

PARKINSONIA DIEBACK: A Ph.D. PROJECT

Naomi Diplock¹, Vic Galea¹, Colleen Westover², Riëks van Klinken³ & Alan Wearing¹

¹ School of Agronomy and Horticulture, University of Queensland, Gatton Campus, Gatton, QLD.

² Barkly Landcare and Conservation Association, Tennant Creek, NT

³ CSIRO Entomology, Indooroopilly, QLD

ABSTRACT

A Ph.D. project has been commenced to investigate dieback in *Parkinsonia aculeata*. This paper outlines some of the key areas in this study.

Keywords: Parkinsonia, dieback, biological control, plant pathology

INTRODUCTION

Parkinsonia is an invasive plant which has been listed as a weed of national significance (Deveze 2004). Currently control of Parkinsonia is carried out using chemical, fire and mechanical means (Deveze 2004). A disease has been recognized causing Parkinsonia plants to become unhealthy and eventually die. The project aims to identify the causal agent of this disease, and if pathogenic, to evaluate the pathogen/s responsible as a biological control agent for Parkinsonia.

INVESTIGATION OF DIEBACK

Initially the project will aim to identify the pathogen responsible for the dieback. Investigations into the distribution of the pathogen will be carried out. A survey of landholders will allow us to further investigate this dieback syndrome. This will allow us to determine if the pathogen is the same species/race Australia wide, and whether pathogens are in fact always the causal agent of dieback symptoms observed across northern Australia. Different isolates will be tested for virulence on Parkinsonia plants in the glasshouse and cross infection studies will be carried out on isolates from different areas.

The ecology of the dieback syndrome will be explored, looking at the disease cycle in the field, and its movement through stands of Parkinsonia. This will answer questions such as

- How the pathogen invades and infects the host,
- How the pathogen moves through the plant population,
- Interaction of the pathogen with insects and or other control methods.

Glasshouse trials may be carried out to examine the host range of this pathogen. Soil samples from different areas will also indicate if the pathogen is present but not affecting other plant species.

BIOLOGICAL CONTROL

If the biology of the pathogen lend itself to use as a biological control agent, then, biological control methodology will be developed. This will involve developing mass rearing methods and inoculation techniques that can easily be implemented by landholders.

TRIAL WORK

Some promising pathogens have already been isolated from diseased material from Central Queensland, and the Northern Territory and are the focus of initial studies. Currently trials have been started at Newcastle Waters Station (NT) using a number of different inoculation methods. These involved using a spore suspension of isolates previously made from infected plants collected from that location. The suspension was applied to plants after various wounding methods (stem scraping, root damage, hole drilled into stem or un-wounded control). These trials will be monitored for successful infection and dieback symptoms over time. Further trials will be carried out in Central Queensland with a new approach to inoculation which is currently being developed.

SURVEY

A survey will be conducted with landholders who have Parkinsonia on their properties. We will be relying on landholders across northern Australia to help us conduct a national survey of Parkinsonia dieback. We are particularly interested in locating plants from stands exhibiting signs of dieback. Landholders will be invited to submit samples of affected plants to confirm the presence of the pathogen induced dieback disorder. The survey will include instructions on how to collect a sample for isolation studies and details for free postage of samples.

REFERENCES

Deveze, M. 2004. *Parkinsonia; Approaches to the Management of Parkinsonia (Parkinsonia aculeata) in Australia*. Queensland, Department of Natural Resources, Mines and Energy.