NORTHERN TERRITORY GOVERNMENT

DEPARTMENT OF RESOURCES

PRIMARY INDUSTRIES
ANNUAL EXTENSION REPORT 2011

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INTRODUCTION

This 2011 edition of the Northern Territory Department of Resources' Annual Extension Report is a summary of the Department's extension activities in the Primary Industries Division across a wide range of agricultural industries in 2011.

In early 2011, the Northern Territory Government launched its new Agribusiness Industry Strategy 2011-15, building on and complementing the Primary Industries Extension Strategy. Both strategies were developed in consultation with industry partners to provide a focus on priority issues. Extension is a critical component of the Agribusiness Industry Strategy and its vision of thriving regional economies underpinned by sustainable food and fibre industries.

This Report reflects on Primary Industry Division's extension services for 2011, which are diverse across the range of activities it is involved in. These services provide critical information to industry, build knowledge of, and reinforce established best practices and the adoption of new research and development findings and raise knowledge and awareness amongst industry stakeholders and the general public in the early detection of exotic disease or pest incursions. Extension officers also provide a vital feedback mechanism between the production sector, industry researchers and decision-makers.

The NT Government has made a commitment to NT agriculture to maintain an effective research, development and extension (RDE) service to its rural industries. While research projects are reported separately in the Department's Annual Research Achievements Report, it is recognised that research, development and extension activities form part of a continuum of effort and are planned to integrate and complement each other.

This year's report is designed to be useful and informative to a wide range of readers. Comments and suggestions are welcome and can be provided to the Department's Technical Publications Branch at: technical.publications@nt.gov.au.

PLANT INDUSTRIES

Departmental officers provide extension services to the NT cropping, horticultural and forestry industries to promote productivity, profitability and, where possible, to protect the environment and human health.

TITLE: National Forum on African Mahogany

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Keywords: African Mahogany, Douglas Daly Region, tropical hardwood timber

Purpose

The purpose of the forum was to bring together government researchers, commercial planation managers, consultants and private farm agro-foresters involved in developing an African Mahogany (*Khaya senegalensis)* forestry industry in northern Australia.



Design/Method/Approach

The forum was conducted over three days, and involved the delivery of technical, scientific and commercially focussed presentations. The program also incorporated a field trip which included a visit to a nursery involved in propagating wild harvested seed, and inspection of commercial plantations in the Douglas Daly Region.

Activities/Findings/Achievements

Some 50 delegates from across Australia attended. Researchers from Queensland, Northern Territory and Western Australian government agencies provided much of the information around advances in breeding and selection of African Mahogany. Of particular significance was the topic of planting of seedlings from wild-harvested seed sources obtained from Africa, as opposed to utilising selected lines of elite NT and Qld government trees and mass-propagating them as cloned cuttings.



Other agenda items included timber quality, pest management, water interception, grower's perspectives and value-adding opportunities. Issues around the development of more uniform and comprehensive forestry codes of practice across the various state and Territory jurisdictions were also discussed.

Overall, the event served as an important networking and ideas sharing opportunity. It served to highlight the substantial amount of cutting-edge research that has been undertaken over the five years, including that achieved by the formation of the 'Smart Forest Alliance'. The forum also recognised that there is significant research and development needed at a time when forestry research funding is limited.

Practical Implications

The forum has managed to progress the science around selection and propagation of elite genetics within the Australian *Khaya senegalensis* gene pool.

TITLE: 8th Australian Mango Conference, 2011

Project Leader: Warren Hunt

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Keywords: Australian Mango Conference, mango

Purpose

The Australian Mango Conference is a biennial event organised by the Australian Mango industry Association (AMIA) and supported by the Northern Territory Department of Resources, the Queensland Department of Agriculture, Fisheries and Forestry (QDAFF), and the Department of Agriculture and Fisheries Western Australia (DAFWA), which serve as the key providers of research and extension expertise to the Australian mango industry. The event's purpose is to provide a regular forum for the industry from a national perspective, and includes both scientific and more practical, farmer-ready presentations. The 2011 conference was not refereed.

Design/Method/Approach

The Department's role in these events is to provide on-site coordination of activities to ensure smooth operations as well as to contribute scientific or extension related expertise. The 2011 conference was conducted from 18 to 21 May 2011 and attracted delegates from the NT and Australian industries.

Activities/Findings/Achievements

Ten Departmental staff were directly involved in proceedings. Staff presented papers around topics related to mango pest and diseases, developing improved root stocks, market access issues around fruit fly, irrigation management and climate change. The Extension Leader also facilitated the on-farm field session of the conference, and several Departmental staff participated in the inter-farm tour program.

Practical Implications

The event was able to draw together 150 delegates across the farming, RDE, and agribusiness sectors that service the mango industry, and as such it provided a useful networking opportunity for stakeholders.

TITLE: Maintaining Mango Fruit Quality Seminars

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Keywords: fruit quality, mango, mango wash, shelf life

Purpose

To enhance the knowledge and awareness of the underlying causes of mango fruit quality deterioration, and best practices to extend shelf life.

Design/Method/Approach

Two small-group seminars were held in mid-2011 in Darwin and Katherine to address both pre and post-harvest management and handling issues affecting fruit quality in mangoes. There has been ongoing concern amongst some segments of the industry about poor packet-out percentages of first grade fruit and failures in transporting fruit to market, resulting in short shelf life. The activities were organised and facilitated by Plant Industries staff with additional expertise sought from Mr Rowland Holmes who has been working in this field for over a decade.

Activities/Findings/Achievements

Nineteen people from six major NT industry producers and four agricultural consultancy enterprises attended. Fruit quality issues discussed by participants included: skin brown-spotting, sooty mould, mango scale insect attack, weather damage, stem-end rot, questions around the use of certain fungicides, and tree rub problems in windy dry seasons.

Learnings gained by participants included:

1. Careful consideration with selection of fruit washes.
2. Fruit washes based on surfactants are detrimental to fruit quality.
3. Mango Wash™ is a surfactant-free wash.
4. Mango Wash™ solution ideally needs replacement after every third bin.



Wash solutions need regular recharging to maximise fruit quality

5. The concentration of mango sap does not increase with rainfall, but the volume of sap excreted by detached mangoes does. Therefore longer wash times are required in wetter conditions.
6. The current best practice for mango washing is 90 seconds.

7. Recognition for enhanced staff training. The seminars helped growers better understand how crucial well-trained workers are.

8. Fruit held or transported with high skin temperatures (>24°C) will begin to exhibit skin brown-spotting. This also pertains to fruit ripened under ethylene in poorly performing cold rooms.

9. The importance of pre-cooling fruit to 12-14°C prior to transport, then transport at the same, and later ripen the fruit at the market at 20°C, over two-three days using ethylene.

10. Growers testified that there were many more variables associated with maintaining mango fruit quality than they previously appreciated.

11. Growers indicated that they needed to ask more questions of their wholesaler about ripening procedures in the market, and seek better feedback on fruit quality from the market in general.

Practical Implications

These seminars have already assisted some producers in changing practices and adding value to their 2011 harvest. Importantly, the interactive nature of the seminars indicated that there are serious identified knowledge and skills gaps in the NT mango industry around fundamental parts of business operations that strongly influence returns that growers will receive for their crop. This has prompted a move towards piloting a small-group extension process for the industry in 2012 which will further identify the range in practices across different operations in participating businesses. This will assist growers to better recognise their own business strengths and weaknesses, and enable the Department to best tailor its extension or research efforts.

TITLE: Mango Research, Development and Extension Forum 2011

Project Leader: Warren Hunt

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Keywords: fruit quality, mango

Purpose

To update the Northern Territory mango industry on the research, development and extension (RDE) efforts of the NT Department of Resources and other interstate agencies involved in servicing the mango industry in Australia.

Design/Method/Approach

The NT mango industry held its annual forum on 17 and 18 March 2011 at ‘Tou’s Garden’ at Acacia. This activity was conducted in traditional conference style with session chairpersons and a supporting set of proceedings for participants. There were opportunities for questions at the end of each presentation, and break-out sessions during which people were asked to contribute their ideas to various issues.

Activities/Findings/Achievements



Fifty-two growers and industry stakeholders attended the 2011 forum at Tou's Garden, Acacia

Fifty-two people from industry, agribusiness and service agencies attended the forum. Fourteen presentations covering a wide range of technical issues on mango research and development were presented. These included issues around market access, genetic improvement and variety development, supply and value chain, insect pest management , pre and post-harvest disease management, irrigation, fruit defect analysis, and understanding weather and climate systems.

During several interactive sessions, industry participants had the opportunity to contribute ideas that were then taken to the Department's Mango Advisory Panel - a collaborative grouping of mango producers and Departmental research and extension personnel that meets three times per year to assist in providing strategic direction for RDE investment for the NT Mango Industry.

The forum's ideas for ongoing effort included:



Entomologist Austin McLennan explains the concept of area-wide management against fruit fly.

1. Maintaining first grade fruit quality along the supply chain.
2. Continuing the national mango genetic improvement program.
3. Ongoing RDE in insect pest management, including research into integrated pest management systems and potential for area-wide management systems against fruit fly.
4. Ongoing research and extension for improving pre and post-harvest disease management systems.
5. Ongoing refinement of mango defect monitoring and analysis.
6. Ongoing RDE into crop manipulation – i.e. inducing early flowering, prevention of flower abortion, extending flowering length and reducing early fruit drop.
7. RDE into better understanding tree canopy management.
8. Initiating research and development (R&D) into both harvesting systems and technologies to reduce future industry costs.
9. Maintaining and initiating new R&D partnerships with universities and commercial agribusiness.

10. Improving farmer profitability by effective extension of best practices relating to:
    - tree husbandry
    - nutrition
    - water use efficiency
    - harvesting systems equipment
    - appropriate chemical use to prevent ineffective chemical applications or potential residue issues.

11. Extension of best practice management around management of vertebrate pest species within and around orchards.

12. Extension relating to better understanding weather and climate systems and their implications for management.

Practical Implications

The points contributed by forum participants were considered by the advisory panel, and a number of programs have been initiated to address the issues raised.

TITLE: Extending Termite Management in Horticultural Crops

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Keywords: integrated pest management, *Mastotermes darwiniensis*, regional extension, termite management

Purpose

To increase knowledge and skills amongst Darwin and Katherine horticultural producers of integrated pest management practices related to management of the giant north Australian termite - *Mastotermes darwiniensis*.



Mastotermes darwiniensis

Design/Method/Approach

Two small-group field workshops were held mid-year in Darwin and Katherine to address identified knowledge and skills gaps in termite management (i.e. the management of the giant northern Australian termite - *Mastotermes darwiniensis*).

Activities/Findings/Achievements

Twenty-nine people participated in the events with the majority from mango enterprises. Several agribusinesses and agricultural consultants also attended, along with the caretakers of Fred's Pass Reserve.

Entomologist Brian Thistleton and Technical Officer Michael Neal provided expert instruction around pest biology and integrated pest management strategies involving detection and treatment. The process involved interactive, facilitated discussion followed by in-field practical demonstration of detection and treatment techniques. Learnings highlighted by participants were:

1. Where and how to best direct termite treatments.
2. Learning why past treatments had failed.
3. The usefulness of aggregation drums for eliminating termite colonies.
4. Learning how to detect early signs of damage visually, as well as boring trees for detection and treatment of termites.
5. Developing area-wide control programs within an orchard/plantation.
6. Awareness of a new chemical treatment.

Practical Implications

Participants learned new skills, and gained greater knowledge around integrated control of *M. darwiniensis*. This will reduce productivity losses from this pest amongst mango, citrus, and other enterprises in the Darwin and Katherine Regions, thereby assisting to make these businesses more profitable.



Technical Officer Michael Neal demonstrating to Katherine horticultural growers - trunk auguring to detect presence of Mastotermes in a mango tree

TITLE: Passion Fruit Extension

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Keywords: flavicarpa, passion fruit, Panama Red passion fruit, pollination, regional extension

Purpose

To extend to existing growers and other interested parties, the latest findings, and best practices for overcoming the disease and agronomic issues with growing passion fruit in the Northern Territory. This extension activity is part of a program supported by the Australian Centre of International Agricultural Research (ACIAR), in partnership with researchers from the (now) Queensland Department of Agriculture, Fisheries and Forestry.



Panama Red passion fruit

Design/Method/Approach

The extension event involved a small group workshop and field walk at Berrimah Farm.

Activities/Findings/Achievements

Twenty-two people, ranging from local commercial growers to backyard gardeners attended a workshop and farm walk at Berrimah Farm in September 2011. Whilst there is still much more to develop with the crop, good progress was made in addressing the primary limitations for commercial production in the Top End.

Expansion of the small passion fruit industry in the NT has been inhibited by short vine life. Newly established vines will commonly flourish for one or two seasons before succumbing – turning what should be a perennial horticultural crop into an annual or at best biennial farming system with forced plough-outs and replants.



Poorly adapted rootstock grafted with Panama Red (left) and flourishing Birdwood Brazilian flavicarpa rootstocks (right), Katherine Region

Recent work by the Plant Industries Group has developed a strategy to resolve this barrier to profitable commercial production, opening a window of opportunity for future industry development. The NT could have a distinct advantage when this issue of vine decline is overcome, as the NT appears free of the debilitating 'Woodiness' Virus which afflicts all production areas in eastern Australia and many other regions of the world. To maintain this advantage, the movement of live passionfruit plants, the primary mode of virus spread, is prohibited into the NT. A second serious disease, Passionfruit Fusarium Wilt does not appear to be present in the NT.

Not all passion fruit types succumb to short vine life as a number of more resilient types have been identified. The Department has trialled and identified some more resistant "Golden Passion Fruit" *flavicarpa* seed introductions which are grown as rootstocks and grafted with Panama Red selections.



Passion fruit flower

The workshop also highlighted specific issues around site selection, land preparation requirements, pruning strategies, pollination techniques and nutrient requirements for growing passion fruit. It also dealt with harvest and post-harvest handling issues such as: when to harvest; post-harvest packing; and cool room storage temperature.

Practical Implications

The material extended in this event was a set of proven and practical techniques and guidelines for those interested in further developing passion fruit in the NT.

TITLE: Rice Program Extension

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Keywords: floodplain, rice, Tortilla Flats

Purpose:

To communicate findings from Northern Territory field research into agronomic and pest management issues around rice varieties that might suit northern Australia.

Design/Method/Approach:

Extension work involved field walks and media communication through the print and electronic media (i.e. ABC Rural Radio).



Rice cultivars - Tortilla Flats demonstration site

Activities/Findings/Achievements

Two different groups undertook field walks of the lowland (paddy) rice site at Tortilla Flats on the Adelaide River floodplain. The first event in March 2011 involved nine local primary producers. A consequence of this visit was that a local cattle producer was persuaded to establish irrigation bays and plant a pilot stand of 30 ha of rice which was harvested and used for stockfeed processing.

A second tour party in September consisted of international delegates from the Advisory Panel of the Australian Centre for International Agricultural Research (ACIAR), who inspected the site.

Practical Implications

The Department is increasing its knowledge and skills in rice production around germplasm evaluation, sowing techniques, water management, weed management, pest and disease management, the effects of temperature, varietal suitability and quality, and market chain and industry development.

TITLE: Fodder Industry Program

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Keywords: Cavalcade, Douglas Daly Region, fodder, hay production, live export cattle trade, regional extension, tarping hay, tropical pasture

Purpose

The NT fodder industry has grown steadily over the past 15 years in line with the growth in export of live cattle. It is located mainly in the Top End, Katherine and Barkly Regions. It has become a significant component of the Northern Territory rural economy generating around $13.9m in 2011. The objective of this project was to undertake value-chain and agronomic research, and extend relevant findings to NT fodder producers.



Windrowed grass hay in the Douglas Daly Region

Design/Method/Approach

The extension side of this project aimed to further develop industry knowledge, awareness and skills, with an objective to influence wider adoption of best practices.

Activities/Findings/Achievements

The project undertook two extension exercises in 2011. The first was a meeting to bring key stakeholders in the industry together to discuss their involvement and potential cooperation in both a value-chain and

agronomic research and extension program. The second event was an activity aimed at raising producers' knowledge and awareness about in-field hay storage over the wet season.

Cooperation in fodder industry RDE

There was broad industry interest and support for the concept of fodder industry value chain and agronomic RDE. The first activities planned for 2012 are to commence surveying the industry to establish benchmarks in practices, resources and productivity. Additional work for 2012 involves initiation of agronomic research targeted at better understanding the nitrogen equation in different fodder systems, and extension of the trial's findings to fodder producers.

In-field hay storage

As a consequence of the 2011 live export trade suspension, producers reported a fall in demand for hay and fodder products. With the 2011-12 wet season approaching and surplus hay remaining in the field, identifying and implementing suitable storage options was seen to be important for those wanting to prevent serious degradation or total loss of their baled hay assets. A group of five major Douglas Daly fodder producers and a commercial processor met to address this issue in September 2011. A range of hay stacking and tarping (covering with a tarpaulin) methods and their estimated costs were discussed. A practical demonstration of an effectively designed and tarped stack was inspected.



Good stack formation and tarping is critical for in-field storage

Practical Implications

The project is filling an important knowledge gap in the NT fodder industry's business development.

TITLE: Addressing Product Quality and Safety with Language other than English (LOTE) growers in the Vegetable Industry

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Keywords: Asian vegetables, chemical use, environmental stewardship, *Innoveg*, publications, vegetable, water management

Purpose

Studies have shown that 40% of Australian vegetable growers are of backgrounds where languages other than English are spoken. The Northern Territory has its own distinct set of migrant vegetable producers, principally from Vietnamese and Cambodian backgrounds where languages other than English (LOTE) are commonly spoken. The two communities form the hub of vegetable production in the NT, supplying southern markets with a variety of Asian vegetable types (Sin Qua, Luffa, Asian Gourd, Taro, Yam Bean, Bitter Melon, Cucumber, Okra and Snake Bean). The sector was worth $20.7m to the NT economy in 2011. These growers have special needs relating to extension of knowledge and skills for a wide range of agricultural subjects such as irrigation, pest management and chemical use, post-harvest management of product and environmental stewardship.

Research by vegetable and horticultural agencies has highlighted a number of issues relating to product safety and quality occurring within the greater Australian community of LOTE growers. These include poor understanding of:

- best practice chemical usage;
- post-harvest management of product; and
- environmental stewardship.

There are a number of reasons for this, including:

- poor communication between LOTE growers and the rest of the Australian industry;
- lack of regulatory drivers (most of the growers supply direct to the market without needing to comply to a quality assurance program);
- disconnection within the supply chain between production and retail; and
- a short-term view of the industry.

If not addressed, these issues have the potential to affect the viability and reputation of the whole vegetable industry.

To begin to address these issues, *InnoVeg,* the national program for extension in the vegetable industry, has been developing and delivering a series of resources, workshops and activities specifically designed for

LOTE growers in the Sydney basin of New South Wales (NSW) and the rural Darwin region in the Northern Territory (NT). The resources developed through this pilot program are nationally relevant and will be made available to all service providers currently working with LOTE communities around Australia through the LOTE Community of Practice Group. This project will also take stock of existing LOTE projects being conducted across Australia and improve connections with these projects through the *InnoVeg* Providers Network.

Design/Method/Approach

The project is utilising interactive small-group extension approaches in its engagement of grower stakeholders. The LOTE workshops are usually short (1 to 1½ hour) meetings or site visits, held in the middle of the day, usually during a lunch hour. This proved to be the most successful period in terms of attracting grower participants. They include the assistance of a properly briefed interpreter to aid in delivery of proceedings, and in promoting dialogue. A few local group champions have been identified within three geographic localities in the Darwin rural area. Growers are usually invited to events by either direct visit from project staff or networking via the local grower champion.

The main topics covered in the first year of the program were:

1. Post-harvest management and better understanding the supply chain.

2. Product quality and safety (i.e. developing improved knowledge and skills around best practices with insect pest and weed management).

3. Environmental stewardship (e.g. developing enhanced capacity in relation to water management, maintenance of soils through improved cultural practices).

Activities/Findings/Achievements

Post-harvest management and the supply chain

A growers' tour to Sydney was held on 16-17 October, when six growers toured the Flemington wholesale and Bankstown and Cabramatta retail markets. Wholesalers visited included TV Farms, Top Class Fruit Supply, VinQ Produce, Oriental Produce and Southern Cross. The quality of vegetables arriving at each market was assessed by growers, and temperature loggers fitted into loads in the NT were retrieved for analysis. Quality issues such as heat damage, poor grading and post-harvest rots were discussed by growers and wholesalers. Some of the growers said they would change their business focus and or practices around post-harvest management due to the market tour.



Sydney markets

A workshop dedicated to post-harvest management of vegetables was held on 11 November at Dao Nguyen's farm shed at Humpty Doo. A follow-up radio interview was conducted by ABC Radio. Anecdotal

evidence indicated that participating growers have since changed their cool chain practices as a result of this workshop, and are also using insulating blankets in the field, immediately on harvesting.

Product quality and safety

Three voluntary on-farm food safety audits have been completed and around 20 have been planned for 2012.

Environmental stewardship

Three workshops on water use efficiency were held in the dry season, at Marrakai (Thanh Nha Vegetables), Humpty Doo (Dao and Hung Nguyen) and Berry Springs (TMP Transport). The workshops gave an opportunity to reinforce good water management practices and promote the work of water resource planners. A free bore meter scheme was also promoted through the workshops.



Senior Extension Officer Stuart Smith working with a group of Vietnamese growers

A total of 21 *Water Smart* farm audits have been completed since these workshops. There is scope for further extension work around grower knowledge relating to bore structure, function and specifications. Interestingly, a high number of growers had either received, or received and installed bores as part of the free bore meter scheme run by the NT Department of Natural Resources, Environment, The Arts and Sport, a result of the promotion through the project's earlier workshops.

Practical Implications

The efforts of the project thus far have enhanced the capacity of the NT vegetable industry by adding to the skills set of the industry and facilitating tangible changes in on-farm practices. Further extension work on bore function and protection against back flow from fertigation is necessary. Ongoing and wider adoption of improvements in cool chain management are necessary to continue to improve the quality of vegetables in the market during the 2012 season.

A paper describing the interim learnings of the project has been published in a refereed journal:

Smith S, Connelly M, and Hunt W. (2011) 'Using structured self-assessment to improve cross cultural extension in the vegetable industry of the Northern Territory.' *Extension Farming Systems Journal*. Volume 7, Number 2 – Industry Forum, pp. 103-108.

PASTORAL INDUSTRY

Departmental officers provide extension services to the NT pastoral and other animal industries to promote productivity, profitability and, where possible, to protect the environment and human health.

TITLE: Top End Pastoral Extension

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Keywords: beef cattle, buffalo, Douglas Daly Region, floodplain, pasture management, publications, regional extension,

Purpose

This program disseminates information on pastures, cattle, buffalo and grazing management to primary producers in the Top End of the Northern Territory. Pastures information provided includes the development and management of introduced pastures, native pastures and floodplain pastures.

Design/Method/Approach

The program uses a range of passive extension methods such as electronic and print media, Departmental newsletters, Agnotes, Technical Bulletins and scientific papers, in communicating pasture, cattle, buffalo, grazing management and land management messages to pastoral industry and community stakeholders as well as peers in the research, development and extension community. Staff also undertake interactive activities such as property visits, media interviews, seminars, field days, tours, rural shows and conferences as part of their extension work.

Program staff represented the Department on governmental panels relating to animal management and land use, including weed management. Linkages are maintained with industry organizations such as the NT Cattlemen's Association (NTCA), NT Buffalo Industry Council (NTBIC), NT Agricultural Association (NTAgA), Meat and Livestock Australia (MLA), North Australia Beef Research Council (NABRC) and Leucaena Network. A semen storage vat is maintained for participating cattle and buffalo producers, for hire on a fee for service basis.

Activities/Findings/Achievements

Newsletters and Publications

Two editions of the Top Paddock Newsletter were produced during 2011. Project officers contributed nine articles to Departmental newsletters and three articles to Buffalo News. Two articles, on live cattle export to Vietnam and Buffalo meat, were also published in the Territory Quarterly magazine. An article was published as a Technical Bulletin: Shotton, P. (May 2011). A Historical Overview of Agricultural Research at Douglas Daly Research Farm (1960s – 2010). Technical Bulletin No. 338.

Hay and Seed Survey (2010) for the Northern Territory

The survey is conducted annually to record the value of hay and seed production activity in the Northern Territory. The results of the survey are used in Budget Papers and are provided to the Australian Bureau of Statistics to record official production figures. The 2010 survey was finalised in early 2011 to capture the dry season irrigated hay production from a number of properties. In 2010, hay production was a record 83 320 tonnes, valued at $16.5 m and seed production was 137 tonnes, valued at $0.68 m.

Property Visits

Over 100 property visits were carried out and involved specific advice on matters related to pasture development and management, cattle production, buffalo production, buffalo milk production, cattle production, and to sample seed for export interstate and overseas.

Field Days, Open Days, Shows, Tours, Conferences

Staff were involved in a number of activities during the year. These included:

- Girraween Primary School Sustainable School in Action Field Day
- NTAgA Regrowth Field Day
- North Australia Beef Research Update Conference (NABRUC)
- North Australian Beef Research Update Conference Tour to the Mary River
- The Barkly Herd Management Forum
- Katherine Farm and Garden Day
- Fred's Pass Rural Show
- Darwin Show
- Old Man Plains Open Day, Alice Springs
- Hay Stacking Field Day, Maneroo
- Weather and Climate Workshop, Bureau of Meteorology
- Grazing Land Management Workshop, Katherine
- Tour for the Kalimantan Timur - Dinas Peternakan delegation, Beatrice Hill Farm, and;
- NTCA tour, Katherine Research Station.

Practical Implications

The Top End Pastoral Extension Team are important for the NT Pastoral Industry through maintaining critical base competence in animal and pasture science and linkages into the producer community.



TITLE: Regional Beef Research Committees

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Keywords: beef cattle, pasture management, Regional Beef Research Committee, regional extension, weed management

Purpose

Regional Beef Research Committees (RBRCs) advise the Minister for Primary Industry on issues facing the cattle industry in each of the four regions in the Northern Territory and make recommendations on priority areas of research, development, extension, education and training. The pastoral industry in the NT has three RBRCs, namely the:

- Katherine Pastoral Industry Advisory Committee (KPIAC), which also includes members from the Top End, representing that region.
- Alice Springs Pastoral Industry Advisory Committee (ASPIAC).
- Barkly Research Advisory Committee (BRAC).

Design/Method/Approach

The RBRCs participated in planning and reviewing the results of pastoral research to ensure they address the region's priorities. The RBRCs are made up of producers from the region as well as representatives of the Department of Resources, the NT Department of Natural Resources, Environment, The Arts and Sport, Charles Darwin University and a member from the live export or processing industry. The Department plays a key role in supporting the RBRCs by providing secretariat services and coordination. The Chairperson of each committee also represents the regions on the North Australia Beef Research Council (NABRC) and Meat and Livestock Australia's (MLA) Northern Beef Industry Committee (NBIC).

NABRC is an independent organisation made up of producer representatives, research organisations and education providers. NABRC does not fund RDE, nor employ any RDE personnel. Rather, its role is to influence the beef industry RDE agenda in Queensland, the NT and northern Western Australia (Pilbara and Kimberley Regions). NABRC helps ensure that innovation and learning in the northern Australian beef industry addresses its priority issues. NBIC differs from the other groups in that it is a formal component of the red meat industry's R&D, a part of MLA.

Activities:

BRAC

Two BRAC meetings were held in 2011. Key outcomes were:

- Identification of key regional priorities:
  - water quality and investigating the effects of animal production
  - sourcing suitable skilled work for partners on remote stations.
- Identification of key regional research priorities for 2012.

KPIAC

Two KPIAC meetings were conducted in 2011. Key activities included:

- identification of key regional research priorities for 2012;
- contributing to the design of a CSIRO Profitability Scoping study aimed at assisting alternative development pathways and improving the profitability of the beef industry;
- reviewing the Departmental research, development and extension (RDE) priorities to ensure programs were on track to meet industry needs in the wake of the live export suspension;
- providing input into the organisation of a 'Beef Up Forum' at Daly Waters; and
- reviewing and advising on ongoing projects such as the MLA Producer Demonstration project, the NT Pastoral Industry Survey, the national body condition scoring project, Climate Clever Beef and Northern Grazing Systems projects.

ASPIAC

One ASPIAC meeting and one special meeting in the form of a teleconference was held during 2011. Key activities included:

- updates and discussion of outcomes of the PEG (polyethylene glycol) project;
- presentation of a field day at Old Man Plains Research Farm focusing on female cattle fertility;
- submission of a letter to MLA in support of a trial to assess options to increase Meat Standards Australia grading for cattle transported from central Australia; and
- identification of key regional research priorities to inform NABRC program development for 2012.

Practical Implications:

The RBRCs continued to ensure that the Department's research and extension priorities addressed the current needs within industry. They ensure that projects are practical and on track. The Department's relationship with the RBRCs generates positive social capital between the pastoral industry, government and rural communities.

TITLE: Technical Support for South East Asian Importers

Project Leaders: David Ffoulkes and Barry Lemcke

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Keywords: beef cattle, live export cattle trade, meat quality, nutrition, feedlot, regional extension, standard operating procedures

Purpose

To support the development of new live cattle export markets for Northern Territory cattle producers by providing technical services to assist importers with the establishment of robust facilities and operations in accordance with Australian welfare regulations.

Design/Method/Approach



In 2011, the Technical Services Program focussed on assisting a new live cattle export market in Vietnam. Officers were dispatched to make a pre-shipment inspection of the importer's operations and to supervise the unloading of the first shipment. This was followed up by further visits to provide technical advice and training to improve the feedlot and slaughter operations and meat quality derived from the imported Australian cattle. In addition, a technical feasibility study was also undertaken for another Vietnamese client who is interested in importing Australian cattle in 2012.

Activities/Findings/Achievements



In August 2011, a pre-shipment inspection of the importer's operation at Hai Phong was undertaken and steps were taken to minimise any risk to the welfare of the cattle through training in animal handling and the development of standard operating procedures (SOPs) for unloading, transportation, arrival at feedlot, feedlot management and slaughter. Recommendations were made on improving the feedlot infrastructure and the formulation of a feedlot ration.

The shipment arrived in September with the unloading of the cattle, post-delivery transportation; and feedlot introduction being supervised by one of the project's officers, who also advised on slaughter practices to ensure they were operating effectively, in line with World Animal Health (OIE) standards for cattle. Further visits were made in October and November 2011 to assess the feedlot operation and to provide training in slaughter, carcass preparation and meat handling.

Departmental staff have also aided the design of feedlot and slaughter facilities at Hai Phong and in Dac Lac Province. They facilitated learning opportunities for senior staff from one enterprise through a visit to a feedlot and abattoir in Indonesia owned by Australian agribusiness company Elders International. Staff were also influential in brokering a successful business arrangement for distribution of meat products between two Vietnamese importers.



In December 2011, the Department signed an agreement with Meat and Livestock Australia to assist Vietnamese importers with the implementation of the Australian Government's Exporter Supply Chain Assurance System by mid-2012. Overall, Departmental staff have built the skills and enhanced the management skills of local Vietnamese staff involved in livestock handling, management and slaughter.

Practical Implications

The technical support provided by this program is upholding animal welfare conditions for Australian stock being sold into Vietnam through building the capacity of the new Vietnamese importers to develop and manage their enterprises at a high operational standard, and to produce a quality end product.

TITLE: Tennant Creek Pastoral Production Extension

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Purpose

The Tennant Creek Pastoral Production Team services the greater Tennant Creek Region, including the Barkly Tablelands and Eastern Gulf Regions. It assists cattle producers in developing profitable, sustainable and productive beef enterprises.

Design/Method/Approach

Extension officers use a range of passive and interactive extension methods to provide services to the region's pastoral industry. Passive methods include newsletters, electronic and print media, and publication of technical materials. Interactive methods include training workshops, seminars, one-on-one property visits, and field days. Such extension methods are vital to ensure NT cattle producers are informed of new research results and to facilitate the adoption of proven technologies and practices. The team also maintains positive social linkages between themselves as Government agents and key stakeholders such as Northern Territory Cattlemen's Association (NTCA), Meat and Livestock Australia (MLA), the North Australia Beef Research Council (NABRC) and regional Landcare groups.

Activities/Findings/Achievements

Four issues of the Department's *Barkly Beef* regional newsletter were published in 2011. Subjects covered a range of topics such as hormonal growth promotant (HGPs) strategies, wet season spelling, weed management issues, understanding estimated breeding values, animal health issues, precision pastoralism and updates of other project activities from around the Territory.

Both electronic and print media were used to convey key extension messages to beef industry stakeholders. ABC Radio *Country Hour*, the Beef Central Website and MLA's Frontier magazine presented segments and articles on the Alexandria Demonstration Site. Posters on the Alexandria Demonstration Site and the Barkly Utilisation Rates Study were presented at the North Australia Beef Research Update Conference (NABRUC) in Darwin. Extension Officers advised the Territory NRM Board on grazing land management principles for two Territory Conservation Agreements proposed for pastoral properties in the Barkly Region and responded to three carrying capacity pasture growth assessment requests.

Training workshops and field days were key components of the Tennant Creek extension effort. The Barkly Herd Management Forum was held in August at AACo's Brunette Downs Station and NAPCO's Alexandria Station, where 28 participants, speakers and government staff attended. Topics presented included benchmarking for business, nutrition, breeding, grazing land management, pasture dynamics, genetics and bull selection, weed identification and control, animal welfare and HGPs. In an evaluation of the field day, participants rated the event a score of 8.8/10 for its efficacy in delivering knowledge and skills.

The Alexandria Spelling and Stocking Rate Field Day was held in the afternoon preceding the Barkly Herd Management Forum. The field day showcased the benefits of wet season spelling and sustainable stocking rates for maintaining land condition at new bores and demonstrated the benefits of wet season spelling for improving land condition at old bores. An evaluation of the activity indicated that all participants saw the science and practices extended as useful to their enterprises.

The team also conducted collaborative activities with industry, participating in two Barkly Regional Advisory Committee meetings and the Tennant Creek Show. Extension staff also responded to a number of local enquiries in 2011 relating to livestock husbandry and pasture management.

Practical Implications

This work demonstrated that Pastoral extension staff were able to effectively deliver the latest technologies and research outcomes to the regional beef industry through a range of workshops, seminars, field days, conferences and associated media presentations and publications. The Tennant Creek Pastoral Extension Team provides geographically-positioned capacity for the pastoral areas of the Barkly Tablelands and the Eastern Gulf Regions.

TITLE: Katherine Pastoral Production Extension

Project Leader: Trisha Cowley and Trudi Oxley

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Keywords: beef cattle, Breedcow Dynama®, MLA EDGE*network*® course, grazing extension, Grazing Land Management, publications, rangelands, regional extension

Purpose

The Katherine Pastoral Production Group services the greater Katherine region, which includes the Victoria River, Sturt Plateau, Gulf/Roper and Katherine/Daly Districts. Extension services are essential to build the capacity of the Northern Territory beef industry through communication of research and the adoption of proven technologies and practices. Strong linkages are maintained with industry stakeholders such as the NT Cattlemen's Association (NTCA), Meat and Livestock Australia (MLA), the North Australia Beef Research Council (NABRC), and regional Landcare groups. These relationships are essential to conducting relevant research, development and extension (RDE).

Design/Method/Approach

The extension effort includes the dissemination of results of cattle and rangelands research and other information to producers through one-on-one property visits, training workshops, newsletters, seminars, field days, conferences, and associated publications and media presentations.

Achievements

Print media and technical materials

The Katherine Rural Review is the principal vehicle for written extension communication relevant to producers across the Group's service area. It is produced and distributed on a regular basis.

The works of the Katherine Pastoral staff received wider recognition in the Territory Quarterly magazine around activities in the Grazing Land Management (GLM) program.

Tim Schatz both authored and edited MLA's 2011 publication Heifer Management for Northern Australia.

Caroline Pettit published Land Condition Guides for the Victoria River District, Sturt Plateau and Barkly Regions. These guides are a pastoral land condition assessment tool, produced to assist land managers.

Training workshops

Training workshops were strong components of the Katherine extension effort. An MLA EDGE*network*® Business EDGE workshop was held at the Katherine Research Station. This was attended by 18 producers representing nine properties. The feedback from course attendees was extremely positive with participants feeling that the skills they learnt were vital to the long term sustainability of their businesses.

An MLA EDGE*network*® Grazing Land Management workshop was customised for the Top End and held at the Katherine Research Station, attended by 17 participants from nine properties.

Kieren McCosker presented results from the *CashCow* breeder program results to the Kidman Pastoral Company managers meeting.

Media presentations

Interviews were conducted on the ABC Radio Country Hour promoting the fertility results of the Selected Brahman herd; the release of the Land Condition Guides, the Top End/Katherine GLM workshop and climate risks to the NT.

Industry relations

The North Australia Beef Research Update Conference (NABRUC) was hosted in Darwin and showcased the latest in beef research in northern Australia. The Department presented 30 posters at the conference and two presentations.

During the live export trade suspension, modelling of different selling options available to NT producers was undertaken using Breedcow Dynama®, at the request of pastoral producers. The profitability of selling feeder steers into the Longreach saleyards for backgrounding in the Channel country was compared with growing out and selling as bullocks to a possible Darwin abattoir. Both strategies were unprofitable under the modelling assumptions made.

Dionne Walsh advised the Territory NRM board on grazing land management principles for three Territory Conservation Agreements proposed for pastoral properties in the Katherine Region.

Trudi Oxley provided herd modelling for an NT abattoir proposal.

Research and extension projects were promoted at the NTCA conference. The Group also participated in the Katherine Show and the Katherine Farm and Garden Day at the Katherine Research Station.

In 2011, Katherine pastoral extension staff also responded to approximately 50 local enquiries related to investment information in the NT's pastoral industry, including livestock husbandry and pasture management.

Seven carrying capacity assessments were undertaken by Katherine staff at the request of producers.

Practical Implications

The capacity-building extension efforts of the Katherine Pastoral Production Extension program continue to add to the overall resilience of the NT beef industry. This work is fundamental to ensure the ongoing adoption of both new and proven technologies and best practices, whilst maintaining strong linkages with industry stakeholders.

TITLE: Pastoral Extension – Alice Springs

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Keywords: beef cattle, MLA EDGE*network*® course, rural business management, pregnancy testing, regional extension, wild dog control

Purpose

The work of the Alice Springs Pastoral Extension Group is to bring producers together and extend relevant and timely information packages or training programs applicable to advancing their pastoral industry businesses.

Design/Method/Approach

Business management (together with herd and land management) had been identified as one of the key focus areas for extension activities in the Alice Springs Region in a survey with industry leaders in 2009.

Activities/Findings/Achievements

Rural Business Management



Learning how to use the ePreg pregnancy scanner

An MLA EDGE*network*® Business EDGE workshop was held in Alice Springs in 20-21 March 2012 and provided producers with tools to manage their business covering issues ranging from efficient record keeping to key profit drivers, economic benchmarks and succession planning. The workshop formed part of a series of workshops initiated by MLA on customised business management principles for northern beef producers with workshops being held across Qld, NT and WA. A concerted effort to raise awareness amongst pastoralists culminated in a very successful workshop with 10 properties represented. This constituted the active participation of about a sixth of all pastoral properties in the region. In addition at least two of the stations present have expressed an interest in engaging with the workshop presenter on an individual basis to assist them to commence benchmarking their business performance.

Field Day at Old Man Plains Research Station, Alice Springs – September 2011

The biannual field day at Old Man Plains Research Station (OMP) focussed on the improvement of female cattle fertility by making use of the latest technology available to industry. The Department, in conjunction with the Alice Springs Pastoral Industry Advisory Committee (ASPIAC), organised a range of presenters for the day. They introduced equipment, such as a battery-operated external pregnancy testing device, and discussed topics ranging from ultrasound versus palpation techniques to breeder skeletal structure. Also covered were ways to improve heifer conception, performance recording, and managing herd infertility and calf losses.

Guest speaker, livestock judge and consultant Graeme Hopf, informed the OMP audience about the traits of the ideal beef cow. He highlighted the importance of livestock selection based on correct bone structure due to an enhanced and efficient productive lifetime and allowing animals to walk further.



Graeme Hopf explaining the importance of pelvic aperture

Departmental livestock researcher Tim Schatz delivered a presentation and asserted that low heifer fertility (in first lactation heifers), continues to be an area that requires improvement. He also explained how a range of factors including disease (i.e. bovine viral diarrhoea virus), leptospirosis, campylobacter and trichomoniasis), bull soundness, a failure to attain target mating weights, weaning strategies and cow body condition/live weights can affect overall reproductive performance of a herd.

Some insights were shared by local producer Paul Smith, who was involved with the heifer fertility trial. He confirmed that his future herd management and property development plans have evolved from his participation in this work. He emphasised to the audience "… *What you can't measure, you can't manage … so start measuring your herd; and the questions will appear*."

The day was completed with a review of the extent of calf losses on properties in the Alice Springs district by Departmental veterinarian Peter Saville, who discussed how to counter the losses through timely supplementary feeding, instituting wild dog control programs, vaccinating new cattle being introduced, and aligning timing of calving to times of the year when the most optimal feed resources are likely to be available.

Practical Implications

These extension works are building the capacity of the Central Australian beef industry. The knowledge and skills learned in these events are critical for increasing the herd productivity in this region.

TITLE: Producer Demonstration Sites to Increase Research Adoption and Encourage Practice Change

Project Leader: Trisha Cowley

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Keywords: artificial insemination, beef cattle, dehorning, hormonal growth promotant, MLA FutureBeef, on-farm research, polled, producer demonstration site, regional extension

Purpose

The purpose of producer demonstration sites (PDS) is to support groups of beef producers to demonstrate, develop and adopt priority research technologies and findings. PDS projects aim to: shorten the time lag between technological innovation and adoption of beneficial key research findings; adapt research findings to practical, commercial implementation; improve producer skills, knowledge and practices; and improve collaboration and coordination between producers and support agencies. The PDS projects will also develop monitoring and evaluation systems to assess project impacts. Results will be measured using the evaluation systems of Meat and Livestock Australia's (MLA) FutureBeef program, which will incorporate an annual MLA survey, case studies and economic analysis of business improvement among PDS participants.

Design/Method/Approach

Under a funding agreement with MLA, the Department is contracted to establish, manage and evaluate the impact of six PDS sites in the NT between 2010 and 2013. Two projects are underway. Another project initiated in 2010 was discontinued in 2011 due to changes in management at the host site. The remaining projects are:

1. *Boosting steer growth - comparing the profitability of hormonal growth promotant (HGP) strategies (Hayfield Station).*

This project will compare the profitability of four HGPs strategies under typical herd management systems in the NT to guide producers. Research into HGPs in northern Australian beef herds has shown that when used strategically, they can significantly increase growth rate. What is less certain is the profitability of different HGP strategies. There is a need to investigate the effect of variations in timing of HGP implantations to take advantage of seasonal conditions and minimise the cost of mustering. Further, there is little local data on growth advantages that can be achieved with HGPs.

The key principles that the HGP PDS project aims to highlight are:

- Greater live-weight gains from the use of HGPs can be achieved when animals are in positive growth, rather than when they are maintaining or losing weight.
- Using shorter-term implants more frequently achieve better liveweight gains than longer-term implants used less frequently.
- Once an implant program is commenced, it should be continued if the growth response is to be maximised.

- Peak hormone release occurs during the beginning of the implant's life; therefore, the best returns are achieved when such release is matched with peak nutrition.
- Key findings from the trial will be extended to industry through a field day to be held after the final results have been analysed, articles in Rural Reviews, a Technical Bulletin on HGP strategies, radio interviews and through producer groups such as the Katherine Pastoral Industry Advisory Committee (KPIAC). Other extension methods such as developing short film clips and webinars are currently being considered.

2. *A practical demonstration of the polled gene marker test to increase the frequency of polled progeny and the use of fixed time insemination in commercial Northern Territory herds (Lakefield and Avago Station).*

Currently, very few Brahman breeders within the NT are using polled genetics. Until recently it was not possible to determine if a polled Brahman was homozygous polled (i.e. if it carried two copies of the polled gene (PP)) or heterozygous polled (i.e. if it carried one horned copy and one polled copy of the polled gene (PH)), as both genotypes could be visually polled. The polled gene marker test allows people to determine if a sire is homozygous polled (PP), and therefore can only pass on polledness to his progeny. Therefore, producers can use this test to select sires which will expedite the time taken to reach a 100% polled herd.

Both Lakefield and Avago Stations have been sourcing polled sires for inclusion in their stud herds for several years. Their aim is to breed their own polled bulls for use in their commercial herds, as polled Brahman bulls are in short supply. They are using the Polled Gene Marker Test to identify the genotype of the animals within their stud herd to help with selection choices, and to source true polled sires for use in their stud herd. An artificial insemination (AI) program using semen from true polled animals (bulls which yielded a PP result using the Polled Gene Marker Test meaning that they don't carry a horned allele), will be carried out on Lakefield and Avago Station's stud herds.

Another site is required to compare the progeny of homozygous polled (PP) versus heterozygous polled (PH) bulls over horned Brahman cows.

Key messages from the trial will be communicated to producers through field days, Rural Review articles, radio interviews, webinars, FutureBeef e-bulletins, and through producer groups such as KPIAC.

Activities/Findings/Achievements

Hayfield Station HGP Trial - Following final measurements on a 2010 cohort of steers there was no significant statistical differences in average daily weight gain (kg/day) between any treatments. This was unexpected and reflected the high variation within treatments. There was a trend for implanted animals to perform better with HGP groups showing a 10-15% growth advantage (an extra 10-13 kg annual weight gain) over the control group. This reflects the typical findings of oestradiol-based implants. Further work on a 2011 cohort of steers found no significant difference in dry season weight change between groups which is to be expected due to the low growth achieved. This work (last weight measurement) will finish in 2012.

Lakefield and Avago Stations - Lakefield has selected 50 females for another AI program in April 2012 and Avago will carry out an AI program in December 2012. Another site is yet to be determined.

Practical Implications

Hayfield - This project will provide producers with some data to assist in HGP programs, as well as increasing the knowledge of how HGPs work and what strategies will be most cost-effective.

Lakefield and Avago Stations - Polled Gene Marker Trial - Few producers in the NT have started to incorporate polled genetics into their herd and very few understand the inheritance of the polled gene, or how the polled gene marker test can be used. This project will assist to address these knowledge gaps and therefore increase the number of producers moving towards polled herds. This will produce benefits in herd management and has important implications in reducing the number of animals that will require dehorning.

TITLE: Emission Management Strategies

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Keywords: adaptation, climate change, Douglas Daly Region, emission management, greenhouse gas, mitigation, on-farm research,

Purpose

This project is aimed at better understanding the impact of climate change on pastoral operations in the Northern Territory and to develop strategies for managing greenhouse gas emissions for possible inclusion in future carbon farming initiatives. This project remains an ongoing resource available to the NT pastoral industry around issues relating to climate change.

Design/Method/Approach

- Keeping members of the Pastoral Industry informed and up to date about climate change issues.
- Planning and securing funding for research and development projects to study climate change issues in relation to the pastoral industry in the NT.
- Developing, and continuously reviewing climate change policies and greenhouse gas emissions management strategies for the NT pastoral industry.

Activities/Findings/Achievements

A series of Factsheets and newsletter articles have been produced to raise awareness of climate change issues as they affect the NT pastoral industry. Carbon accounting on NT pastoral properties and Information on the impact of the Carbon Tax on the pastoral industry are to be published.

On-farm research and demonstration projects on carbon sequestration and cell grazing are ongoing and their progress is reported in the Annual Research Reports.

The project also contributes to the development of the NT Government's Climate Change Adaptation Action Plan for respective NT industry sectors. This document will be released in 2012 and will be used as the basis for developing climate change management strategies for the pastoral industry.

Practical Implications

The pastoral industry is informed about climate change issues and policies that may affect their operations in the future.



Soil sampling for organic carbon on cell grazing property in the Douglas Daly Region



Queensland DAFF group visit to cell grazing in the Douglas Daly Region

ALL INDUSTRIES

A number of extension services are provided across all industries in the NT. Departmental officers are also involved in providing critical supporting functions to the Primary Industries Divisions which directly service these industries. These activities are described in this section.

TITLE: Extension related to biosecurity and compliance with agricultural and veterinary chemical, animal health and plant health legislation

Project Leaders: **Chemical Coordinator, Chief Plant Protection Officer and Chief Veterinary Officer**

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Keywords: biosecurity, chemical use, legislation review, plant market access, surveillance, wild dog control

Purpose

Biosecurity and Product Integrity (BPI) Group staff are heavily involved in visiting farm properties primarily to support interstate market access, raise awareness of biosecurity and the sound use of agvet chemicals and to conduct post-border surveillance to ensure the early detection of exotic diseases or pests. Extension is essentially a key component of compliance by seeking to ensure stakeholder understanding and adherence to regulations.

Design/Method/Approach

Staff of the BPI Group use a multi-pronged approach to capacity building for animal and plant health, and to ensure the safe, responsible and effective use of pesticides. These incorporate both passive (e.g. provision of resource materials, newsletter articles) and interactive processes directly with the public or stakeholder communities.

Activities/Findings/Achievements

During 2011, some examples of the range of services that BPI staff conducted which involved some form of extension include the following.

Field days and shows

BPI staff organised displays at field days/shows and attended a number of events to help raise awareness of agvet and biosecurity issues, which included:

- Departmental field days – Biosecurity displays were conducted at the Fred's Pass, Darwin and Borroloola shows and the Garden Extravaganza and staff participated in the Arid Zone Research Institute Field Day, Katherine Farm and Garden Day, Kidman Springs Field Day, Tennant Creek and the NT Veterinarians Conferences.
- Local rodeos – Animal Biosecurity staff attended rodeos at Adelaide River, Borroloola, Daly Waters, Darwin, Katherine, Litchfield, Pussycat Flats, Tennant Creek and Timber Creek.

Consultation

Consultation is an ongoing part of developing and implementing regulation. During 2011 consultation was held with key stakeholders or the general public on existing legislation and/or new or revised codes of practice/guidelines/standards affecting primary producers including:

- Second discussion paper on the *Veterinarians Act* review, held in Katherine and Darwin.
- Review of authorisation/permit system for wild dog control using 1080 with presentations to NT Cattlemen's Association Branch meetings at Alice Springs, Darwin, Katherine and Tennant Creek.
- Review the Parkhurst cattle tick control protocol with presentations to the NTCA Executive and its Top End and Katherine and Victoria River Branches.
- Meetings held with the NT Agricultural Association (NTAgA) and NT Horticultural Association (NTHA) to brief them on the *Plant Health Act* and Regulations which came into force on 1 July 2011.
- Presentations to stakeholder meetings on development of the draft NT Biosecurity Strategy (NTHA, NT Naturalists Club).
- Letters and a Fact Sheet on European House borer (EHB) (*Hylotrupes bajulus*) were sent to key stakeholders seeking their input on new legislation to regulate and prevent the spread of this pest by Western Australian biosecurity agencies.

Extension materials

BPI staff prepared, revised and delivered a large number of extension material either in hardcopy or via web-based systems, including:

- Publications (e.g. Agnotes/Factsheets), electronic search databases.
- Newsletters including NT Animal Health News provided to livestock producers and veterinarians through regional Rural newsletters and the Australian Veterinary Association NT Division newsletter.
- Information Sheet provided by:
  - Animal Biosecurity staff to livestock producers during annual property visits, which summarises Animal Biosecurity Services and relevant contacts.
  - Plant Biosecurity staff to potentially affected stakeholders on EHB and Myrtle Rust (*Uredo rangelli*).
- 1800 or online systems for reporting of exotic animals, plant diseases or pests including establishment of an online form for reporting notifiable animal diseases.

Meetings

Staff led, organised and/or participated in a range of meetings to discuss biosecurity issues, with a variety of groups including:

- NT Cattlemen's Association (NTCA), NT Horse Racing and Recreational Horse Clubs, NT Horticultural Association, NT Livestock Exporters Association (NTLEA), NN Crocodile Farmers Association (NTCFA), NT Beekeepers Association (NTBKA), NT Livestock Transporters Association, NT Stock Agents.

Property visits

BPI staff routinely conduct visits to large numbers of animal and plant industry properties throughout the Northern Territory to deliver a range of services including:

- Audits and instruction on use of Interstate Certification Assurance (ICA) protocols for interstate market access of plants and plant products.
- Discussion of local and national animal health programs, market access, changes to legislation and individual property animal health and welfare management practices and issues.
- Inspection of livestock and plants/plant produce to enable interstate market access.

Surveillance

Surveillance is a key part of biosecurity operations and is conducted mainly to either ensure the early detection of exotic diseases or pests in order to enable their prompt and cost effective eradication before they establish, spread and begin causing significant adverse impacts on primary industries; to support interstate market access; or to check compliance with legislation. During 2011, the following surveillance activities were conducted, some of which involved substantial staff time and resource commitments:

- Acaricide-resistant ticks (e.g. Parkhurst strain) in the Katherine area.
- Annual survey of pesticide residues on horticultural produce.
- Cattle sero-surveillance for Bovine Ephemeral Fever (3-day), Akabane and Bluetongue virus.
- Cattle ticks in Cattle Tick Control and Free Zones.
- Myrtle Rust quarterly survey of all commercial nurseries throughout the Territory.
- Sentinel chicken sero-surveillance for Kunjin and Murray Valley Encephalitis viruses.
- Sentinel beehives and log traps for surveillance of Asian Honey Bee and exotic bee mites.

Training

BPI staff organised and delivered training to a range of audiences and purposes, including:

- Emergency Animal Disease (EAD) awareness and basic post-mortem sample collection at Brunette Downs (March 2011).
- Meat Safety Officers, training in conjunction with a Qld-based Registered Training Organisation (over an extended period).
- Surveillance methods to commercial beekeepers on how to detect bee pests and diseases (February 2011).

Practical Implications

BPI conducts these activities in order to raise stakeholder understanding, ensure compliance with legislation and where required, to achieve a change in management practices.

TITLE: Technical Publications

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Keywords: Agnotes, information services, publications, Technical Bulletins, technical information, Technotes

Purpose

Specialist extension officers in the Primary Industries and Fisheries Divisions of the Department generate a large amount of useful technical and scientific information for use by primary producers in the NT. The Technical Publications Branch in the Policy and Service Group assembles, edits, publishes and distributes that information in a variety of suitable publications after ensuring a high standard of accuracy, consistency, clarity and reliability. It also responds to feedback from staff and the public to improve the service and deals with general enquiries from the community for technical and scientific information.

Design/Method/Approach

Technical Publications produces three major forms of information for primary producers and the general community:

- Agnotes;
- Technotes; and
- Technical Bulletins.

Agnotes – are designed to relay specific information or recommend cultural practices to primary producers and the public, such as how to grow crops and breed animals, and how to control specific endemic and exotic diseases of livestock and crops. *Agnotes* provide direct extension information to producers. They are generally one to 10 pages in length.

Technotes – are designed for interest groups in the field of agricultural production. They usually report preliminary results of experiments, interesting facets of experiments or final results and recommendations from specific experiments. They require a certain level of scientific knowledge in order to be useful. They are generally up to 10 pages in length.

Technical Bulletins – are similar to *Technotes* in design but more detailed. They aim to disseminate a package of technical and/or scientific information where more than one concept is included. Although the target is a scientific audience, the content is written in such a way as to be easily understood by researchers not directly involved in the subject, as well as by the general community.

Editing services are also provided for Primary Industries interim and final reports for internally and externally funded projects, for other ad hoc publications and for technical publications by the Fisheries Division. The Branch ensures that all publications published through it are original works written by Departmental staff and that publication requirements under copyright and liability laws are complied with.

Activities/Findings/Achievements

General feedback from the community and industry reflects the need for easily accessible, accurate and current extension information that is centrally located. Producers are assured that any information they may need, on most aspects of local agricultural production, is available in at least one of the three formats. However, when such information is not currently available, clients are able to access the Library and Information Services. Producers will also be invited to approach the relevant officers in the Department to address their queries directly. Such approaches assist in identifying the need for, and therefore generating new extension information in one of the three formats. Most publications are available free online on the Departmental Publications Database, www.nt.gov.au/d/publications.

All publications produced by Technical Publications are registered with, and are available from, the National Library of Australia. Copies of publications are also sent to many NT, other Australian and international libraries, research institutions, government agencies and universities. Selected items are displayed at various shows, open days and field days throughout the year.

TITLE: Libraries

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Purpose



The Departmental Libraries and Information Services play an important capacity building function through supporting research and extension staff, rural industry organisations, growers, rural service agents and consultants, students, and the general community in sourcing published materials on agricultural matters. The Libraries play a critical role in information sourcing and supply, supporting the Department's officers, its client industries and the Northern Territory Government.

Design/Method/Approach

The Departmental libraries based at Berrimah Farm, Darwin and the Arid Zone Research Institute (AZRI) at Alice Springs provide services to industry by actively sourcing, organising and making accessible information of relevance to the primary industry and fisheries sectors of the Northern Territory. This information is available for reference to all stakeholders and industry members.

Activities/Findings/Achievements

Key activities undertaken by the libraries include searching for, and sourcing of, scientific and extension literature from within Australia and internationally. Demand was high during 2011 with some 1172 service enquiries answered, 62 literature searches undertaken and 4620 documents sourced for clients between the Berrimah Farm and AZRI Libraries.

The Libraries also issue awareness alerts to Departmental staff on new publications across respective disciplines. These alerts enable clients to keep up-to-date with relevant research and extension practices that can be utilised to the benefit of industry. Departmental publications and information about research programs were indexed and made accessible to a wide audience via external databases and other state and national libraries. A focus in 2011 was the capture of staff publications/presentations not included in the journal literature, for example, conference and workshop presentations. Many of these publications are able to be obtained via the Libraries' catalogues. The Libraries are constantly sourcing new, reliable and cost-effective sources of literature for clients.

Practical Implications

The Libraries form a key source of tailored, specialist information for those involved and interested in the primary industry and fisheries sectors of the Territory.

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