

1979

## Early generation evaluation of new subterranean clover crossbreds and medic varieties

C M. Francis

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### Recommended Citation

Francis, C M. (1979), *Early generation evaluation of new subterranean clover crossbreds and medic varieties*. Department of Agriculture and Food, Western Australia, Perth. Article.

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WESTERN AUSTRALIA  
DEPT OF AGRICULTURE  
13 MAY 1960

DEPARTMENT OF AGRICULTURE  
Western Australia

EARLY GENERATION EVALUATION OF NEW SUBTERRANEAN  
CLOVER CROSSBREDS AND MEDIC VARIETIES

C.M. Francis  
Plant Research Division

DEFINITION AND OBJECTIVES

The programme aims to evaluate early maturing subterranean clover, crossbreds and selections emanating from the National Clover Breeding Programme based at the University of W.A. Evaluation of new early Medicago ecotypes included for the first time in 1977 has been continued in 1979. The appointment of a research officer at Merredin (Mr M. Ewing) experienced in dry land pasture research will see an expansion of the programme in 1980. As foreshadowed last year, it is expected this will be the final year of the programme in its current form, and a new project emphasising pasture establishment and management as well as varietal evaluation is projected.

PROGRESS

A. Early maturing low oestrogen crossbreds

Nungarin, the first crossbred to arise from this programme, was released to commercial seed producers in April 1977. Some 1,000 tonnes are expected to be produced in Australia in 1979 and current prospects are for continuing expansion of production. It is currently recommended for dry areas in New South Wales, South Australia and Western Australia.

More recent crossbreds in the programme are undergoing small plot evaluation. Crossbreds harder seeded and earlier than Nungarin have been bred and will need to be tested on a larger scale in terms of their persistence under wheatbelt conditions. In the interim, their initial small plot evaluation has been handicapped by drought conditions in 1976 and 1977 at Merredin; the primary test centre for new early crossbreds. Data for 1979 is presented in Table 1 but dry spring conditions caused low seed yields and the necessity of retesting at more sites in 1980. Drought prevented seed set at the new test centre at Pindar near Geraldton and the trials will be repeated in 1980.

Table 1: 1979 Subterranean clover - Seed yields kg/ha

Crossbred or Cultivar	Nungarin (Sandy loam)	Merredin* (Sand)
346B 16.1.2	84	39
18.1	64	28
18.2	44	15
6B34622.3.1	132	63
22.3.2	33	50
23.1.5	33	19
23.2	45	25
69ND 11.1.2	116	44
69HD 20.1.2	137	45
Nungarin	106	65
Geraldton	16	25
Northam	37	27

\* Ulva series

- To Note: (i) Site at Pindar failed to set seed in drought.  
(ii) No significant seed yield advantages of crossbreds over Nungarin in these trials.

Seed increase has enabled seed supplies sufficient to service an expanded regional programme in New South Wales and Western Australia.

B. A new programme with Medicago species

For alkaline soils in dry areas small plot field evaluation of early maturing Medicago ecotypes from Libya continued in 1979. The Libyan ecotype Swan (M. tornata), was again vastly superior to the current commercial cultivars (Table 2), in sandy soils. On heavier soils M. truncatula ecotypes show great promise (Table 2) and the location at Merredin of the new research officer will see an expansion of their evaluation.

Table 2: Seed yields (kg/ha) medic trials (large plants) 1978/79

Variety	Tenindewa Yellow Sand 1978	Tenindewa Yellow Sand 1978	Mukinbudin Loam 1978
Tornafield ( <u>M. tornata</u> )	59	27	11
Swani ( <u>M. tornata</u> )	101	82	31
Harbinger ( <u>M. littoralis</u> )	99	21	
Cyprus ( <u>M. truncatula</u> )	28	32	44
Aziziza A5 ( <u>M. truncatula</u> )	85		193
Zuara 3 ( <u>M. truncatula</u> )	80		113
Serena ( <u>M. polymorpha</u> )		28	

- To Note: (i) Superiority of Swani over Tornafield on the yellow sands.  
(ii) M. tornata was less successful on heavy soils where M. truncatula varieties from Libya outyielded cv. Cyprus.

Seed increase of Swani in 1979 was hampered by drought at Eradu in 1979 and will continue in 1980.

C. Evaluation of crossbreds in the Dwalganup maturing range

As of last year several crossbreds outyielded both Dwalganup and Daliak at Chapman. Results from Katanning are not to hand. Seed yields are presented in Table 3. A very dry finish reduced seed set in 1979 and the second year figures (78C13) may be largely hard seed residuals; perhaps accounting for the good results achieved by the extremely hard seeded crossbred MD7.13 (Midland B x Daglish).

Table 3: Seed yields kg/ha Chapman

	79C30 1st year stands	78C13 2nd year stands
HD 20.1.2	73	202
ND 23.2.2	158	176
BD 43.2.3.1	125	182
6.2.3.2	70	203
19.1.1	92	165
MD 7.13	107	296
12.1.3.2	27	118
12.2.3	46	126
7.4.2	61	159
8B 12.2.1.2	40	149
19.2.2.2	34	104
40.2.1	22	172
Dwalganup	34	122
Daliak	59	100
Northam	67	194
Nungarin	118	168

Note: Dry matter yields are not presented but ND 23.2.2 (Northam C x Dalglish), Northam A and Nungarin had best vigour ratings.

D. Recent Developments with Kabatiella resistant crossbreeds and varieties

The agronomic potential of a range of crossbreeds was evaluated in Western Australia, New South Wales and Victoria during 1979. These had previously been listed in successive years for Kabatiella resistance and fall into the 'Woogenellup' maturity range.

Full data is not yet available, but most promising crossbreeds to date are DMN 12 and DMN 18 (Daliak x Midland B x Nangeela) and GD 56.8 (Guildford D x Midland B x Nangeela). These have a high degree of resistance to Kabatiella and a vigorous vegetative growth similar to Woogenellup. They have also exhibited reasonable tolerance to root rots (Pythium, Fusarium sp.) in glasshouse tests. Respectively at F<sub>5</sub> and F<sub>6</sub> generations, seed increase will accompany field evaluation in 1980 and field trials will be expanded in all southern states in 1980.

An important development in T. brachycalycinum (Syn. T. subterraneum ssp. brachycalycinum) has been the isolation of early maturing lines from our Turkish introductions. Some of these introductions have the added bonus of good resistance to clover scorch and are being evaluated in South Australia and New South Wales as well as the Esperance region of Western Australia.