

A historical perspective on the International Symposium of Grass Microbial Endophytes

Carolyn A. YOUNG^{1*} and David E. HUME²

¹*Department of Entomology and Plant Pathology, North Carolina State University, Raleigh, North Carolina 27695, United States*

²*AgResearch Group – Bioeconomy Science Institute, Grasslands Research Centre, Palmerston North, New Zealand*

*Corresponding author: cyoung6@ncsu.edu

The emergence of research investigating *Epichloë* fungal endophytes as ecological keystone species revolutionized our scientific understanding of plant-microbial interactions, illuminating both agricultural challenges (such as livestock toxicosis) and opportunities (enhanced pest resistance, drought tolerance, and sustainable production systems). Pioneering work in the early 20th century, including accounts of vertical endophyte transmission from mother plant to seed by Freeman, Sampson, Neill, and Philipson, laid the foundation for the pivotal 1970s discoveries by Bacon and colleagues in the USA linking endophytes in tall fescue to fescue toxicosis. Shortly after, Fletcher, Mortimer and colleagues in New Zealand linked endophytes to ryegrass staggers and pest resistance. From there, research accelerated to build a comprehensive understanding of how endophytes shape plant productivity, stress tolerance, and ecological resilience. The breeding of cultivars that maintain plant protection while reducing animal toxicity illustrates the field's ongoing commitment to practical, science-based solutions for pasture-based agricultural systems.

The International Symposium on Fungal Endophytes of Grasses was first held in New Orleans in 1990, arising from a surge of interest in the practical and theoretical

implications of endophyte–grass relationships. Originally focused on *Epichloë* fungi, the symposium has expanded over time to include broader beneficial plant-associated microbes and is now encapsulated as the International Symposium of Grass Microbial Endophytes. Held every 3–4 years, it has become the central international forum for researchers studying endophytic microbes in temperate grasses, drawing participants from around the globe.

Today, the symposium offers not only cutting-edge science—from microbiome interactions to integrated pest management—but also a deep sense of community. For over three decades, it has fostered mentorship, collaboration, and a shared enthusiasm for the intricate biology of grass-endophyte symbioses. As we gather for ISGME 2025 in New Zealand—where many foundational discoveries were made—we celebrate the vibrant, global community that continues to push the boundaries of knowledge in grass microbial endophytes. This historical perspective aims to honour the milestones achieved while embracing the technical sophistication that now allows us to ask—and answer—increasingly complex scientific questions. ISGME2025 represents not just a continuation, but a reconnection: to place, to progress, and to the people who have shaped this field into what it is today.