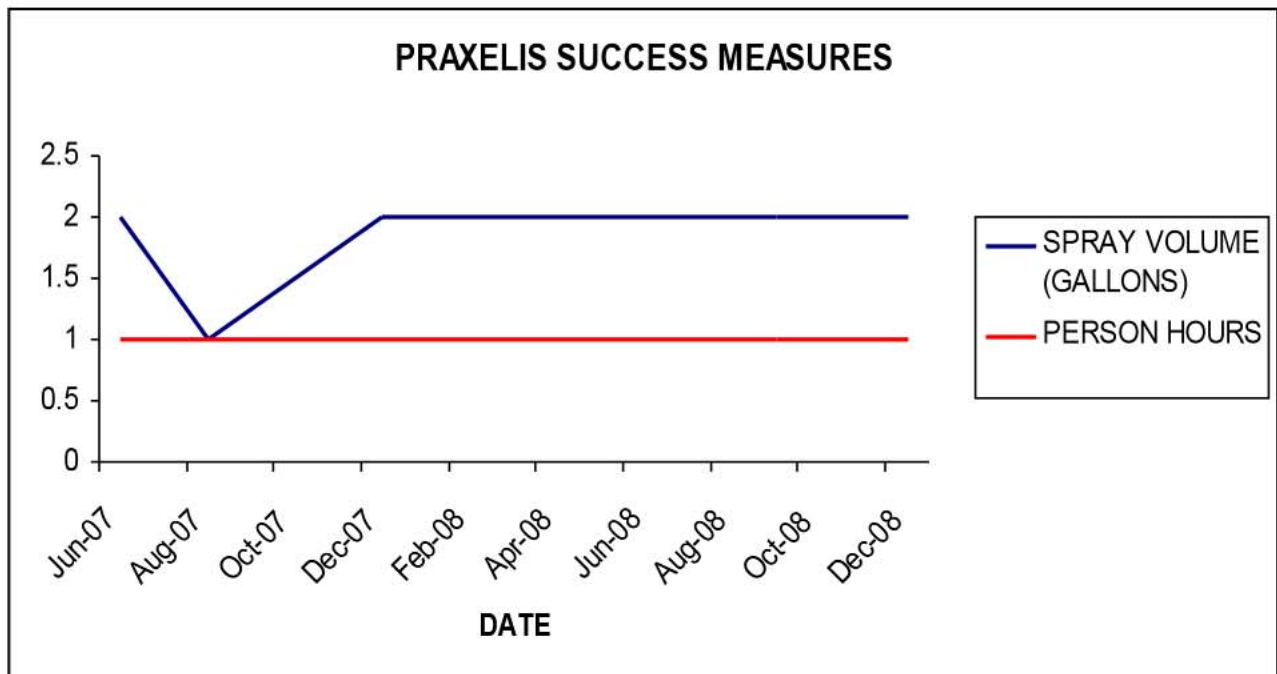


Figure 24: The Paluan data appeared to show no reduction in Praxelis. Measuring quantities in litres and changing the spray nozzle used will show that a reduction in biomass has occurred.

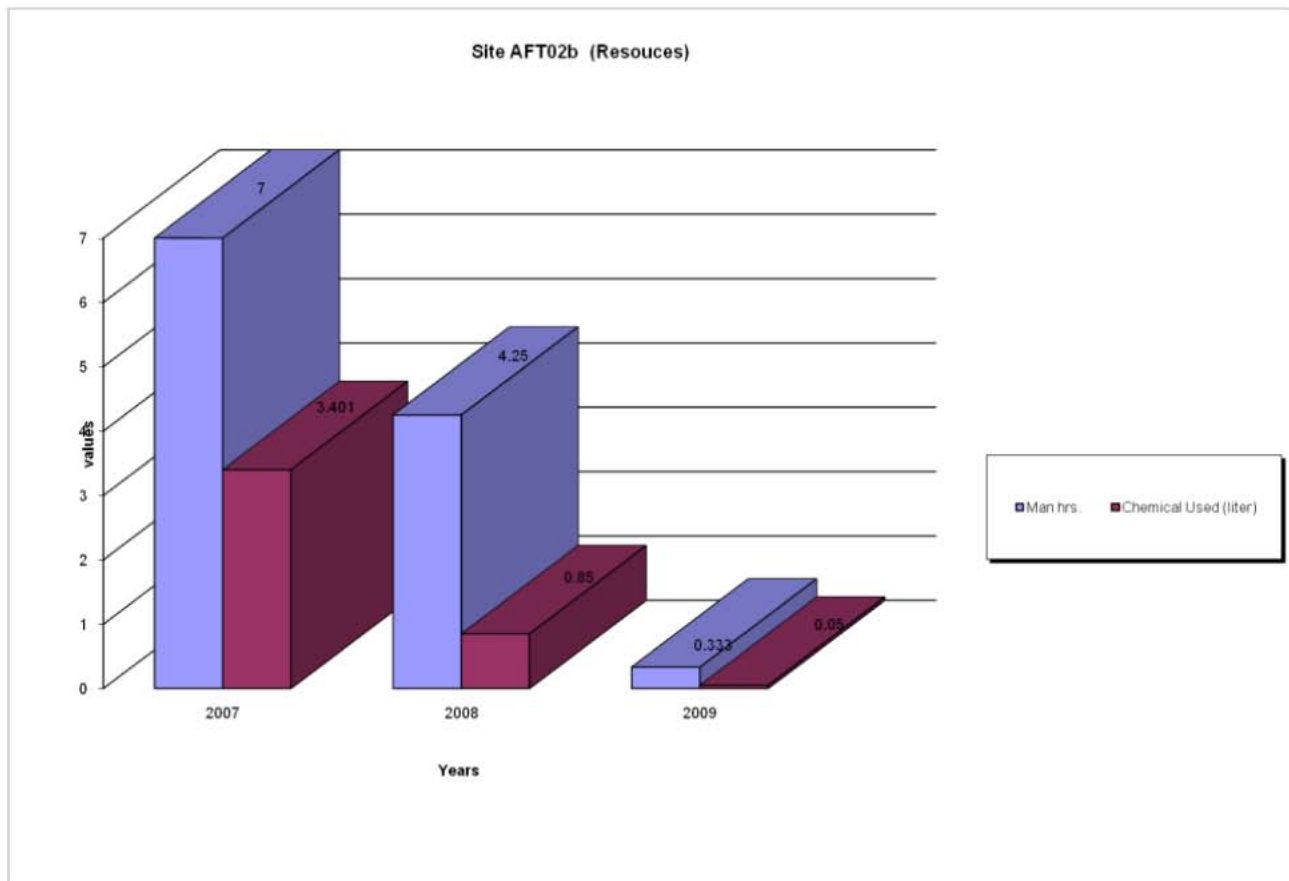


Figure 25: Yap's success measures show a decline in both time required and herbicide volume, suggesting the project has been effective and efficiency is improving.

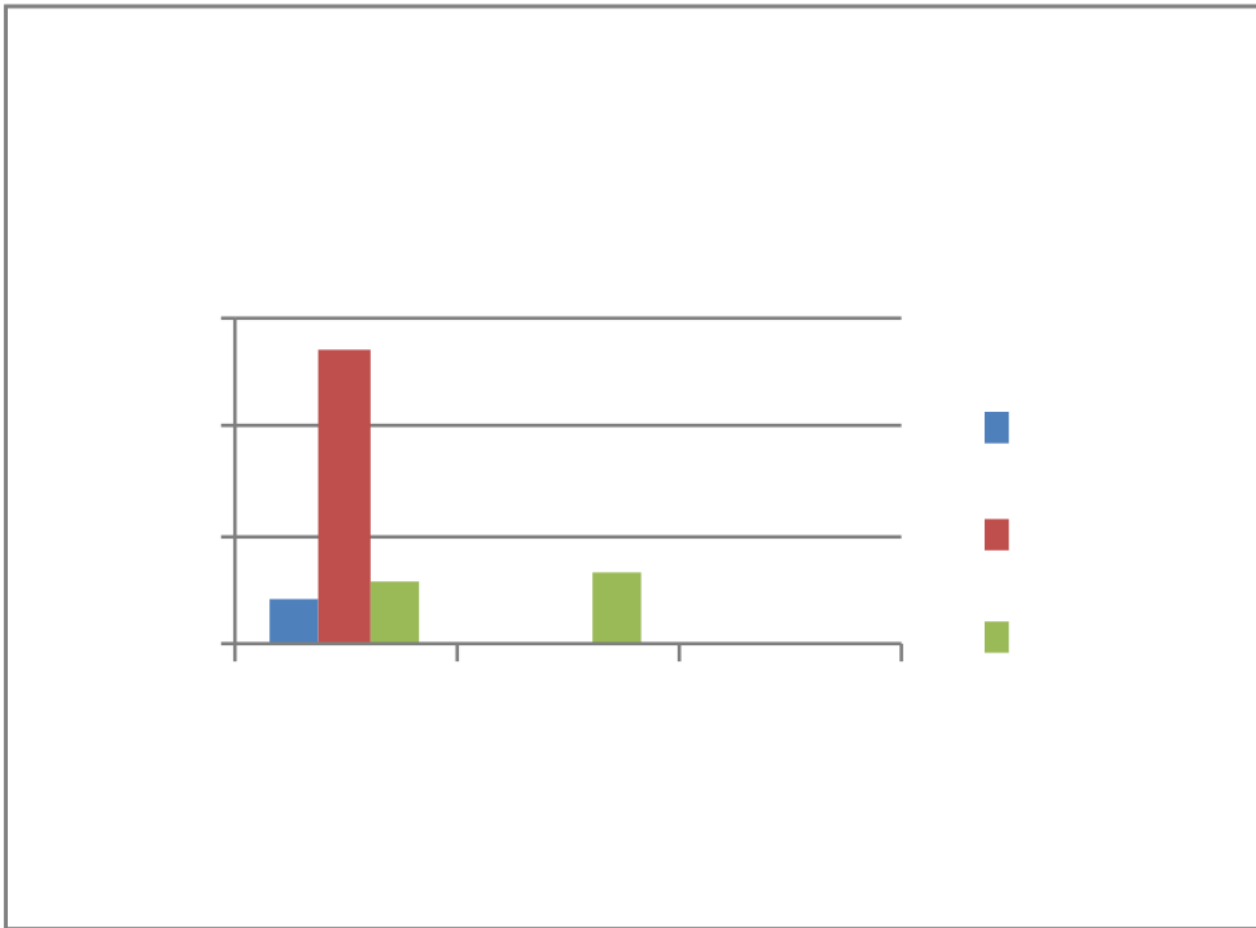


Figure 26: Yap's measures of age class and number of plants also suggests success has been achieved.

7.1.4 Recommendation

That the participants use these success measures and the others provided in the workshop to evaluate, justify success and identify problems.

7.2 EVALUATION

7.2.1 Aim

For the participants to determine if they were having success towards achieving their objective using their success measures, and if they were not why not? If they were not successful participants are to determine ways of improving their success.

7.2.2 Method

Instructor/ participant interaction discussing whether their project had been successful from studying their graphs. Participants were encouraged to provide reasons why they had been successful/ unsuccessful, and how they could make changes or improvements to their project to make them more successful.

Workbooks were completed by each agency for this section and discussed amongst workshop participants.

7.2.3 Outcome

The participants successfully identified whether they had been successful or not and identified improvements they could make. These improvements largely involved recording data, consistency in operations, and understanding the characteristics of the plants.

7.2.4 Recommendation

That participants regularly identify whether or not they have been successful and constantly look for improvement.

7.3 REPORTING

7.3.1 Aim

For the participants to compile a report that was clear, concise, accurate, objective, measurable, accountable and contained recommendations towards required changes or further actions to allow the project to be more successful. For the participants to create and present a powerpoint presentation suitable for detailing their projects and their success to others.

7.3.2 Method

Instructor-led powerpoint presentation providing examples of reports containing the essential elements of a successful and meaningful report. Encouragement that they had completed or discussed all of these elements within the workshop, and by compiling their workbooks into a single document they would have a full report. By utilising their report they can make a powerpoint presentation highlighting their project.

7.3.3 Outcome

Participants constructed their reports with the help of the instructor using all the information, spreadsheets, maps, success measures and evaluation they had completed over the duration of the workshop. Unfortunately this was a fairly rushed exercise, however the system that was used to complete the workshop meant that the majority of constructing the report was formatting. By compiling the report the amount of issues we had got through during the workshop was emphasised and proved to the participants that they had worked through their project plan in a systematic and thorough manner. The powerpoint presentations were delivered to their peers and stakeholders and delivered in a confident manner.

7.3.4 Recommendation

That participants complete their reports in the manner suggested and they email their reports to David Moverley to look over. More time on this section would be beneficial. The use of computers from the start of the workshop enabled participants to enter the information as we progressed.

8.0 RECOMMENDATIONS AND PROPOSED ACTIONS

8.1 THE WORKSHOP

The workshop as it was implemented was generally well received. The scope was fairly thorough and the system used followed a logical progression. The focus on project management as opposed to just data management (as was initially suggested) was, in hindsight, essential and benefited the participants in a far greater way than a focus on data management ever could have. It is vital that a project is managed properly at all levels if data is to be of any use at all, and the opportunity to improve and update skills in all areas of project management and implementation is difficult to access, procure and maintain. Considering the timeframe and the amount of information to consider, process and understand, and the participants of whom were from different organisations with different skill levels and issues, it was always going to be an extremely challenging and intensive workshop. The result of this is that for some of the participants the modules were not in enough depth, particularly when organisations needed a lot of customised or one-on-one help.

Probably the best ways to address this are:

Participants should return pre-workshop questionnaires at least two weeks before the workshop.

Participants are fully prepared with historical data, current maps etc. This is not always possible because some participants have no historical information.

To schedule training to individual organisations customised to each organisations further needs.

Most of these recommendations just involve further organisation before the workshop, which on this occasion was hampered by the late notice at which the workshop was required to be held due to funding constraints. The exception to this is the recommendation for further customised training.

8.2 CUSTOMISED TRAINING

During the workshop it became apparent that each organisation required further customised training. This is because each organisation has different levels of technical support, skill, education and technology. The resulting differences in project management experience mean that successful weed management may be difficult or impossible to measure without further training. All needs for these agencies could not be met in the basic workshop and if organisations are to be self-sufficient, further customised training to address those differences is required.

The best way to overcome this situation is to spend time with individual organisations after they have completed a basic workshop, that need to fill in the gaps and iron out any problems where they have arisen. The optimum time to do this is as soon as possible after the workshop so the entire process can be set up and implemented correctly. There is nothing more frustrating for field staff and management than collecting data that is not based on consistent implementation rendering results difficult to interpret.

8.2.1 Chuuk, Kosrae, Marshall Islands and Pohnpei

Customised training for these organisations to be more self-sufficient should address the following issues:

- Ensure workshop recommendations are applied on a daily basis.
- Ensuring a consistent method of control is used for each weed species.
- Introduction of alternative herbicides and their use.
- Ensuring field staff are capable of using GPS correctly for use in weed projects.
- Ensuring field staff were competent in rationalising weed sites.
- Aiding the staff in prioritisation of weeds and sites.
- Establish a weed management GIS layer for their GPS and map creation..
- Ensuring the work schedule is updated following ground operations.

Most of these issues can be addressed by spending time with the field staff in the field, supplying the proper GPS unit with weed sites mapped on it, acquiring some alternative materials, helping the staff to record and enter data properly. After following up with Palau and Yap it became apparent that just being there to answer concerns or provide training where required was very helpful and resulted in more successful projects.

8.2.2 Palau and Yap

Further training for these organisations is currently being addressed by email where required. It is worth noting that regular visits should be made to further educate these organisations as conditions allow. Weed management is forever a changing industry and it is important to keep up to date with these changes.

It has been suggested by the participants that a two yearly visit would be of great benefit. This will be especially important once good data has been collected for at least a year.

10.0 APPENDIX TWO: WORKSHOP OUTLINE

