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THE LINSEED INDUSTRY

SUBMISSION TO THE TARIFF BOARD.

In September, 1949, the Minister for Trade and Customs referred to the Tariff Board for inquiry and report the following questions:

- (1) Whether the growing of flax for linseed should be encouraged, and, if so, whether Government assistance should be afforded to the cultivation of linseed and the production of linseed oil; and
- (2) in the event that Government assistance is recommended, what form it should take.

The Tariff Board presented its findings on March 21st, 1951. These findings were:

(A) LINSEED.

1. The growing of linseed should be encouraged and, if necessary, should be afforded Government assistance.
2. The Government assistance which the Board considers may be necessary to establish the industry is in two forms—
 - (a) Immediate assistance to organize the industry on a Commonwealth basis through State boards, to be established by State Governments.
 - (b) Financial assistance—
 - (i) for the purchase of the crop and for the provision of storage accommodation;
 - (ii) to enable growers to be guaranteed a minimum price.
3. The Commonwealth should sponsor in the Agricultural Council a plan for the setting up by the States concerned, of linseed marketing boards to discharge the following functions:—
 - (a) To assemble and furnish data which will enable the Agricultural Council to—
 - (i) determine a ratio between costs of producing wheat and linseed, for the purpose of relating a minimum price for linseed to the guaranteed price for wheat;
 - (ii) recommend to the Commonwealth Government from time to time the minimum price that should be guaranteed to growers of linseed.
 - (b) To assist in the arrangement of contracts between growers and crushers.
 - (c) To act as agents for the Commonwealth in financing the purchase and storage of the crop and in distributing to growers any amount necessary to maintain a minimum price.
 - (d) To fix and collect a levy during seasons of high prices to be distributed in seasons of low prices in order to promote stability in the industry.
 - (e) To recommend an economic price for meal in relation to the price of linseed.
- (4) Subject to its being satisfied with the arrangements made by the State Boards and the Agricultural Council, the Commonwealth should provide finance as under:—
 - (i) Portion of the amount required to finance the purchase and storage of the crop; the remainder being contributed by growers, crushers and State Governments.

- (ii) If in any season, import parity should fall below the guaranteed price and as a result the average return to growers from their sales of linseed to crushers should be less than the guaranteed price based on the then current price of wheat, the Commonwealth Government should supplement the amount taken from pool funds to make up to growers the difference between the import parity and the guaranteed price, provided that the Commonwealth contribution be on a pound-for-pound basis and limited to a maximum of £4 per ton or £100,000, whichever is the less, in any one year.
- (iii) Any Commonwealth liability should be limited to a period of five years and a further inquiry into the industry should be held before the end of that period.

(B) LINSEED OIL.

1. The Board has no evidence that any Government assistance other than existing Customs duties is needed by crushers.
2. The present system of import licensing of linseed oil should be abolished as soon as circumstances permit, thus allowing importations by any importer subject to payment of duty.

(C) LINSEED MEAL.

1. The price of linseed meal should be raised to a level more in accord with costs of production and the selling prices of competitive animal foodstuffs.
2. Prohibition of the exportation of linseed meal and cake should be withdrawn, in order that crushers may find a market overseas for so much of the production as is not saleable in Australia at a commercial price.

In February, 1952, the Australian Agricultural Council adopted a report of its Standing Committee which stated, *inter alia*:

The Standing Committee does not consider that a marketing organization in Australia would be effective as a means of protecting the industry, since the chief danger would arise from low prices overseas which could not be offset by local marketing action.

The Standing Committee suggests, for consideration by the Agricultural Council, that the Commonwealth Minister concerned be invited to ask the Tariff Board to give further consideration to the question of protection of the Australian linseed industry, and that in so doing the Board ascertain the views of the State Departments of Agriculture concerning the importance of the industry in relation to the live-stock industries. In this connection the State Departments of Agriculture have expressed their willingness to present evidence to the Tariff Board.

**Submission to the Tariff Board by the New South Wales Department
of Agriculture.**

As a result of this submission the Tariff Board held further hearings at which State Departments of Agriculture gave evidence regarding the desirability of establishing a linseed industry in Australia on a permanent basis. The submission of the New South Wales Department of Agriculture is reprinted below:

Apart from the necessity for maintaining a continuity in linseed oil supplies, the New South Wales Department of Agriculture is interested in the linseed industry in Australia from two points of view:—

- (1) Linseed meal, which is obtained as a by-product of linseed oil, is an extremely valuable feed for dairy cows, pigs and poultry. The importation of linseed oil rather than the importation or local production of linseed must deprive this group of stock feeders of one of the most valuable protein-rich feeds available and this must seriously reduce the efficiency of the industries concerned.

- (2) Linseed is valuable as an alternative form of land use in many of the best cropping areas of New South Wales, particularly insofar as it enables producers to further diversify their farming activities.

Linseed Meal as a Stock Feed.

The production of meat and other livestock products such as milk and eggs can only be carried out efficiently if the animals concerned obtain a sufficient quantity of the major groups of substances which make up a balanced ration. These substances are proteins, carbohydrates, fats, minerals and vitamins. We are here concerned with the protein group which may be supplied by linseed meal—in whole or in part (depending on the type of animals concerned).

Flesh and eggs are largely protein and milk contains about as much protein as fat. This protein has to be supplied to the animal as feed. If the feed contains insufficient protein, maximum production cannot be achieved. Protein deficiency manifests itself in slow growth and/or low milk or egg production. The protein requirements of animals can be obtained either from protein-rich roughage (such as first-class pasture or the hay, silage or green fodder of lucerne, clover, cowpeas, etc.) or from protein concentrates such as linseed meal, peanut meal, or meat-meal. These concentrates are to some extent interchangeable and will therefore be examined together at first; the extent to which this interchange is limited because of palatability or toxic effects, will be discussed under the heading of the respective industries.

Before World War II Australia had no difficulty in obtaining substantial quantities of linseed from abroad—especially from India and Argentina. The bulk of the linseed oil consumed in Australia was obtained from the local crushing of imported seed. This furnished the various livestock industries with a relatively abundant supply of reasonably priced protein concentrate. The decision of the major linseed exporters to force their customers—including Australia—to take linseed oil rather than oil-in-seed presented considerable difficulties to those livestock producers who had come to look upon linseed meal as a regular item in their animal rations.

There is no significant trade between Australia and other countries in protein concentrates. Interstate trade is also fairly small, according to statements made by various producers. No statistics are available to verify this fact. However, freight rates on protein concentrates are high, relative to their value, and this would be a factor limiting interstate movements. It is possible therefore to discuss the New South Wales supply position purely in terms of New South Wales production figures.

It is not possible to obtain any reliable indication of the amount of protein obtained from roughages. Unfortunately the statistics available regarding the amount of protein concentrates produced in New South Wales are not as complete as is desirable. Table I gives the figures which it has been possible to obtain regarding the production of protein concentrates in New South Wales from the early war-years to 1952.

Both the total weight of protein concentrates and the approximate quantity of crude protein is given in Table I. The protein content of the different concentrates varies considerably. The main abattoirs' by-product—meat-meal—averages about fifty per cent. crude protein.

Coconut meal contains twenty per cent. crude protein and linseed meal thirty per cent. The quantity of crude protein available for stock in these meals increased from a wartime average of 11,500 tons per annum to 16,000 tons in 1949-50, as a result of an increase in the production of meat-meal, which more than compensated for the reduction in the supplies of linseed meal. In 1950-51 supplies of crude protein fell to 13,200 tons and they probably declined to the average wartime level in 1951-52, as the result of a severe decline in supplies of linseed meal.

The shortage of protein concentrates in the last two years greatly exceeded that of the war years, judged by the experience of officers of this Department who were inundated until about six months ago, with urgent pleas from producers to help them obtain protein concentrates. It seems likely therefore that the demand for these products has increased substantially in the last few years. This increase in demand will be discussed from the point of view of the different industries using concentrates.

TABLE I.
Production of Stock Feeds in New South Wales.

Year ended 30th June—	Chief Protein Concentrates.					Peanut Meal.	Bran and Pollard.
	Meat Meal.	Coconut Meal.	Linseed Meal.	Total.	Approx. Quantity of Crude Protein Available.		
Average 1937 to 1939	* '000 tons.	8.4† '000 tons.	16.5 '000 tons.	* '000 tons.	* '000 tons.	* '000 tons.	208.9 '000 short tons.
Average 1940 to 1945	9.6‡	8.2	16.9	34.6	11.5	4.3§	207.9
1946	15.6	4.9	23.3	43.8	15.8	3.5	184.5
1947	16.9	4.1	8.9	29.8	12.0	*	222.6
1948	18.1	6.9	4.7	29.8	11.8	0.8	217.2
1949	19.8	11.4	7.8	39.0	14.5	*	269.3
1950	19.9	9.8	13.6	43.3	16.0	*	231.5
1951	18.7	7.9	7.8	34.4	13.2	*	238.0
1952	*	10.3	1.3	*	*	*	*

* Not available. † Average of years 1937-38 and 1938-39 only. ‡ 1941-42 to 1944-45 only. § 1944-45 only.

Source.—Bureau of Statistics and Economics, Sydney.

Poultry Industry. Figures of the amounts of protein concentrates supplied to the different individual livestock industries are unfortunately not available. It is estimated, however, that the poultry industry absorbs more than half the supply of protein foods. The demand by this industry increased originally as a result of an increase in poultry numbers during the war years. In the period since 1945 the number of laying hens has declined slightly but this has been offset by an expansion of the cockerel-raising industry. As far as the demand for protein concentrates by the industry as a whole is concerned, this latter expansion has probably led to a net increase in the demand for concentrates.

The acute shortage of protein concentrates in 1950-51 and 1951-52 has had a decidedly harmful effect on the poultry industry. Departmental experiments have shown that an inadequate protein supply in a ration may reduce egg production per bird by as much as twenty-five per cent. Even before the shortage of concentrates became acute, many poultry farmers were not using sufficient protein for a balanced ration.

The extension officers of the Department have for many years stressed the importance and value of supplying sufficient protein to birds. The shortage of concentrates has meant a severe set-back to this extension effort.

Linseed meal is one of the protein concentrates which can be used by poultry farmers and many of the sample rations suggested by the Department in its extension literature contain linseed meal. However, linseed meal cannot be relied on for the whole of the protein content of the ration as it contains a toxic material which affects growth and causes losses if used to excess, unless the toxic material is washed out by water soaking. Up to ten per cent. of laying or breeding rations and up to five per cent. of chicken rations can be supplied by linseed meal. If all poultry farmers in New South Wales fed balanced rations the total demand for protein concentrates would be approximately 20,000 tons annually. Of this quantity roughly one-third (*i.e.*, about 6,700 tons) could be supplied by linseed meal if its price was comparable with other concentrates—or if other concentrates were in short supply. It is thought that, given the present price structure, poultry farmers would take substantial quantities of linseed meal at approximately £30 a ton, ex works. This belief is not backed by any detailed study of farmers' attitudes but is based mainly on the contact poultry experts of the Department have with many farmers and others interested in the industry.

Pig Industry. Pig numbers rose from 357,000 in 1938 to 561,000 in 1944 but fell to 265,000 in 1952. These figures disguise important changes in the distribution of pigs in the State which are relevant to changes in the demand for protein concentrates. In 1938 eighty-two per cent. of the pig population of this State was concentrated in the coastal dairying districts. This percentage fell to sixty in 1945 but rose again to sixty-seven in 1952. Pigs outside the coastal districts are normally fed on grain which must be supplemented with protein to a greater degree than rations fed in dairying areas, where milk protein is available.

Reports from extension officers indicate that most metropolitan pig producers have managed to obtain supplies of protein concentrates in the last two to three years, but that country producers were chronically short of concentrates until about six months ago. At present extension officers in most country districts report that meat meal is available at approximately £40 a ton.

As a pig feed, linseed meal combined with grain does not give as satisfactory results as meat meal and grain, but where linseed meal is used in combination with meat meal, equal or better results are obtained.

The Department recommends a mixture of two parts of meat meal and one part of linseed meal as a good alternative to complete reliance on meat meal. The quantity of linseed meal which pig raisers can be expected to use will depend almost entirely on its price. With meat meal selling at £40 a ton, in country centres, linseed meal would be worth only £24 a ton to pig raisers. In view of the recurrent shortages of meat meal it is believed that considerable quantities of linseed meal would be purchased if it could be obtained at £28 to £30 a ton landed in country centres. About six months ago pig producers were offered linseed meal at £36 a ton ex-factory (in Sydney) but as far as the Department is aware no sales were made to pig raisers at this price.

Dairying Industry. The dairying industry is potentially the largest market for linseed meal producers in New South Wales. This Department has consistently stressed in its extension programme that the protein content of rations of dairy cattle is of supreme importance. The drop in milk production when grasses flower and seed is largely due to the sudden fall in protein content of grasses at this stage. For dairy cattle linseed meal is an ideal concentrate and greatly preferred on grounds of palatability to meat meal and other abattoir by-products. If a dairy herd is on good grazing feed which is deficient in protein—a condition fairly common in New South Wales dairying districts—the feeding of one pound of linseed meal will produce approximately half a gallon of milk. If departmental recommendations in this matter were adopted by, say, seventy per cent. of all dairy farmers, the demand for linseed meal from the dairying industry alone would be approximately 50,000 tons per annum and milk production in the State would increase by roughly fifty million gallons or twenty per cent.

Improvement in Supplies in the last Six Months. As already mentioned the Department has received no complaints regarding shortages of protein concentrates in the last six months, and some extension officers in country towns have stated that the supply position has improved considerably in this period. It is believed that this improvement is temporary and that the basic need for an additional assured long-term supply of protein concentrates remains. The present easing of the position is probably the result of:—

- (i) Increased meat production and consequent increases in the production of abattoir by-products. Excellent seasonal conditions have been largely responsible for this expansion in meat production.
- (ii) Increased margarine production coupled with increased production of coconut meal.
- (iii) A decline in the cockeral-raising industry as a result of a fall in poultry prices in the United Kingdom.
- (iv) The very favourable climatic conditions experienced in dairying districts in recent months.

Linseed as a Crop.

The establishment of the linseed industry on a permanent basis is also considered desirable by this Department because it will enable farmers to diversify their farming activities to a greater extent than is now possible.

Wheat is now the major crop in those areas where linseed can be produced. Most wheat farmers in these districts already diversify their activities to some extent by running sheep either for the production of fat lambs or wool but the introduction of another crop for which there is an assured market would contribute to the greater financial stability of farms in the areas concerned.

Recent trends in linseed production in this State are given in Table II.

TABLE II.
N.S.W. Linseed Production.

Year.	Area.		Production.		Average Yield per acre.	
	Acres.	Tons.	lb.	Bushels.		
1946-47	121	5	86	1.54		
1947-48	1,019	108	237	4.23		
1948-49	5,048	757	336	6.00		
1949-50	6,085	1,602	589	10.52		
1950-51	14,630	1,163	178	3.18		
1951-52	15,785	1,617	229	4.09		

Source.—Bureau of Statistics and Economics, Sydney.

In Table III, the average yield per acre of both linseed and wheat in the chief linseed-growing shires of New South Wales is shown for the years 1948-49, 1949-50, 1950-51 and 1951-52. Wheat yields were,

TABLE III (A).

Yield of Linseed and Wheat in Various Linseed-Growing Shires in N.S.W. 1948-49 Season.

Statistical Divisions and Shires.	Linseed.				Wheat.		
	Area.	Production.	Yield per Acre.		Area.	Production.	Yield per Acre.
	Acres.	lb.	lb.	Bushels.	Acres.	Bushels.	Bushels.
North-Western Slope—							
Liverpool Plains ...	566	146,898	259.9	4.63	188,470	3,128,037	16.60
Macintyre ...	508	130,365	256.6	4.58	50,856	1,023,567	20.13
Peel ...	240	65,647	273.5	4.88	96,152	1,723,383	18.02
Yallaroi ...	721	291,222	403.9	7.21	61,366	1,396,536	22.76
	2,035	634,132	311.6	5.56	396,844	7,289,523	18.37
North-Central Plain—							
Booloroo ...	494	292,090	591.3	10.56	44,182	1,087,551	24.29
Namoi ...	571	261,841	458.6	8.19	164,421	2,762,265	16.80
	1,065	553,931	520.1	9.29	209,203	3,849,816	18.40
South-Western Slope—							
Hume ...	105	32,911	313.4	5.60	42,153	872,586	20.70
Jindalee ...	132	24,200	183.3	3.27	29,504	436,839	14.81
Mitchell ...	174	19,321	111.0	1.98	93,040	1,276,995	13.73
	411	76,432	186.0	3.32	164,697	2,586,420	15.70
Riverina—							
Culcairn ...	408	124,351	304.8	5.44	64,271	1,207,545	18.80
Lockhart ...	133	15,864	119.3	2.13	124,297	1,947,375	15.67
	541	140,221	259.2	4.63	188,568	3,154,920	16.73
Total (above shires)*	4,052	1,404,716	346.1	6.19	959,312	16,871,679	17.59

* This figure does not correspond exactly with the total for the State, as some shires with small linseed acreages have been omitted from the Table.

Source.—Bureau of Statistics and Economics, Sydney.

on an average, 2.7 times as high as linseed yields. However, it is considered that the figures for linseed yields do not give a true indication of the agronomic possibilities of linseed for the following reasons:—

- (i) In 1950-51 this State had the worst epidemic of Heliothis that has ever occurred.
- (ii) In 1951-52 losses from Heliothis were again abnormally high as farmers relied on an aerial spraying service which was unable to cope with the demand. However, the position now appears to be satisfactory.
- (iii) Most farmers are, as yet, relatively inexperienced in the cultivation of linseed.

Departmental experiments suggest that the yield ratio between wheat and linseed, using existing varieties of linseed, is about 2.25 to 1.

TABLE III (B).

Yield of Linseed and Wheat in Various Linseed-Growing Shires in N.S.W. 1949-50 Season.

Statistical Divisions and Shires.	Linseed.				Wheat.		
	Area.	Production.	Yield per Acre.		Area.	Production.	Yield per Acre.
	Acres.	lb.	lb.	Bushels.	Acres.	Bushels.	Bushels.
North-Western Slope—							
Ashford ...	77	62,304	809.1	14.45	21,775	542,409	24.91
Liverpool Plains ...	137	108,050	788.7	14.08	183,491	4,703,046	25.63
Macintyre ...	254	8,760	34.5	0.62	50,697	1,275,177	25.15
Peel ...	211	209,918	994.9	17.77	93,098	2,053,233	22.05
Yallaro ...	1,175	704,164	650.4	11.61	61,917	1,575,984	25.45
	1,854	1,153,196	622.0	11.11	410,978	10,149,849	24.70
North-Central Plain—							
Booolooroo ...	1,501	1,153,618	768.6	13.73	45,963	1,223,988	26.63
Boomi ...	70	52,114	744.5	13.29	855	12,072	14.12
Namoi ...	1,160	752,937	649.1	11.59	168,529	3,601,350	21.37
Narrabri ...	50	24,130	482.6	8.62	119,375	2,270,418	19.02
	2,781	1,982,799	713.0	12.73	334,722	7,107,828	21.24
South-Western Slope—							
Burrangong ...	60	32,176	536.3	9.58	68,050	1,486,064	21.84
Mitchell ...	76	21,233	279.3	4.99	90,106	1,597,746	17.74
Weddin ...	100	51,520	515.2	9.20	121,979	2,497,494	20.47
	236	104,929	444.6	7.93	280,135	5,581,304	19.92
Riverina—							
Carrathool ...	65	40,700	626.2	11.18	79,681	1,304,565	16.37
Culcairn ...	185	19,642	106.2	1.90	64,334	1,354,731	21.06
Lockhart ...	250	21,600	86.4	1.54	119,397	2,378,223	19.92
	500	81,942	163.9	2.93	263,412	5,037,519	19.12
Total (above shires)*	5,371	3,322,856	618.7	11.04	1,289,247	27,876,500	21.62

* This figure does not correspond exactly with the total for the State, as some shires with small linseed acreages have been omitted from the Table.

Source.—Bureau of Statistics and Economics, Sydney.

TABLE III (C).

*Yields of Linseed and Wheat in Various Linseed-Growing Shires in N.S.W.
1950-51 Season.*

Statistical Divisions and Shires.	Linseed.				Wheat.		
	Area.	Production.	Yield per Acre.		Area.	Production.	Yield per Acre.
	Acres.	lb.	lb.	Bushels.	Acres.	Bushels.	Bushels.
Hunter and Manning— Upper Hunter ...	130	12,200	93·8	1·68	3,237	24,564	7·59
Central Tablelands— Waugoola ...	40	600	15·0	·27	54,262	633,648	11·68
North-Western Slope— Ashford ...	160	59,820	373·9	6·68	17,561	198,033	11·28
Barraba ...	132	62,216	471·3	8·42	13,275	139,710	10·52
Cockburn ...	211	33,200	157·3	2·81	23,829	241,698	10·14
Liverpool Plains ...	958	272,725	284·7	5·08	148,510	1,415,523	9·53
Macintyre ...	211	30,130	142·8	2·55	33,944	384,600	11·33
Mandowa ...	245	99,115	404·6	7·23	27,055	283,194	10·47
Murrurundi ...	24	2,350	97·9	1·75	5,963	57,231	9·60
Peel ...	730	143,697	196·8	3·51	77,391	830,442	10·73
Yallaro ...	3,420	368,746	107·8	1·93	68,094	718,086	10·55
	6,091	1,071,999	176·0	3·14	415,622	4,268,517	10·27
Central-Western Slope— Timbregongie ...	20	6,480	324·0	5·79	89,726	835,302	9·31
Talbragar ...	10	5,400	540·0	9·64	60,554	584,760	9·66
Goobang ...	50	13,440	268·8	4·80	184,074	2,230,464	12·12
	80	25,320	316·5	5·65	334,354	3,650,526	10·92
South-Western Slope— Burrangong ...	50	F	...	...	46,904	554,658	11·83
Hume ...	30	6,400	213·3	3·81	38,470	639,504	16·62
Jindalee ...	40	7,020	175·5	3·13	19,396	215,604	11·12
Mitchell ...	80	32,704	408·8	7·30	81,173	1,338,483	16·49
Weddin ...	100	9,544	95·4	1·70	89,004	1,057,740	11·88
	300	55,668	185·6	3·31	274,947	3,805,989	13·84
North-Central Plain— Booloeroo ...	4,838	690,342	142·7	2·55	39,754	424,887	10·69
Namoi ...	2,354	442,730	188·1	3·36	152,590	1,206,642	7·91
	7,192	1,133,072	157·5	2·81	192,344	1,631,529	8·48
Central Plain— Lachlan ...	30	F	...	...	142,563	2,342,190	16·43
Riverina— Berrigan ...	248	134,638	542·9	9·69	58,040	1,241,730	21·39
Carrathool ...	100	27,253	272·5	4·87	80,076	1,276,179	15·94
Conargo ...	85	59,560	700·7	12·51	18,055	378,813	20·98
Coreen ...	100	1,578	15·8	·28	81,987	1,683,381	20·53
Culcairn ...	34	4,150	122·1	2·18	57,055	1,036,644	18·17
Lockhart ...	40	3,600	90·0	1·61	105,891	1,893,861	17·89
Leeton ...	150	75,930	506·2	9·04	25,498	511,140	20·05
	757	306,709	405·2	7·24	426,602	8,021,748	18·80
Total (above shires)*	14,630	2,605,568	178·2	3·18	1,843,931	24,378,711	13·22

F—Failed.

* The totals correspond with State totals for linseed, as all linseed-producing shires are included.

Source.—Bureau of Statistics and Economics, Sydney.

TABLE III (D).
Yields of Linseed and Wheat in Various Linseed-Growing Shires in N.S.W.
 1951-52 Season.

Statistical Divisions and Shires.	Linseed.				Wheat.		
	Area.	Production.	Yield per Acre.		Area.	Production.	Yield per Acre.
	Acres.	lb.	lb.	Bushels.	Acres.	Bushels.	Bushels.
Hunter and Manning— Upper Hunter ...	50	32,000	640.0	11.43	2,966	44,424	14.98
Northern Tableland— Macintyre ...	55	12,000	218.2	3.90	9,637	148,338	15.39
Southern Tableland— Goodradigbee ...	50	...	...	...	1,306	19,119	14.64
North-Western Slopes—							
Ashford ...	295	86,530	293.3	5.24	14,159	228,690	16.15
Cockburn ...	110	51,618	469.3	8.38	19,507	273,861	14.04
Liverpool Plains ...	1,629	229,940	141.2	2.52	154,627	1,859,697	12.03
Macintyre ...	240	45,970	191.5	3.42	30,792	509,970	15.49
Mandowya ...	465	29,633	63.7	1.14	22,154	225,303	10.17
Peel ...	759	223,147	294.0	5.25	67,244	925,596	13.76
Yallaroi ...	3,903	1,066,862	273.3	4.88	59,658	955,407	16.01
	7,401	1,733,700	234.3	4.18	374,141	5,038,524	13.47
Central-Western Slope—							
Goobang ...	100	2,000	20.0	0.36	155,881	2,056,878	13.20
Jemalong ...	50	12,800	256.0	4.57	109,477	1,628,922	14.88
Talbragar ...	90	25,380	282.0	5.04	49,984	662,889	13.26
Timbregongie ...	120	15,680	130.7	2.33	67,494	1,019,090	15.10
	360	55,860	155.2	2.77	382,836	5,367,780	14.02
South-Western Slope—							
Illabo ...	30	17,920	597.3	10.67	25,124	393,324	15.66
Jindalee ...	40	7,000	175.0	3.13	13,033	255,780	19.63
Mitchell ...	1	181	181.0	3.23	49,249	773,643	15.71
Weddin ...	260	54,270	208.7	3.73	76,374	1,234,578	16.16
	331	79,371	239.8	4.28	163,780	2,657,325	16.22
North-Central Plain—							
Boooloeroo ...	3,555	904,061	254.3	4.54	32,476	412,992	12.72
Coonabarabran ...	140	19,872	141.9	2.53	87,117	1,119,264	12.85
Namoi ...	2,921	492,867	168.7	3.01	141,412	1,634,007	11.55
	6,616	1,416,800	214.1	3.82	261,005	3,166,263	12.13
Central Plain—							
Lachlan ...	6	1,800	300.0	5.36	112,334	1,033,983	9.20
Riverina—							
Berrigan ...	168	47,824	284.7	5.08	42,645	906,981	21.27
Carrathool ...	20	8,800	440.0	7.86	56,046	913,566	16.30
Conargo ...	150	44,221	294.8	5.26	10,375	234,927	22.64
Jerilderie ...	18	3,248	180.4	3.22	11,775	265,101	22.51
Wakool ...	132	25,403	192.4	5.61	19,296	282,399	14.63
Leeton ...	428	160,266	374.5	6.69	15,644	300,249	19.19
	916	289,762	316.3	5.65	155,781	2,903,223	18.63
Total (above shires only)* ...	15,785	3,621,293	229.4	4.10	1,463,786	20,378,979	13.92

* The totals correspond with State totals for linseed, as all linseed-producing shires are included.

Source.—Bureau of Statistics and Economics, Sydney.

To compare the profitability of wheat and linseed it is also necessary to take into account the additional costs involved in growing linseed. These may be itemized as follows:—

- (i) Linseed is a much weaker plant when germinated, than wheat. It does not compete with weeds as well as wheat and the seed bed must therefore be cleaner and more thoroughly prepared.
- (ii) Linseed must be sprayed at least once and sometimes twice against climbing cutworm (*Heliothis armigera*). One firm of contractors contacted, quoted 28s. od. per acre for spraying. If linseed production is put on a more or less permanent basis this cost can be materially reduced by farmers purchasing spraying booms and doing their own spraying. No such spraying is necessary with wheat.
- (iii) Linseed processing firms insist on double-bagging so that the cost of an additional bag for every three bushels must be borne by linseed growers.
- (iv) Seed costs per acre for linseed are approximately 20s. od. as compared with approximately 15s. od. for wheat.
- (v) Linseed stubble has no value for grazing and may cause foot trouble among sheep walking over it.
- (vi) Linseed is more difficult to strip and not so easily cut by the header. Losses over the back of the header tend to be greater unless considerable care is taken. The danger of machinery breakages is much greater if second growth occurs.

No detailed study of the relative costs of production of wheat and linseed in New South Wales has been undertaken as yet. In view of the factors listed above it is believed that the cost of growing linseed is approximately twenty-five per cent. higher per acre than that of growing wheat. This suggests that farmers will need to obtain about three times as much for a bushel of linseed as for a bushel of wheat to make the two crops comparable, because of the lower yield per acre of linseed.

It appears likely that wheatgrowers will receive in the vicinity of 14s. od. per bushel, f.o.r., principal ports, this season. At this stage it is not possible to forecast the return to the grower on wheat which will be sown in 1953 or subsequent years but it is likely that wheatgrowers will be influenced in their 1953 sowing programme by anticipated returns on the current harvest.

If wheatgrowers anticipate a return of 14s. od. per bushel for wheat it is unlikely that they will be interested in expanding linseed acreages unless they are assured of a price of at least £80 per ton, principal ports, for their linseed.

New linseed varieties are at present being bred and tested at two experiment stations of the New South Wales Department of Agriculture. These new varieties promise to have higher yields and better resistance to disease than existing varieties. However, it will be four to five years before they will be available to commercial growers.

Conclusion.

The New South Wales Department of Agriculture is of the opinion that the linseed industry can play an extremely useful part in the general agricultural economy of Australia. Apart from the question of self-sufficiency in wartime, it is considered that the provision of adequate

assured supplies of protein concentrates can make a significant contribution to the increased efficiency of the different livestock industries mentioned above. In view of the return of more stringent economic conditions both at home and on world markets, everything possible should be done to improve the competitive position of these industries. In addition, it is probable that the expansion of linseed production in this country could make a contribution to the solution of Australia's balance of payment difficulties. In the appendix which follows an admittedly rough calculation is presented to show the probable effect of a hypothetical increase in linseed acreage on Australia's balance of payments.

It is considered that the linseed industry deserves protection for a limited period of time to allow growers to gain experience with this new crop and to prevent their being discouraged by temporary fluctuations in world linseed prices. The Department is of the opinion that the establishment of a marketing board or boards would not, in itself, promote stabilization of the industry. Protection by means of a tariff is the only way in which growers can be temporarily sheltered from rapidly changing world price fluctuations.

APPENDIX.

The possible contribution of linseed production to the Australian balance of payments.

The calculation given below represents an admittedly crude attempt to analyse the effect of an increase in linseed production on Australia's balance of payments. For purposes of comparison the case considered is one where an expansion in linseed production takes place at the expense of wheat production. It is not considered that the linseed acreage in this State can be expanded only at the expense of wheat, although it is probable that an increase in linseed production will be obtained largely at the expense of wheat. In any case, the comparison between linseed and wheat will be used here to illustrate the least favourable comparison which can be made between linseed and any alternative enterprise. In other words, any comparison which might be made between linseed and any other alternative use of resources would be even more favourable to linseed than is the comparison with wheat which is made here.

In order to illustrate the importance of linseed in the Australian economy the probable effect on the balance of payments of the substitution of 100 acres of linseed for 100 acres of wheat will be examined. The average yields over the last four years for both linseed and wheat (in the same shires) have been used, although this comparison favours wheat, for reasons indicated in the text.

Linseed.

Based on average yields in the past four years, 100 acres of linseed will yield 33,300 lbs. of linseed.

Each ton (2,240 lbs.) of linseed yields 810 lbs. of oil, and 1,400 lbs. of meal. Approximately 30 lbs. of seed per ton is lost due to impurities, etc.

33,300 lbs. of seed will yield 12,041.5 lbs. of oil, and 20,812 lbs. of linseed meal. One ton of linseed oil can be imported at present at £130 stg. c.i.f., Sydney.

Therefore, 12,041.5 lbs. of oil would save imports to the value of £A873.5.

100 lbs. of linseed meal contains sufficient protein to produce 50 gallons of milk or 24.1 lbs. of butter.

20,812 lbs. of meal could therefore produce 5,015 lbs. of butter.

Australia is at present selling butter to the United Kingdom for 39s. 6d. per cwt.

Australia's export income could therefore be increased by £A879 by exporting an additional 5,015 lbs. of butter.

The total increase in foreign exchange as a result of growing 100 acres of linseed in an average season may therefore be expected to be £879 plus £873.5=£1,752.5 (given existing prices).

Wheat.

The average yield for wheat over the last four years in the main linseed-growing shires of New South Wales was 16.59 bushels. (The average for the State as a whole was 15.775 bushels). Replacing 100 acres of wheat by 100 acres of linseed would therefore reduce Australia's wheat surplus by 1,659 bushels. It is somewhat problematical as to what value should be put on wheat for present purposes. Under the International Wheat Agreement Australia obtains 16s. 6d. per bushel; on the free market present prices would be about 20s. per bushel. A price of 18s. per bushel is probably a realistic assumption for the present purpose.

At 18s. per bushel 1,659 bushels of wheat would be worth £A1,493. The reduction of 100 acres of wheat would therefore reduce Australian exports by £A,1,493 in an average season (given present prices).

Conclusion.

The switch from cropping 100 acres of wheat to 100 acres of linseed might therefore be expected to improve the foreign exchange balance by £1,752-£1,493=£259. This figure, which is, of course, only approximate, is used here solely for purposes of illustration. It needs to be slightly reduced as the grazing value of 100 acres of wheat stubble has not been taken into account. However, it is not considered that this would make any appreciable difference to the result. On the other hand, the value of skim milk resulting from increased butter production has also been neglected.
