

Plum breeding in Queensland

B.L. Topp

Department of Primary Industries, Granite Belt Hort. Res. Stn., Applethorpe, Q. 4378

The Granite Belt is Queensland's major deciduous fruit-growing area. High summer temperatures, predominantly summer rainfall and mild winters make it a unique plum-growing area. New Japanese plum varieties (*Prunus salicina*) are needed that are adapted to this climate and which can capitalize on the early maturity. The aim of the programme is to produce varieties that ripen before the main early cultivar Wilson and also to produce replacements for the later-maturing standards.

Methods

Standard techniques are used for pollen collection, emasculation and cross-pollination (1). Pollinations are performed for a two-week period in early September using insect-proof cages to prevent random pollination. Pollen is applied several times to each stigma at daily intervals to improve fruit set.

Seeds from early-maturing parents are stratified in their fruit (2,3). Seeds are germinated in March after a three-month stratification. Seedlings are grown over winter in a glasshouse and field planted in spring. Superior selections are propagated at test sites for further evaluation.

Results and Discussion

The first progeny produced in 1966 were crosses of early x early parents. These progeny were very early ripening but had poor fruit size. Most crosses now involve at least one parent with large fruit size.

Population sizes have increased in the last two seasons mainly through improved pollination and germination techniques. Germination percentage has been increased from 0-40% to 30-90% and fruit set percentage from 10-25% to 10-40%. Over 3 300 seedlings have been field-planted to date and of these 75% are less than two years old.

The most promising selections from the 1 416 trees so far evaluated are listed below:

SELECTION	CROSS	MATURITY (RELATIVE TO WILSON)	FRUIT SIZE (mm)
R1T86	Wilson x Early Gem	14 days before	30 - 40
R3T91	Early Jewel x Early Gem	14 days before	30 - 40
R9T24	Burbank x Formosa	11 days after	40 - 50
R2T46	Burbank x Skeuse Seedling	21 days after	50 - 60
R3T17	Doris Open Pollinated	43 days after	40 - 45
N10T34	Burbank x Salad	45 days after	45 - 60

1. Weinberger, J.H. 1975 . In Advances in Fruit Breeding, eds. Janick, J. and Moore, J.N. pp. 336-347.
2. Hesse, C.O. and Kester, D.E. 1955. Proc. Amer. Soc. Hort. Sci. 65: 251-254.
3. Lesley, J.W. and Bonner, J. 1952. Proc. Amer. Soc. Hort. Sci. 60: 238-242.