BIOSYSTEMATIC STUDIES IN *POMADERRIS* Labill.
(Rhamnaceae)

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ABSTRACT

Interest in Pomaderris was initiated by the chromosome counts reported by Hair (1963). Chromosome numbers for the following taxa are confirmed: P. kumeraho A. Cunn. 2n = 24, P. aspera Sieber (cultivated) 2n = 24, P. phylicifolia Lodd. 2n = 48, P. rugosa Cheeseman 2n = 48, P. ericifolia Hook. 2n = 36, P. hamiltonii L.B. Moore 2n = 36, P. edgerleyi Hook. 2n = 37, P. novae-zelandiae stat.nov. 2n = 36.

In P. kumeraho, breeding experiments, and studies of the ovule show that plants are self fertile, and reproduction is sexual. Microsporogenesis studies show some asyndesis, and the presence of fragments of unexplained origin at meiosis. Half the microspores formed are inviable.

The triploid taxa reproduce by agamospermy. The origin of the embryo sac is diplosporous. Although breeding experiments indicate that pollination improves seed set, endosperm chromosome counts in P. hamiltonii show that fertilisation of the endosperm nucleus does not occur. A physiological stimulatory effect from pollination is postulated. At microsporogenesis in the triploid taxa, some restitution occurs at the first meiotic division with the formation of large unreduced pollen grains. The rate of restitution is variable and is affected by both environmental and genetic factors. Restitution is correlated with high univalent frequency, and restituting cells exhibit little Anaphase I movement of chromosomes. Pollen of triploids is highly variable in size, pore number, and viability.

P. phylicifolia shows mostly bivalents at meiosis, producing 25-30% viable pollen with reduced chromosome number. Reproduction is mainly sexual, but there is some indication that agamospermy may also occur.

P. rugosa shows a high proportion of multivalents at meiosis, and segregation is irregular. Viable pollen with a reduced chromosome number is below 5%. Restitution may occur at meiosis under certain conditions. Reproduction is presumed to be agamospermous.

The comparative morphology of the New Zealand and Australian taxa of Pomaderris was also studied from herbarium specimens. The data were analysed using numerical taxonomic methods. Four clusters of O.T.U.s are identified, but many O.T.U.s are intermediate in morphology and do not belong to a cluster. The New Zealand taxa are spread among the four clusters. Each N.Z. taxon is closer to an Australian taxon than to other N.Z. taxa. Pollen of Australian specimens was compared with pollen of known N.Z. polyploids. The existence of polyploids and apomicts among the Australian taxa is suggested. Taxonomy and origin of the New Zealand polyploid taxa are discussed.

CONTENTS

ABBREVIATIONS

P.M.C.	Pollen mother cell
E.S.	Embryo sac
O.T.U.	Operational Taxonomic Unit
Vic.	State of Victoria, Australia
N.S.W.	State of New South Wales, Australia
A.C.T.	Australian Capital Territory
Qld.	State of Queensland, Australia
N.Z.	New Zealand
Tas.	State of Tasmania, Australia
K	Royal Botanic Garden Herbarium, Kew, England
BM	Herbarium of British Museum, London, England
MEL or Mel	National Herbarium of Victoria, Melbourne
NSW	National Herbarium of New South Wales, Sydney
HO	Herbarium of University of Tasmania, Hobart
W	Natur historiches Museum Botanische Abteilung, Vienna, Austria
CHR	Herbarium of Botany Division, D.S.I.R., Christchurch, New Zealand.
Canb. CANB	Herbarium Australiense, C.S.I.R.O., Canberra
Canb. bot.	Herbarium of Canberra Botanic Garden, Australia
WELT or Welt	Herbarium of National Museum, Wellington, N.Z.
AK	Herbarium of Auckland War Memorial Museum
AKU	Herbarium of Auckland University, Botany Dept
MU	Herbarium of Melbourne University, Botany Dept
P	Museum National d'Histoire Naturelle, Laboratoire de Phanérogamie Paris France.
A.C.B.	A.C. Beauglehole, Collector for MEL
N.A.W.	N.A. Wakefield
D.C.	De Candolle author of Prodromus (1825)
L.S.	Longitudinal section
s.d. or n.d.	Date lacking

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