



# Biological control of skeleton weed

## Skeleton weed rust fungus

Skeleton weed rust fungus *Puccinia chondrillina* is a highly effective host specific pathogen which is widely used as a biological control agent for skeleton weed *Chondrilla juncea*. It was first released in eastern Australia in 1971.

### Is it safe?

*P. chondrillina* is so extremely host specific, that it only attacks one of the 3 skeleton weed biotypes in Australia. It will not attack any other plants. It has been present in eastern Australia for over 50 years and has been used to control skeleton weed in other countries, with no off-target impacts have ever been recorded in Australia or internationally.

### How does it work?



*Puccinia chondrillina* pustules cause the leaf epidermis to peel back and desiccate, becoming necrotic and dying, and impacting the plant's ability to photosynthesize and store nutrients. The plant is forced to constantly produce new replacement leaves which exhausts the plants' root reserves. Over time the plants become stunted and sickly and die back.

Research from Europe, America and Australia has shown that skeleton weed rust will significantly reduce skeleton weed size, biomass and reproductive output. By impacting both growth and reproduction, *P. chondrillina* contributes to a decrease in the overall population density of *C. juncea*.



In eastern Australia, biological control of skeleton weed caused a major and sustained reduction in skeleton weed density by more than 80% in five years. Experimental plots in Europe showed that 90-100% of skeleton weed seedlings infected with *P. chondrillina* were killed. In California, seed set of rusted plants was reduced by 94%, seed germination by 30%, seed quality by 24%, and biomass by 89%.

### Field trials in Western Australia

Trial plots near Badgingarra WA show the size reduction in skeleton weed by *Puccinia chondrillina* rust. **Below left**, naturally occurring skeleton weed was given an anti-fungal treatment to remove skeleton weed rust; **Below right** no treatment was provided, and rust infection was allowed to flourish. Stem length and stem diameter on rust plants were approximately half that of healthy plants.



**Left** - tiny, stunted skeleton weed plant with all but one leaf destroyed by skeleton weed rust, in Badgingarra WA. Rust-infected skeleton weed is forced to constantly produce new replacement leaves which exhausts the plants' root reserves. Over time the plants become stunted and sickly and die back.

Find out more go to: [dpird.wa.gov.au/skeletonweed](http://dpird.wa.gov.au/skeletonweed) or scan the QR code.



The Grain, Seeds and Hay Industry Funding Scheme, funded by WA grain grower contributions, raises funds to address priority biosecurity threats specific to the WA grains, seeds and hay industries.

### Important Disclaimer

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