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MAKING FARM TREES PAY

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1. INTRODUCTION

The purpose of this paper is to try and identify the species and crops from them which could be considered for use as farm trees.

The use of farm trees for economic return represents some management problems either with stock or watering. However, these are not insurmountable but are rather problems of correct choice for sites concerned and marketing the product, usually from rather remote areas.

Heavier rainfall areas consequently have few problems. The areas of less rainfall have problems and as found during the preparation of this paper, cost of trees, time to bearing age, stocking and market price have main effects on profitability.

Unfortunately, marketing seems to have the usual problems for which there are at present few answers. Promotion would seem to be one and development of local markets together with product research, e.g. use of tree lucerne in stockfeed cubes, carob bean flour and kibbles (assumed to be cubes from pods etc. In fact, honey locust could be incorporated with these most likely).

2. MARKET AND DEMAND, PROMOTION AND SUPPLY

Supply : Table 1

2.1 Nuts not segregated and figures in Table 1 include Kiwi fruit etc. Nevertheless, the production value exceeded $1 million for the first time in 1978/79.

2.2 95% of local supplies are obtained from overseas or the Eastern States.

2.3 South Australia supplies most almonds and competes on the market with walnuts and pistachios.

A cartel structure is suspected or at least selling strategy linked closely to U.S. crops and markets.

Large areas are advocated to reduce losses due to birds and need for pollinator rows of trees.

2.4 Victoria supplies most local walnuts.

2.5 Queensland macadamias are sent overseas for shelling and brought back : potential for local production.

1. Local (Australian) = 0.2 kg/capita
2. Overseas (U.S.A.) = 2.0 kg/capita.

Promotion

Exceedingly limited due to marketing largely under control of Co-operative Nut Growers in the Eastern States.

3. FACTORS AFFECTING CHOICE OF FARM TREES WITH POTENTIAL

3.1 Rainfall

3.2 Temperature

3.3 Length of season

3.4 Soils

3.5 Management amalgamation (irrigation)

3.6 Summer water supply

3.7 Labour requirements

3.8 Cost of establishment including cost of trees

3.9 Scale of operation and disease restriction/risks

4. APPARENT ECONOMIC SPECIES FOR SOUTHWEST WESTERN AUSTRALIA
(assuming acceptable standards of management)

4.1 > 600mm Rainfall (Nuts)

Almonds — Chestnuts
Pecans) & Timber — Filberts
Walnuts)

4.2 < 600 > 500mm

Almonds — Figs (?)
Pistachios
Jam wattle - timber
Carob bean - Kibbles + Flour

4.3 < 500mm Fodder Beans

Tree lucerne)
Honey locust) Fodder foliage and beans
Sandalwood - wood
Jam wattle - timber
Carob beans - seed flour & kibbles

4.4 > 600mm Agroforestry Systems

Pinus radiata)
Pinus pinaster) posts and sawlogs
Eucalyptus globulus - chipwood
Mixed eucalypt spp)
(rarer)) - seed production and dried fruits
& other natives) e.g. banksia cones etc.

5. GENERAL COMMENTS

5.1 Table 2 of comparative economic returns suggests that tree lucerne, pine trees, pecan, almonds and carobs, with mixed eucalypt spp., of rarer spp., for seed production are the species most likely to yield financial returns. Most of these are easily established.

5.2 Further tests are required with tree lucerne for use as stockfood as a cube (both this and alfalfa have about 17% crude protein).

5.3 All of the species of value could fill an anti-erosional role and hence attract an intangible return also.
(Slides illustrate some of the species referred to.)

5.4 Despite the approximations in Table 2, what is evident is that economics of farm trees are related to:

5.4.1 cost of trees for establishment

5.4.2 length of time to bearing age

5.4.3 stocking per unit area

5.4.4 market price of produce.

This assumes that other establishment costs are more or less equal, e.g. fencing, ground preparation and maintenance.

5.5 If the shelterbelts are responsible for retention of soil, soil values could be credited as produce of the trees. This is usually expressed as loss of crop yield : "Dollars and Dust" figures consider this to be at least 8% to 20% the year after loss. Thus for a normal 8 bag crop, the loss could be 1.6 bags, i.e. 4.8 bushells equal to 12 bush./ha, i.e. $40/ha. (assuming $120/tonne for wheat).
If, for instance, there are two single rows around an 80 x 80 chn paddock, i.e. 320 trees, this represents $0.13¢/ tree per year and therefore the costs of trees would be recouped in 5-12 years @ 10% C.I.

5.6 The use of carob bean for best results requires grafted stock. The market has not evidently been tested for locally produced flour or kibbles

References:

1. W.A. Year Book, 1981.
2. North American Nut Trees, Jaynes.
3. Forest Focus No 20, April 1978.
4. Aust. Journal of Forestry, Vol. 42 No. 1 Jan., 1944.
5. Tree Lucerne - A Fodder Crop which has been Overlooked by L.C. Snook, D.Sc., B.Sc. Agric. Dept of Agric. W.A.

TABLE 1

PRODUCTION OF MINOR FRUITS : W.A.

Year	Commodity: Loquats, figs, olives, passion-fruit, almonds & other minor fruits Value ($)
1973-74	334 303
1974-75	413 213
1975-76	483 351
1976-77	626 149
1977-78	636 742
1978-79	1 061 418

Source: W.A. Year Book, 1981.

TABLE 2

COMPARATIVE ECONOMICS OF YIELDS AS AT MAY 1982

(A) NUTS

Crop	Stock Type	Age to Bearing	Approx. Cost/Tree	Est^{d} Yield Per Tree (kg) (in shell)	Approximate Wholesale price of nut/kg	Estimated return per Tree	Tree Value at Bearing with C.I. of 10% ($)	Time to Amortise Stock Cost After Frt (yr)
1. Almonds *Prunus amygdalis*	Grafted	4-5 yrs	$5-$6 ea.	12-15 kg.	$1.50-$1.60 ($3.25-$3.60 shelled)	$18 $20-$25	9.74	0.54
2. Persian walnut *Juglans* spp.	Grafted	5-10 yrs	$35	7-10gm nut plus small logs at 30-40 yrs	$1.00-$1.20	$7-$12	90.70	9.07
3. Chestnuts *Castanea* spp.	Seedling Grafted	10-12 yrs	$4.50 $12	1 bushell (US) 70-150/kg	Market test	?	14.10 37.63	?
4. Hazels or Filberts *Corylus* spp.	Seedling	12-15 yrs	$4.50	4.5/kg	$1.90-$2.00	$8.50-$9.00	17.07	2.00
5. Macadamias *M. integrifolia*	Seedling Grafted	3-4 yrs 2-4 yrs	$12-24	25 (age 12+)	$1.90-$2.00	$45-$50	62.09	1.31
6. Pecans *Carya* sp.	Grafted	3-4 yrs	$10-12	23-35 (age 25 yrs)	$2.00-$3.00	$70-$100	16.10	0.19
7. Pistachios *Pistachio atlantica* stock?	Seedling Grafted	3-4 yrs 8-10 yrs	$1.50-$2 $15	7-10 kg	$1.50 (?)	$10.50-$15	38.87	3.10

TABLE 2

COMPARATIVE ECONOMICS OF YIELDS AS AT MAY 1982

(B) FODDER/BEANS

Crop	Stock Type	Age to Bearing	Approx. Cost/Tree	Est^{d} Yield per Tree (kg) (in shell)	Approximate Wholesale price of nut/kg	Estimated return per Tree	Tree Value at Bearing with C.I. of 10% ($)	Time to Amortise Stock Cost After Frt (yrs)
1. Bunya Bunya *Ar. bidwillii*	Seedling	20-25 yrs (?)	90¢	2-2.5 kg	Market test	?	8.05	?
2. Carob bean *C. siliqua*	Seedling	4+ (Israel)	90¢	70 kg (Israel)	$1.15 (seed flour)	$20 (flour)	2.56	0.12
	Grafted	10-12 (WA)	?					
3. Tree lucerne *Cyt. proliferus*	Seedling	3-4 yrs	90¢		Luc. cube $2.60/kg			0.04
		seed	$3/20kg	1.5-2.00	Seed $40-$50/kg	$40-$50	1.32	
		foliage		25-80 kg	Fodder = ?	$33 (2-yearly harvest)		
4. Honey locust *Gled. inermis*	Seedling	3-4 yrs	90¢	270 (U.S.)	Market test	?	1.32	?
	Grafted		$3-$5	150 (W.A.)			5.86	
5. Sandalwood *S. spicatum*	Seedling + host	7	90¢	Seed - 100 av. @ 30 yrs				
				Wood - 12 kg @ 20 yrs	$1000-1500/tonne	18	5.99	0.33

TABLE 2

COMPARATIVE ECONOMICS OF YIELDS AS AT MAY 1982

(C) AGROFORESTRY COMBINATIONS

Crop	Stock Type	Age to Mature	Approx. Cost/Tree	Yield/Tree	Wholesale Price	Est^{d} Return per Tree per Annum	Tree Value at Bearing (C.I. 10%)	Time to Recoup Cost of Tree
1. P. radiata	O/root	(Rotation (Age	4¢ each	1.00m^3 (wood)	)) $9.00/m	$9.00	0.93	0.10
2. P. pinaster	" "	(30-40 yrs (	4¢ each	0.96m^3 (wood) seed = 2 kg	) $40/kg	" $80.00	0.93	0.01
3. Jam wattle Ac. acuminata	Potted or D.seed	10-12 $3/20gm	90¢	1 post	Cheapest alt = $1.20 ea.	$1.20	2.82	2.35
4. Tasmanian blue gum Euc. globulus	J/P	15-20	15¢	Av. 1.0m^3	3.15/m^3	$3.15	0.52	0.16
5. Mixed eucalypt spp. (rare)	J/P	10-12	15¢	Variable	$100/kg	$25.00	0.47	.02