



**LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY**  
**Sessional Committee on Environment and Sustainable Development**

Committee Members:

Mr Peter Chandler, MLA	Member for Brennan
Ms Marion Scrymgour, MLA	Member for Arafura (Chair)
Mr Peter Styles, MLA	Member for Sanderson
Ms Lynne Walker, MLA	Member for Nhulunbuy
Mr Gerry Wood, MLA	Member for Nelson

Apology:

Mr Michael Gunner, MLA	Member for Fannie Bay
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**PUBLIC HEARING, FRIDAY 27 NOVEMBER 2009**

**Arid Zone Research Institute**

Witnesses:

Mr Rod Gobbey, Mr Chris Materne, Dr Raghu Sathyamurthy	Executive Director Primary Industries, Regional Manager Pastoral Production; and Regional Manager Plant Industries
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**Madam CHAIR:** I reconvene this public meeting of the Sessional Committee on Environment and Sustainable Development. Our inquiry arises from a reference to the committee by the Honourable Alison Anderson MLA, former Minister for Natural Resources, Environment and Heritage.

I welcome representatives from AZRI, Mr Rod Gobbey, Executive Director Primary Industries, Mr Chris Materne, Regional Manager Pastoral Production and Raghu Sathyamurthy Regional Manager Plant Industries and thank you for appearing before us today. Although the committee does not require you to give evidence under oath, these hearings are formal proceedings of parliament and consequently they warrant the same respect as proceedings of the House itself. I remind witnesses that giving false or misleading evidence is a serious matter and may be regarded as a contempt of parliament. I remind Members that they should not seek personal opinions from public servants appearing in a professional capacity.

Whilst this meeting is public, witnesses have the right to request to be heard in private session. If you wish to be heard *in camera*, please advise the Committee prior to you commencing your answer.

Today's proceedings are being recorded and to ensure the accurate transcription of recording, I ask that witnesses and members identify themselves prior to speaking. In the first instance I invite officers of AZRI to state their full name and position before commencing their evidence. As soon as practicable following this hearing a transcript of your evidence will be uploaded to the committees' website, but not before you have proofed it.

I will now hand over to Rod or Chris or Raghu.

**Mr GOBBEY:** Thank you, Chair; I will open proceedings if I may. It is Rod Gobbey, I am Executive Director of Primary Industries based at the Arid Zone Research Institute. This is the second time I have appeared before this Committee. My first appearance was 24 November 2008 and if I may just give a brief update on some of the things raised there before, talking about things specific to this region of the Northern Territory.

In 2008, I think it is fair to categorise the presentation, a lot of it was around drought and the drought conditions that were more extensive than they are at present. At that time, both the Barkly and the Tennant Creek region were unfortunately experiencing a prolonged period of drought. However, over the 2008-2009 seasons, above average rainfall was experienced in the Barkly region, which was pleasing for the producers there. Also, good rainfall was received across the southern Alice Springs region in November and December of last year. That was average to well above average at that time, but unfortunately, in the north-west Alice Springs district, there has continuing to be low rainfall over the past 12 months and that is an issue for the producers in that region and we are working with them at a technical level through Chris's pastoral area to manage that situation.

I will make some general comments that overall, agriculture in the Northern Territory is limited by a number of factors, not only drought. More importantly on an ongoing basis, it is access to appropriate land and water and the proximity of those sites to appropriate infrastructure including roads, energy and markets. Overall, the combination of those factors, we have got a fragmented, some would say a mosaic, approach to development because of the identification of, ideally, those four or five

factors in combination. Even with substantial periods of development, it is true to say that less than one percent of the NT landscape is developed for horticultural or pastoral production.

Moving to this specific part of the world, to state the obvious, rain is a pretty rare event so irrigation agriculture relies on aquifer and the recharge of those aquifers, which could be best described as infrequent. However, there are small areas around Alice Springs, for example at Ti Tree as Centrefarm previously stated, where good soils and aquifers exist in tandem with proximity to roads and transport and other logistic infrastructure so horticulture is possible in those regions.

That needs to be balanced against some of the climate models are continuing to predict that there will be at least a one degree average temperature increase in this part of the world by 2030. Similar models also predict that, unfortunately, rainfall may also drop in this part of the Northern Territory in the similar timeframe. Now I am not qualified to make comments on those models or those predictions; I just cite that from the literature.

Other general information by way of size of industry across the Territory, there is 550,000 livestock per annum turned off and that yields \$365m a year at farm gate value. From a regional perspective, approximately 40% of that production comes from the Katherine region, 10% from the Top End, 30% from the Barkly and 20% from the Central region.

Horticulture continues to grow across the Northern Territory with a farm gate value of \$224m in production value and grains and fodders as separate sections are in the order of \$38m. Forestry, despite some setbacks with the corporate entities, I would expect that the value of forestry would increase over the medium to longer term.

Specific to the Central region of the Northern Territory, there are 15 research projects conducted by the department specific to this part of the world. Many of these are based at the Arid Zone Research Institute; particularly in the horticultural area, but also we do work in partnership with producers on their land. Of those 15 projects, eight of them are in the plant industries area and, if I may, I will list those projects by title and Raghu at a later time could give you much more in-depth technical information on any or all of those projects and similarly with the pastoral projects, Chris Materne would be able to do the same.

So quickly, at the project title level, to assist current and future industry in the table grape production, we are actually producing a table grape manual, which is something that has been lacking. It will bring together technical information to assist current and potential applicants. That is being pulled together by staff at the Arid Zone. We have a weeds management herbicide trial at AZRI. We have a major wind-break trial there as well. Raghu is pulling together a trial that is doing a soil carbon and nutrient dynamics. It is a pilot study that Raghu could comment on if asked to. Date Palms, we have a disease problem in the Date Palms at AZRI, which is not unique to us and it is a scale problem so we are doing some work with that. In combination with Desert Knowledge Australia, we have a Bush Tomato project at AZRI and that is currently being written up in to a peer reviewed scientific journal, as I understand.

Irrigation efficiency trial, again at AZRI; we have a larger project that has many facets at AZRI and that is on the water reuse side at AZRI where there is notionally 300ha of land that could be used at some time in the future for commercial horticulture using the recycled water coming out of the treatment plant from Alice Springs that is currently being stored in the paleo channels underneath the Arid Zone Research Institute.

Quickly, if I may, the seven projects in the pastoral sector are the Indigenous Pastoral Program, which is Territory-wide, but within this region it is on six pastoral properties and that is, hopefully, an ongoing project with a number of partners involved. We provide general extension services to the pastoral sector and we have a property to the south of Alice Springs at Old Man Plains which we use as a demonstration site and we are hoping to use that more in to the future. In partnership with Desert Knowledge CRC is the 21<sup>st</sup> Century Pastoralism Project where we have two staff full-time from the department working with the Desert Knowledge CRC organisation on that particular project.

As part of a Territory-wide project, we have a heifer fertility project on a number of stations in this region and, if I might digress slightly into the technical area, there are a number of ways of increasing the farm turn-off in the Territory. One is by increasing the percentage of the number of animals weaned from the current stock in tandem with also increasing the overall number of stock. So this project, in the unlikely event even that the base heard size does not increase; this would increase the numbers of production, we would expect.

We are working also at a number of locations on sustainable carrying capacity on properties and we provide that information in to NRETAS decision making as well as with the producers.

On three properties in this region, it is the safe utilisation in accordance with the land types and that work is also being done in tandem with our work at Old Man Plains and at other pastoral properties.

Finally in the pastoral area, we have a general project that deals with the grazing strategies generally to ensure that there is a close harmonisation between productive and environmentally sustainable outcomes.

So that is a snapshot of what we are doing as a bit of a refresher plus specifically the 15 projects in this part of the Territory. With the Chair's permission, I have a short submission here I would be happy to distribute now or at the end of proceedings.

**Madam CHAIR:** It would be good to try and get it to members now, so that they can look at it.

**Mr GOBBEY:** And if I may, I will take your advice, but I can provide this electronically to the secretariat. I would be happy to take questions; I am in your hands.

**Madam CHAIR:** Well I might open it to questions and if they fall within the ranges that you are talked about, then the appropriate representative can answer. Member for Nelson.

**Mr WOOD:** I was going to ask something about the very last thing you just mentioned, and if I can address it to Chris, the grazing strategy for Central Australia and I think Rod said production versus viability outcomes but in an environmentally sustainable manner. I suppose the issue is: how does Buffel Grass fall in to the environmentally sustainable manner that we are talking about?

**Mr MATERNE:** Buffel Grass is a very controversial issue, as you know, but we do know that Buffel Grass is here to stay. We not going to be able to eradicate it even if we wanted to. So now it is a case of let's move to the next point of how we going to manage it. Buffel Grass undoubtedly can increase production on pastoral properties and there are definite benefits to the pastoral industry with Buffel Grass. Now on the environmental side of Buffel Grass, there are two sides of it that are a problem: one, they talk about it out-competing natives and displacing natives; and the other is the fire issue, the intensity of local fires are increased. Now, both of those - - -

**Madam CHAIR:** Has there been any evidence on the first one?

**Mr MATERNE:** From what I have seen, Buffel Grass, when it is left go and gets very, very rank, it is the inter-Buffel Grass zones which are then smothered and that is the important part with that first issue. If we look at management, the idea of management for this particular issue is to actually keep that inter-Buffel zone free and the evidence that I have seen is that you still get the species richness in the area, but you might have less numbers per square metres of an individual issue, but the species seem to still be there. From what I have seen, the species richness side of things, that is not so much of a problem if you keep those inter-tussock regions open and that comes down to management. The biggest issue environmentally would probably be the fire intensity and, again, I believe that comes down to management of Buffel Grass.

So on a pastoral property, we have got one project or one grazing strategies project happening on Mt Riddock Station, which has actually seen since 2000-01 an explosion of Buffel Grass across, traditionally, an annual-type pasture that has not turned into – it looks a bit like the Mitchell Grasslands or the Barkly Tablelands with lots of perennials. In that project, the station owners were very keen to try and maintain species diversity because we do know that if cattle have a choice of species, they actually do better than if they are forced to eat a monoculture of anything. So they were very interested in that and our work out there so far has shown that the species richness can be maintained relatively easily just through grazing and maintain that inter-tussock space.

**Madam CHAIR:** I was going to follow on from your question - - -

**Mr WOOD:** I was just going to say; there is a book out by a gentleman down south that talks about that having the range of species and our horses, for instance, are healthier by allowing a range of species to occur.

**Madam CHAIR:** So what management plans are there in terms of pastoral properties? I mean, one pastoral property may want Buffel Grass in terms of feed and production, an adjoining property may think: 'This is a real issue'. So I suppose fire-breaks and management of those - who enforces the management plans to make sure that it is inspected? Buffel, as I understand, like Gamba is a declared weed?

**Mr WOOD:** No.

**Mr MATERNE:** No.

**Madam CHAIR:** It hasn't been? Oh, I thought that is was seen after - was it when you have the big fire down here?

**Mr MATERNE:** No, it is not.

**Mr WOOD:** We have got little Gamba down here.

**Mr CHANDLER:** Has there been any research on the capacity of Buffel Grass to store Carbon? Like in areas where it has not been grown before and then all of a sudden it takes over; is there any evidence?

**Mr MATERNE:** As far as I know, there has not actually been any work done in that area. When we talk about land condition and we talk about stability of the country and improved land conditions, you actually get more perennials coming in to an area because the perennials actually stabilise that country quite considerably.

They are also a lot better for production because they do actually respond to rain. Pretty well instantly after a week of rain, they will respond and start producing feed, where, if you have got an annual base, they have got to germinate, grow or put out leaves before they can start capturing the sun before they can put on any useful feed and that can take up to four weeks after a rain event. So we advocate perennials in an area to improve land condition and with the root structure of the perennials, helping them to become more robust, there is actually a lot more root development in the perennial grass tussocks. There is no work saying yes or no; but the feeling is that, yes, there probably would be more carbon being stored in to the soil with perennials.

**Madam CHAIR:** In terms of management of that, though, does AZRI monitor what is happening in those pastoral properties?

**Mr MATERNE:** No, we don't.

**Mr GOBBEY:** The monitoring of stations for condition is the responsibility of our partner agency NRETAS. We work pretty closely together, but it is not one of the core programs of the department.

**Madam CHAIR:** No, I was just wondering if you came across a problem as a research institute, which agency would it go to: DPIFM or would it be NRETAS? Thank you, Rod. Any other Members?

**Mr WOOD:** Just as general background, where do most of the cattle go from Central Australia?

**Mr MATERNE:** Central Australia; they go all over the place, actually. If you get from about Tennant Creek upwards, the live export market really does take over. In Central Australia, a lot of our cattle go to Queensland for feed lots, they go to South Australia for feed lots, we send some live export. It is really an extreme mix of markets for Central Australian cattle.

Down here, we have still got quite a few herds that are British breeds which are very good for their meat and a lot of them still go south. Some of them actually go straight to the abattoirs because it has sold as Fats from a few properties. So we do have that opportunity, but then we also still have some cattle, but only a smaller proportion to actually go to live export.

In general, there are either British breeds such as the Herefords, or they're Brahman-cross so they have still got some British breed in them, but they have got the rigour of the Brahman from the Top End.

**Mr WOOD:** Are there many Indigenous pastoral properties in Central Australia and, if so; are they actually producing?

**Mr MATERNE:** There are. We are working with seven, I believe, and they are producing cattle. I suppose when a lot of these properties that have gone to Indigenous ownership; like many properties, a lot of the infrastructure has declined and one of the steps that we have been doing is working with CLC and ILC to help get the infrastructure back in place and more appropriate infrastructure because we do know that about 95% of soil erosion and problems actually happening on stations is from poor infrastructure design and placement. So it is a case of going in there we are going in there and helping them set up appropriately the first time and they are starting to produce cattle, but that is still a work in progress.

**Mr WOOD:** When you say 'infrastructure', you are talking about the placement of dams and watering areas that feed in to one area and then you get erosion and those sorts of issues?

**Mr MATERNE:** That is right. It is more where you put your fence lines and how you even construct your fence lines. That is quite important because a lot of money can actually be saved. We are actually demonstrating on Old Man Plains that a lot of money can actually be saved by appropriate infrastructure placement and design from the word go and you reduce your maintenance costs considerably.

**Mr WOOD:** Is there any place in Central Australia that young people can get training in the pastoral industry?

**Mr MATERNE:** Yes. I know, for instance, CDU have programs Certificate III and Pastoralism and I know that the Wright Training Organisation, based in Queensland are now operating in the Northern Territory, also run those courses and in fact we are actually working under an arrangement with Wright to be able to go to our demonstration farm to actually bring the young people from different stations who might be doing that qualification to actually come and see what is happening on our research farm. So there is that opportunity and there is that Indigenous Pastoral Program which has got a lot of training for Indigenous people on the properties that they are working.

**Mr CHANDLER:** I have a general question. We talk about sustainable development. This week, I raised in parliament the issue of weed control. The two I mentioned were Mimosa in the north, which is an absolute horrid weed, and here with the Mexican Poppy, both introduced species in to the Northern Territory. What are we doing in regard to border protection to stop some of these introduced species coming in to the Northern Territory?

**Mr GOBBEY:** If I may; the border protection into Australia from offshore is the responsibility of the Commonwealth through their AQIS agencies, but we are working pretty closely with them and if I make an observation, the Northern Australian Quarantine Strategy, which recently the Commonwealth has put additional resources into, and we are at the peak steering committee, the decision making committee, on that. From my point of view, it is pleasing that the Commonwealth have relocated the staff involved in that program from Canberra with almost an equal split of the scientific staff between Cairns and Darwin and operated from the AQIS regional manager in Darwin. So at the national border level, we are working very collaboratively with the Commonwealth. On the issue of interstate quarantine, we have requirements under both our animal and our plant diseases legislation for the legitimate movement of products into the Territory that requires certification to the level determined by either the Chief Veterinary Officer or the Chief Plant Health Officer. I am hopeful that we are going to have a new Plant Health Bill ready to come before parliament next year, which will complement the new livestock legislation which was passed by parliament, I think, in the second half of last year.

**Mr CHANDLER:** I suppose I raised the question because a few weeks ago I had the opportunity to visit the Ord region and obviously we stopped at the border at Western Australia and they took everything including a six-pack of beer and they certainly took the big bag of fruit that I had that was going to last me the week. There was a whole list of fruits and plants that you could not take in there and it made me think we need to protect our industry within the Northern Territory and I just wondered whether or not - because I thought of the Queensland border and South Australian border where there are no check points. I am not suggesting that we can stop everything. I remember reading a report where somebody driving a Ute picked up a weed and it stuck up under a vehicle. Unless you were checking under vehicles, like you see in the movies with mirrors - - -

**Madam CHAIR:** That is how Mimosa Pigra got into the Top End and the Katherine region with the Ord, the one bush that they need to be really conscious of, and I do not think they focus on it, is Bellyache Bush in the Katherine region.

**Mr CHANDLER:** So I am not suggesting that these checkpoints are going to absolutely stop everything, but do we have any signage on our borders?

**Mr GOBBEY:** We do. There are amnesty bins in the airports and we, from time to time, have our quarantine staff in attendance. They are not as uniformed and as visible as some of the Commonwealth officers may be. Because of the geographic spread of the Territory, there are some regional issues to contend with here and that is, for example; some of the produce that is grown in Darwin – I am a lover a chilli, so I noticed a sign that I can not actually bring a stock of chillies with me back from Darwin to Alice Springs. That is because of potential fruit-fly issues.

So we do take a - I would like to categorise it as a risk-based approach to this. In the last 12 months, we have brought together our plant health and our animal health professionals together with our chemical management professionals into one division of biosecurity and product integrity. That is so we can have a more integrated focus on the biosecurity issues and that, I believe, is providing a better outcome than when the groups were separate because despite being in the plant and animals area, many of the awareness and communication messages are exactly the same.



**Mr CHANDLER:** Just one subsequent question: is there a plant management for weeds in this area?

**Mr GOBBEY:** The overall responsibility for weeds management sits with NRETAS, but we are closely integrated. There are a number of weeds advisory committees that I have relatively different senior staff involved in assisting NRETAS to come and make decisions in relation to - Gamba was mentioned earlier and there is a national list of weeds, the WONS list, Weeds Of National Significance, and we actually work very closely with NRETAS because some of the expertise about the behaviour of these plants sits in primary industries so whilst we are not responsible for administering the legislation, we do work with our colleagues increasingly more closely.

**Mr STYLES:** The grey water usage that you talked about in relation to - you have got 300ha that you are going to use. Is that a trial or is that something that is going to go ahead?

**Mr GOBBEY:** This may take a little while to explain because it is a complex project, but I will make my best efforts to make it the abridged version if I can. From the Alice Springs sewage system, there is a treatment of that output and it finds its way to the Arid Zone Research Institute by a colour-coded purple pipe, so if I refer to the purple pipe, that is the international code to differentiate it from potable water. That treated water has been coming to Alice Springs now for a little over 18 months. There were initially four satellite - I am not allowed to call them 'ponds' - infiltration basins at AZRI and there has recently been a fifth basin - commissioned next week, I understand - construction has been completed.

I think they can take a total of six or seven hundred megalitres of water per day. They are not each in use each day. The intention is that the water from the sewage treatment flows in to each of those basins in turn. It then infiltrates into the paleo channel beneath the research farm. I think there is a requirement that the treated water cannot sit in the ponds for any more than four or five days before infiltration. That is a period shorter than allows mosquitoes to breed.

There is not enough water in the paleo channel as yet for it to be considered a volume or of sufficient quality because it is mixing with saline water beneath for that to be pumped out and reused. But we are hopeful that will be the case in about one to three years, and sorry I can not be any more specific than that. But in advance of going to formal expressions of interest for commercial horticulture by one or more proponents on that site, Raghu is leading a process of applied research because to go and seek expressions of interest - the only information we can give at the moment is the quality of the water and the current quality of the soil. We need to do some serious applied research to determine what can and what cannot be grown under that system.

So I am hopeful that this financial year, the modest infrastructure upgrade will go in to allow the research to take place. That includes above-ground storage tanks to hold the water for a period of time and some irrigation infrastructure. In tandem with that, Power and Water are completing receiving licensing agreements for the Department of Health to allow that to happen. As a secondary issue and a consequence of that, we as a department need an agreement from Health to use that water in the way that we intend, and we need an approval from the Health Department to say that the way in which we intend to use the water will not be compromising public health outcomes because it is the intention to grow, as part of

the research trial, food to a standard that would be commercially available for human consumption. We would not intend to sell that, but as a demonstration site, we need to apply all of the rigours that we would if we were a commercial proponent. Apologies if that is a long-winded answer, but there are a number of elements to this, some of which are happening concurrently, some of which, by their very nature, have to happen sequentially.

I would like to think that in the middle to the third quarter of next year, we will have the research trials up and running. I would like to think that within six months of that, we can start publishing the results of that and call for a general registration of interest from people, nothing as formal as a tender, but just some awareness of what we are doing. We would collect, through a registration process, those organisations or individuals who might want to be involved in the commercialisation. Then I would envisage at least 18 months from now working with the Land Development Corporation as our servants to commercialise that site and we would then, as a matter of courtesy, go back to those who have registered an expression of interest, but advertise more broadly as well so that it would be an open and transparent expression of interest. And even at that stage, on the advice I received as late as yesterday, there would not be enough water to sustain the immediate development of 300 hectares; it would more likely be a quarter to a third of that area, but managed development is much better than the alternative.

**Mr STYLES:** Absolutely. Thanks.

**Mr WOOD:** My question is a horticultural one. When I look at the plant industries, there is really only one crop that you are looking at, except scale in Date Palms, but in relation to growing a crop; out of all those trials, there are only Bush Tomatoes. We have just heard from the people from Centrefarm that they are looking at things like pomegranates, they are growing watermelons, they are looking at biofuel plants and I think they mentioned a couple of other plants, timber, the Chinchilla White Gum. I suppose what concerns me: why isn't the department doing some of that experimental work as well? Obviously, this is a commercial company wanting to look at commercial outcomes. I am not saying Bush Tomatoes will not have a commercial outcome, but why isn't there more focus on trying to do trials in those areas?

**Mr GOBBEY:** Perhaps if I hand over to Raghu, but some preliminary comments would be that the information provided - I take responsibility for compiling that. I read the remit in the Terms of Reference from my appearance here today to be about the Arid Zone Research Institute so the information is focused on the Arid Zone Research Institute, but we are doing other work. Raghu might be able to comment on that.

**Dr SATHYAMURTHY:** One of reasons why we are not working across several of those crops is a lot of the basic research on the production aspects of those crops have been worked out. There are always new cultivars, new varieties that are coming in and so there are opportunities there to trial that and we are actually trying to do that work in collaboration with growers on their farms. For example; there is a pomegranate grower just south of Alice Springs who is interested in kind of having some of that work being done on that property and we are interested in that, but essentially, most of that information is already available in the literature from work that has been done and we are happy to engage with growers and actually do the trials on growers' properties.

**Mr WOOD:** Are we were relying on information that is being gathered from trials in another state instead of us actually – I forget who mentioned it; one of the comments was that we are not sure whether, for instance, that particular White Gum will do well in the Warrabri area. That is only one example, but we used to do trials that see how things were related to our own area and we also did trials to see if we could improve. That was part of the research station's job, to find a new variety, but the emphasis is not on that any more.

**Dr SATHYAMURTHY:** Yes and no, to some extent. Yes in the sense that there has been considerable research done at the Arid Zone Research Institute itself on several of the crops that are of interest for commercial uptake. For example citrus research, a lot of that has been done at the Arid Zone. That information has been captured and is available in the form of economic cost-benefit analysis and production manual type information that we can disseminate now to growers who are interested.

With some of the other crops, we are not in the process of working on crop-specific issues at the moment and perhaps we should be to some extent, depending on what the industry's interests are. We have been in some discussion with Centrefarm and we are happy to work on those aspects with them. We are not doing any work on our research farms at the moment in that regard. Most of the research is sort of trying to help existing industries or emerging industries start off on the right foot in the context of sustainability. So that is really where much of the research of my group is based.

**Madam CHAIR:** I am interested in what you were just saying, but if you look across both pastoral and also with plants, I read in your submission you were saying because of the issues of climate change by 2030, decreasing rainfalls, which will have an impact on the aquifer recharging, wouldn't it then be imperative to try to - and I take your point that existing research has been done on a number of those crops - but the challenges of sustaining that in to the future in to the arid zone, wouldn't that warrant a continuing focus and more research to see what the impact of existing crops or crops in to the future, or plants, even for pastoral, how is that going to be sustainable by 2030?

**Dr SATHYAMURTHY:** And we are doing some of those under the mention of water use efficiency and trials like that is about trying to see can we produce the same amount of yield with less water and one of the areas we are trying to get that work going is with table grapes because that is the established industry. We have just commenced some engagement with the melon growers up at Ali Curung to perhaps look at things like - one of the issues is soil management around farms that get cleared for melon production and things like that. So we are working with them around building better wind break type research to help with some of those issues.

**Madam CHAIR:** Wind and soil erosion.

**Dr SATHYAMURTHY:** Soil management and water management are the things that we are focusing on in that regard.

**Mr CHANDLER:** Just on the grapes; how successful are grapes in the Alice area?

**Dr SATHYAMURTHY:** The Ti-Tree table grapes industry has had a history of success that, to some extent, has been tapering off over the last few years for a variety of reasons, one of which is associated with soil-borne pathogens. The root knot nematode is one that has been giving the table grape producers some grief in terms of affecting their profitability. You can manage it, but it requires expensive chemicals.

**Mr CHANDLER:** So, just explain that further - is it having a detrimental effect on the size of the grape?

**Dr SATHYAMURTHY:** It affects yield; it stresses the plants out. Essentially, these soil-borne nematodes do significant injury to the roots and that affects the plant's ability to take up water efficiently. It affects the ability of the plant to take up nutrients efficiently and that affects yield.

**Madam CHAIR:** When you say there is stress on the root, is that the soil?

**Dr SATHYAMURTHY:** It is an actual organism; it is a pathogen.

**Madam CHAIR:** That is in the soil, okay.

**Dr SATHYAMURTHY:** Yes. It's a soil-borne pathogen.

**Mr WOOD:** If a grower had a large enough block of land and nematodes have built up in the soil, is it possible that one of those methods of controlling it is rotation? I know grapes are a perennial plant, of course, but is that a possible solution if there was enough land available?

**Dr SATHYAMURTHY:** It is. There are multiple opportunities. One is rotation, but perhaps the best solution is there are several root stocks that are available for grapes that are resistant to this particular pathogen. We have just submitted a research and development proposal to Horticulture Australia to look at exactly that: to see which of those root stocks will do well in the arid zone. If we are funded, we are going to be doing those trials on grower properties themselves to kind of help them, given what they are doing now in terms of their management, how do their current grapes perform relative to these roots stocks that are resistant to nematodes?

The other related issue in terms of management are things like green manure crops. In horticultural systems we are dealing with perennial plants that we cannot just go in and remove because they are producing plants. You can have green manure, typically things like the cabbage-type varieties, the brassicas, that you can plant that help suppress these nematodes and keep them in check. So there are those kinds of ways that we can control them and we are trying to do some research in that area as well.

**Mr CHANDLER:** So these pathogens do not exist in soil, like in South Australia? Or they do?

**Mr WOOD:** They are a terror in bananas.

**Mr CHANDLER:** So in bigger grape growing areas like in South Australia, they just have to manage them through chemicals?

**Dr SATHYAMURTHY:** They manage them through chemicals, manage them through green manure, manage them through biological control methods through the planting of resistant root stocks. All of those strategies that are more mature and by mature, I mean an industry that has had a longer period of existence. They are able to do that, whereas even though the Ti-Tree table grapes have been around for a while, they are still a small industry of about a half a dozen growers. So it has not enabled them to make that transition perhaps as quickly as some of the growers down south.

**Madam CHAIR:** When you mentioned bush tomatoes, there was another industry that wanted to establish down here in the Centre in terms of olives. Was that ever deemed suitable? I know someone was trying to establish an olive farm for the end product, some olive oil and other things. Did that ever eventuate?

**Dr SATHYAMURTHY:** There is an olive farm south of here and I think as Rod Gobbey said in the beginning, just about anything you want to produce can be produced here in Central Australia. It is just a question of the cost, the logistics of transport and market access and all of those sorts of things that start to make that particular plant industry competitively inferior to something that is produced right next to a market or something that is produced right next to a supply chain. So they are some of the challenges. There is a local olive producer, but it is a niche market.

**Mr CHANDLER:** To bounce on the back of that about other crops, I found it interesting with the Kununurra region that you've see a whole industry there, actually it was the sugar grain industry, drop off completely because of market fluctuations. And farmers over there are learning to be very – you know, one year they are growing this crop instead of growing that crop for years and years. They are swapping. In regard to the sugar cane, for instance, the market wanted the farmers to sign off on five year agreements and no one wanted to agree with that because next year, mangoes might be the best thing, so they can change their crops. Is there a list of potentials and can farmers come to departments like this and seek information on what they could grow here?

**Mr GOBBEY:** The answer to that is yes, Member for Brennan. The example, whilst not in this region of the Territory, where we are working very closely is with the Peanut Company of Australia in the Katherine area where they need other crops to grow in rotation with their peanuts. We are doing some research on their land plus we are also doing some work at the Katherine Research Station. I understand this year they had a substantial harvest of corn-maize and I also understand there were some small areas of wheat actually grown, but I am not sure if that will be ongoing. That is an example of working closely with them. They take a commercial risk on things and we are happy to work with them.

**Mr CHANDLER:** And that kind of information; if you are doing some research that came up in a list of crops that could be sustainable or horticulture that would be sustainable here, that would be available to the public?

**Mr GOBBEY:** I was happy to provide through the Secretariat, but I think I on our website there is a list of the research that we have done since the 1970s through to today. There is a summary document of all of the plants where there has been research conducted and, yes, it is at the summary level, but if anyone needs more detailed information from that document, we can retrieve it out of the system, albeit some of the information from the 1970s is not digitised and it takes a bit more time to retrieve. But there is a published list of the previous work we have done.

**Madam CHAIR:** What we might do is look at what sort of work it is and then we can follow it up and if we require any information from that, Rod, we might write to you and get that information.

**Mr GOBBEY:** Yes, delighted.

**Mr WOOD:** Can I just ask - I know you have got a commercial lettuce grower here. Are there any other commercial growers of vegetables in this area?

**Dr SATHYAMURTHY:** It is slowly increasing. One of the grape growers - and this is something again related to the point that the Member for Brennan made earlier - diversification is the key for some of these industries. If they are a single commodity industry and get a disease like root knot nematode, or something else, or a fruit fly outbreak, that essentially affects their entire business. So some of them are starting to diversify into things like pomegranates, which is what one of the table grape growers is doing, and they are also starting to grow cabbages and cauliflowers and last year, in collaboration with that lettuce grower in Alice Springs, they had a very good crop and so they are starting to diversify into those fruit and vegetable crops with a view to supplying into local markets if they can, the Alice Springs market with a captive audience of about 25,000 to 30,000 people and more during the tourist season and also to interstate markets, but it is still developing slowly. The big challenge with something like that is producing it. You are essentially in an open hydroponic system. You have got sand so anything you put on it runs right through, so how do they do it efficiently is the challenge.

**Mr WOOD:** I ask from another aspect, and we did not get to debate was the issue of a prison farm or prison farms, I shouldn't say just one, but a prison farm, would you say, if it was set up properly in the Alice Springs or Central Australian region, could it be able to supply a fairly large range of vegetables for a small population, which would be the prisoners, most of the year around, if it was set up correctly?

**Dr SATHYAMURTHY:** The big constraints would be the amount of input you are going to need to actually get that to happen. That is not the labour input but just the actual nutrients input and things like that. So most of the soils around here are pretty difficult to actually achieve something like that, but it might be possible on a small scale.

**Mr WOOD:** Those soils are no really no different in the north. The sandy loams have got very little nutrient in them. You have to add fertiliser or manure or whatever. That would be the normal process you would expect, wouldn't it?

**Dr SATHYAMURTHY:** Yes. The advantage in the north perhaps is the availability of very reliable seasonal rainfall means that you can have organic matter build up very quickly, which helps with all the other nutrient aspects, which is where the challenge lies for the southern part of the Territory.

**Mr WOOD:** Are there issues with heat and could you get over it using what they do down in some of the southern areas like Murray Bridge where they cool the greenhouses? But is heat a problem for growing vegetables and can you overcome it?

**Dr SATHYAMURTHY:** It can be quite a substantial problem. One of the reasons why the hydroponic grower grows his under shade-cloth is precisely that it can get quite intense. He can get heat-related burning of plant matter. There might be a possibility to maybe integrate greenhouse technology with solar technology to cool greenhouses, but that is something that I have not specifically looked at in that regard, but it might be possible.

**Madam CHAIR:** But the whole issue of solar is probably the best resource here in the desert.

**Mr WOOD:** Well, you have a dry climate, which is at least easier to cool than a humid climate. There are ways of cooling that are fairly simple and, again, I quote the Murray Bridge system where carnations are cooled by a suction fan pulling water which is re-circulated through a [inaudible] and straight into there. So whether than can be operated from a solar system, you might be right. But I think there are opportunities for developing a prison farm where, using some of the knowledge of the local research station has I think would help identify the sites and also identify what crops they could grow because the other part of it is to not only produce the crop, but you have got to process the crop so it can be stored at the right time and used later on.

**Mr CHANDLER:** I think one of the issues that you also touched on was the market. The Member for Nelson, at the last hearing we had, raised the subject of fruit and vegetables grown in the Top End to be trucked all the way to Adelaide to be turned around and put on a truck back to Darwin, which just seems bizarre. I suppose the same thing would be here where you were talking about people growing lettuces hoping to hit the local market to be able to sell them into the supermarkets here.

**Mr GOBBEY:** If I could make a general comment without naming the names, the local lettuce producer has a direct supply arrangement with one of the supermarket chains and there is no relationship with the other supermarket chain. I think that is partly based on the reason that the local manager does not have the discretion or authority, if you like, and if they were to sell to the second multinational, the product may find its way in to a distribution warehouse and then need to come back.

**Mr STYLES:** General extension services. It seems to me that there is a lot of provision for some fairly technical extension services on to various properties in joint arrangements. And you finding that you have got sufficient resources to be able to provide reasonable extension services?

**Mr GOBBEY:** One of the issues in dealing with industry members and associations, and moreso the individual members, is coming to an agreed definition about what is extension. There are, in round numbers, 200 staff in the Primary Industries group of the department. Yes, it is true that there is a small minority with the name 'extension' within their title, but all of the veterinarians and the stock officers within the Animal Health area spend most of their time providing extension advice. It is not production extension advice, as Chris and his staff and colleagues would do in the Pastoral Production area.

The same applies to our Plant Health services through biosecurity. Yes, they have a regulatory focus but, again, most of those staff spend most of their time working directly with industry providing advice about chemicals and market issue

requirements and the like. In the Pastoral Production and the Plant Industries divisions, they clearly have a different focus than regulatory as in our biosecurity area.

I did an internal analysis some months ago and of the 200-odd people, many of whom are based in laboratories and we have some support people, about half of those people at some time as part of their routine work provide what I would define as an extension service to industry. So it is the notion and the understanding of the Extension Officers from the 1980s and 1990s. It is much, more complex and much broader based now so no one person has it within their capacity to provide an extension message about the individual issues to do with one crop or one commodity and also the animal or plant health or the chemical treatments associated with that. So it has been my focus to actually not integrate the groups that provide the service, but to make sure they provide integrated information. So if a mango grower in the Top End has a pest or disease problem, it is now routine for the people from the biosecurity area to make a farm visit in partnership and with the people from the Plant Industries division.

I have got some work to do, I acknowledge that, but there is no simplistic or simple answer to this. It is about needing to provide a coordinated response.

**Mr WOOD:** I am going back to my days with the Extension Officer, but they used to obviously come out bush. Those Extension Officers had a broad knowledge so when they went out to Daly River, they would know about this crop, this crop, this crop and this crop and while they were out there, they would probably give us some advice on the soil, they might give you a bit of advice on fertiliser usage and they would give you advice on pest control. So Extension Officers themselves were well trained in a broad-brush approach to horticulture, but what you are saying now is they are not so much needed and we will send out the specific people to deal with white-fly or scale, but those won't necessarily be able to, while they are out there, talk about why the cabbages are dying.

**Mr GOBBEY:** I am not down-playing things that have happened in the past by any means, but particularly in the regulatory and particularly in the chemicals area - I have been involved in primary industries in one way or another since the early 1970s and that is going to age me, I know, but it is a much more complicated and complex environment today. I have been fortunate not personally to have been involved in any litigious issues, but I do know that providers of technical advice, whether they are in government or whether they are in the private sector, have to be explicit and absolutely sure of the advice they are giving because people are making significant business decisions on that advice which is a continuing trend. That is not at the front of our mind in the Territory, but I do know that the very broad nature of the available information, it would be improbable that it could be carried around in the head of one individual.

**Mr WOOD:** But he would have the capacity to take the information with him.

**Mr GOBBEY:** Absolutely.

**Mr WOOD:** There is another side to extension which is, I know we hate living in the past, but extension gave the department a front. It sent out a message that the government is interested in horticulture and agriculture and there was that social side, you could call it, of the Extension Officer going out bush and that seems to be the part that has dropped off.



**Dr SATHYAMURTHY:** What I try to do with my team is we try to get to every grower property in our region at least three times a year and we still do that. We have an Extension Officer or an Industry Development Officer as part of my team, but collectively our whole team tries to get around to each of the different properties between two and three times every year and we have done that in the past 12 months. We try and build the rapport not just with that one person, but with the whole team so they know that if our Extension Officer is not around, they can get on the phone to me, they can get on the phone to one of my other colleagues in my group. We know that not every one of us is going to be able to comment across the whole gamut of issues, but we are trying to spread that across.

**Madam CHAIR:** Raghu, with the extension officers and what Gerry was talking about and what Peter said, in the Top End you have got all your scientists and people who work in herbarium; which looks at plants and the history of plants and all that research which then feeds into different areas and you see all these people working across these different areas, is there such a focus down here? What would be looked at in terms of plant species and industries that would happen in the Top End but that would have different challenges for plants in the arid zone?

**Dr SATHYAMURTHY:** From my experience I would say it does happen. I don't know the extent to which it happens up north because I have not worked there, but my group has fairly strong collaborative ties with the plants people within the NRETAS department and in fact some of the wind break trials that we are putting in were done in consultation and in discussion with them because they know the local plants. They know which ones are likely to be beneficial. So we do try and engage with them in those kinds of activities. So there is to some extent. I might not have the information repository like a herbarium or something like that, but we do have some knowledge repositories in other departments that we try and work across.

**Madam CHAIR:** So if you were and I suppose this has been an issue with some of the Aboriginal groups, they have the asset which is their land and they want to use it to get a plant industry or a pastoral industry going, are there barriers between agencies to actually get the research and just trying to get that research to those groups to be able to get that development happening?

**Mr GOBBEY:** I could make a general comment in relation to the specific issue to the Indigenous communities and perhaps an example of market gardens or the aspirations of market gardens. I could best categorise our efforts in recent years, our efforts in the department, as being pretty modest and not as well joined up with the rest of government as they could have been. To mitigate that, it is not without the want of trying as well. The bringing together of the regional development functions in to this department allowed us to be much more strategic in that and Raghu deals with Fran Kilgariff's staff in this part of the world and Raghu's colleagues in the Top End deal with similar people in regional development. We are now actually doing it much more in consultation with the proponent or the willing partners. There are a smaller number of projects that are happening now than there were, but I think they are much more focused and it is not an easy piece of work. If Raghu could share some of his examples of the last few months, that might assist.

**Madam CHAIR:** It would be good just to know what some of those barriers are given that you constantly hear that - I mean, people want to do this stuff; they want to go in to these projects. But there seem to be these barriers that do not allow the

projects to happen whether it is horticulture or agriculture. I know pastoral had had a greater success.

**Dr SATHYAMURTHY:** I think to some extent when Centrefarm was giving their presentation to this Committee, the Member for Nelson asked a question about the expertise and the scientific knowledge. There has to be a lot of capacity building that goes on. There is the basic natural resources issue that one has to contend with: what is the soil, what is the water, what can be grown in relation to that has to be addressed and that potentially is a barrier. Then there is the barrier of what is the knowledge of the person trying to achieve this industry, trying to build this industry for themselves, trying to build a market garden. So that is potentially another issue. Then there is question of what is the goal of that market garden. Is it for it to be a business that is going to supply to the supermarket within the end of the season and if that is the case, the level of expertise and the level of knowledge for both the production and the marketing aspects has to be much higher. I think that is an unrealistic goal to some extent. But if it is being used as a tool to engage with the Indigenous market gardeners, to engage with developing plant industries as a way of Indigenous development, then that is a goal that is achievable if you just ignore the fact that you might not make big profits for perhaps the first 10 seasons.

So it is quite a diverse issue. We engage with the Indigenous market garden community in collaboration with our colleagues in regional development and we visit their farms and we try and provide as best extension advice as we can to help them build their production systems.

**Madam CHAIR:** So do we have a repository of information that is held by AZRI or NRETAS? You are saying all the natural resource management issues that would have to be looked at would be produced by, I suppose, NRETAS?

**Dr SATHYAMURTHY:** I suppose I can only speak from my personal experience in that regard. When I have needed that information I have been able to source it through my colleagues in NRETAS. We also, as Rod Gobbey mentioned, we have a repository of publications of the department so we can put that information together and take that when we go and visit with these growers. We can take that information and give it to them first hand. I have done that with several of the Indigenous market gardeners around the Kings Canyon area where there are some of these market gardens that have been coming into development.

**Mr CHANDLER:** Rod, just picking up on something you said earlier and it probably touches on barriers, you were talking about the water from the sewage treatment farm going in to these new ponds - no they are not ponds they are called?

**Mr GOBBEY:** Satellite infiltration basins.

**Mr CHANDLER:** Satellite infiltration basins. Often, we find ourselves needing to deal with a number of government departments. I am trying to frame a question here that is not asking for an opinion. Do we have a good process in place when you need to get permission from different departments?

**Mr GOBBEY:** For the projects that I am very familiar with, I think there are no barriers. If I could use an example: yesterday, to progress the very matter of getting the infrastructure on site at AZRI and the licences in place, the person who has day-to-day responsibility for the overall management of that convened a meeting in the conference room at AZRI at relatively short notice and within a couple of days there

were representatives from NRETAS, from Health Raghu was there. I sat in on the meeting to get an update as to where it is at and this morning, as an outcome of that meeting, there are various applications at various stages so I inquired of my colleague at the Health Department in Darwin as to where it was at and I had a response back by 10 o'clock.

**Mr WOOD:** Do you have his name?

**Mr GOBBEY:** So, yes, that is reasonably complex. The other example that I could use is that prior to the Peanut Company of Australia moving to Katherine, they needed to get information from a number of government agencies and that was achieved in a couple of meetings. I think we have got a much better possibility of doing it here than in New South Wales, for example.

**Madam CHAIR:** Thank you, Rod, Raghu and Chris. Thank you for appearing before the Committee. If there is any further information, Rod, when we have our deliberative meeting and go through the minutes we may write back, through the Minister, to yourself seeking further information. Thank you very much.

**Mr GOBBEY:** Thank you; our pleasure.

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The Committee suspended

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