

## EDUCATION, SCIENCE AND TRAINING

### SENATE LEGISLATION COMMITTEE – QUESTIONS ON NOTICE 2004-2005 BUDGET ESTIMATES HEARING

**Outcome:** CSIRO  
**Output Group:** - CSIRO

#### **DEST Question No. E250\_05**

Senator Carr provided in writing.

#### **Question:**

1. Did the Davies Laboratories in Townsville once maintain a soil profile collection?
2. What was the nature of this material?
3. What was its purpose?
4. How big was this collection?
5. Where is this material now?
6. Was the decision to relocate the collection publicly announced to the community at that time?
7. Were research organisations in North Queensland informed?
8. What were the financial savings from this move?
9. How many jobs were lost?
10. Other than cost savings, what advantages, including scientific advantages, have been achieved by relocating the profiles?
11. How many times has this collection been used by researchers from North Queensland since the relocation?
12. Are these CSIRO or non-CSIRO researchers?
13. What expenditure has been incurred by CSIRO in funding staff travel to Canberra to use this collection?
14. Is the number of users you have provided an increase or a decrease on usage in the two years prior to its relocation?
15. What arrangements are in place to facilitate access?

**Answer:**

CSIRO has provided the following response.

*Soil Profile Collection at the Davies Laboratory*

1. The Davies Laboratories in Townsville once maintained a collection of soil specimens and it has now been transferred to the recently established CSIRO National Soil Archive at the Black Mountain Laboratories in Canberra. Collections from other CSIRO Laboratories in Brisbane, Adelaide, Narrabri, Hobart and Perth are also being relocated to the new facility.
2. The soil specimens from Townsville are similar to those from other laboratories – they are nearly all air-dried, sieved and stored in plastic containers.
3. Most of the Townsville specimens were acquired during soil surveys of north Queensland from the mid-1960s to the mid-1990s. They represent examples of the most common or significant soils in the region. The specimens can be analysed for a broad range of soil chemical properties that were not measured at the time of the original survey. They can also be used to calibrate new measurement methods and support research studies more generally.
4. The Townsville specimens come from over 600 soil profiles and they occupy a volume of approximately 55 m<sup>3</sup>.
5. The specimens are currently being transferred to long-life containers, catalogued, and cross-referenced with the CSIRO National Soil Profile Database.
6. The decision to relocate the collection was not publicly announced to the community. The soil archive has always been viewed as having a specialist technical role. The specimens are not in a form that can be used for display and educational purposes – soil monoliths (intact natural soil profiles impregnated with resin) are much better for this purpose and examples are on display at the Davies Laboratory.
7. Research organisations in north Queensland were not officially informed, although individual scientists were aware that the material and related data were available from the team at Black Mountain. Transfer of the soil specimens solved a significant management problem because without specialist care, the archive was unlikely to remain useful. (This has been a widespread problem for scientific agencies across Australia.) Scientists at the Davies Laboratory now refer their enquiries on soil profile data to the team at the Black Mountain Laboratory.
8. There were costs in transferring the Townsville soil specimens to Black Mountain (approximately \$11,500) but the move provides a very practical solution to the management of archived soil specimens not only in Townsville but across the country. There are economies of scale with a single archive both in relation to better management, linkage to the CSIRO Soil Profile Database, and provision of a single point of contact for soil specimens from across the country. Access to the specimens is readily provided and the Black Mountain group provide accompanying data and arrange transport of material.
9. No jobs have been lost. The key scientists who led the collection programs in north Queensland were Mr Ray Isbell (deceased), Mr Graham Murtha (retired) and Dr Ross Coventry (now at James Cook University). These field scientists have not been replaced and there are now no active survey programs undertaken by the Davies Laboratories. No CSIRO employees were assigned to managing the soil specimens in Townsville. Maintaining a soil archive requires staff with a good working knowledge of the collection

and this expertise is provided by the Quantitative Land Evaluation Team at the Black Mountain Laboratories led by Dr Neil McKenzie.

10. Formal records of archive use were not maintained in Townsville. However, the level of use appears to be consistent with the long term average. Linking of the north Queensland specimens with the CSIRO Soil Profile Database will provide a more efficient method for gaining access to specimens in the future.

In recent years, the main user of the CSIRO National Soil Archive has been Mr Jan Skjemstad (CSIRO Land and Water, Adelaide) with his internationally significant work on carbon cycling and sequestration in soils. He has used specimens from the Townsville collection. Apart from Mr Skjemstad, the main user of the north Queensland material was Mr Ray Isbell (CSIRO Townsville) who died in 2002 – he used material to support development of the Australian Soil Classification.

11 – 13.

Mr Skjemstad (CSIRO) is the only researcher to travel to Canberra to use the consolidated collection during last two years and he gained access to specimens from around the country including north Queensland. This work was funded by the CRC for Greenhouse Accounting.

Archived soil specimens have been used sporadically by CSIRO researchers during recent years. While the number of applications has been small, their value has been significant. For example, analysis of archived specimens has been used to:

- allow rapid assessment of the distribution of soil across southern Australia with toxic levels of boron at a fraction of the cost necessary for new field work;
- characterise the patterns of carbon distribution in soil profiles from a large number of sites to support the National Carbon Accounting System;
- calibrate new methods of analysis – new methods for determining carbon were checked against older methods to provide more reliable information for carbon accounting in Australia;
- support basic research into nutrient cycling across a large number of soils.

14. Awareness of the value of archived soil specimens is increasing. There are many potential applications relating to environmental monitoring, improved methods of measurement, and natural resource management more generally. When establishment of the CSIRO National Soil Archive is completed later this year, the facility will be publicised. Of much greater significance will be an online connection to the Archive provided by the Australian Soil Resource Information System. This online system will be available in December 2004.
15. Negotiations are underway at present to use the facility to house specimens collected by the Australian Greenhouse Office. Discussions have also been held with state and territory agencies to explore the role of the Archive in housing specimens collected in new soil monitoring programs funded by the Natural Heritage Trust across Australia.