POPLAR AND WILLOW DEVELOPMENT AND USE IN NEW ZEALAND

Ian McIvor¹, Sarah Hurst¹ John Charles¹ and Lindsay Fung²

The earliest introduction of poplar and willow species to New Zealand was *P. nigra* and *S. babylonica* with the arrival of English and French settlers in the 1840's. In the following decades immigration was rapid, and land-hungry settlers burnt off heavily forested hills to develop pastoral farming. New Zealand is geologically young and has periods of high rainfall. The removal of forest exposed the landscape to severe erosion. Poplars and willows have subsequently been planted during the last 40 years as vegetative poles in large numbers to retain valuable topsoil and maintain sustainable rural development in hill country in the North Island.

A poplar and willow breeding programme began in 1968, but the arrival of *Melampsora* rusts in the 1970's gave impetus to scale up breeding efforts. Breeding has focussed on conservation qualities; wind, frost and drought tolerance, disease resistance, rough bark, poor opossum palatability and good form.

The degree of conservation planting has been strongly influenced in the past by subsidies from local authorities. More recently this assistance has been removed with a subsequent decline in planting. Information will be given on the development of the breeding programme, and the impact changing national policy on structuring and funding of science has had on the breeding programme.

The arrival of the willow sawfly *Nematus oligospilus* in 1997 has emphasised the need to maintain a vibrant breeding and research programme. The impact of this pest on tree willow plantings, the subsequent involvement of local authorities in the breeding programme and the research response will be discussed.

Other more recent exploratory uses of rural conservation plantings will be reported, including the role of poplar and willow for shelter, fodder, dairy effluent management and in animal health. These multiple end-uses of poplars and willows all require trees with different characteristics, and the breeding programme has been adapted to ensure that it can maximise the potential environmental and commercial benefits of new end-uses

Keywords: breeding programme, breeding adaptability, soil conservation, New Zealand, rural use of poplar and willow, disease.

¹ HortResearch, Private Bag 11 030, Palmerston North, New Zealand.

imcivor@hortresearch.co.nz, shurst@hortresearch.co.nz, jcharles@hortresearch.co.nz ² Horizons Regional Council, Private Bag 11 025, Palmerston North, New Zealand

Lindsay.Fung@horizons.govt.nz