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VETCH SPECIES TRIAL

WOKALUP RESEARCH STATION, 1952

By F. E. RYAN, B.Sc. (Agric.), Agrostologist.

VETCHES are again receiving attention as a suitable crop for the heavy rainfall districts, and experiments at the Research Station, Wokalup, and demonstrations throughout the dairying areas have shown that they can be grown successfully. Vetches have special merit when grown with oats as a rotation crop on areas which have been under subterranean clover for a number of years and which may or may not show signs of deterioration.

The use of a mixed crop in this way would be a modification of the ley system which has helped to raise the productivity of large areas in England. The cultivation of the soil for this crop will leave it in a suitable condition for early seed bed preparation in the year following the crop, and this provides an opportunity for the introduction of improved strains of pasture plants into existing pastures.

The use of vetches in the hay or silage crop provides a fodder with a much higher protein content than is obtained from oats alone.

Commercial Purple Vetch is recommended for the higher rainfall areas and should be sown at the rate of 15 lb. to the acre of vetch with 60 lb. to the acre of Algerian oats.

A number of strains of vetches have been under test at the Research Station at Wokalup and the following report sets out the results which have been obtained.

1952 VETCH SPECIES TRIAL

Varieties.

Varieties included in this trial during 1952 were:—

Vicia articulata C.P.I. 9186

Vicia atropurpurea (Commercial Purple vetch).

Vicia atropurpurea (C.P.I. 10117 Purple vetch).

Vicia atropurpurea (C.P.I. 10374 Purple vetch).

Vicia dasycarpa C.P.I. 9189 (Woolly Pod vetch).

Vicia sativa (Commercial Golden Tare).

Vicia sativa (P4059) (Malta Vetch).

Rainfall.

Rainfall date for Harvey, about 5 miles from Wokalup Research Station is given below. Harvey is the nearest recording point with an average over a sufficiently long period.

RAINFALL IN POINTS.

	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Apr. to Dec.
Harvey (1952)	10	634	1,212	432	530	432	381	116	60	3,807
Harvey average for 46 years	182	562	804	795	612	443	287	102	55	3,842

Highest yields were obtained from purple vetches and none of the varieties was higher in yield than commercial purple vetch.

A composite sample from each variety was analysed chemically and the results are given in the attached table.

DISCUSSION

During 1952, the rainfall in the late spring was reasonably good with the result that late varieties, such as Purple vetch, were very successful.

The vetches in this trial can be grouped according to maturity into an early group consisting of *Vicia articulata* and *Vicia sativa* (Malta vetch) and a late group comprising all other varieties. It is considered that under normal seasonal conditions the late group would still reach a suitable hay stage at Wokalup Research Station, but in drier areas, species such as *Vicia articulata* or Malta vetch would be more suited. There was no significant difference in the yield of green material from any of the varieties.

Air dry weights varied from 36 to 64 cwt. per acre. Commercial Purple vetch gave highest yields and was significantly higher in yield than *Vicia articulata* and Malta vetch. The two introduced strains of Purple vetch C.P.I. 10374 and 10117 were also significantly better than *Vicia articulata* but were not better than Commercial Purple vetch in yield.

From these yield results, the most promising variety for Wokalup conditions appears to be Purple vetch (*Vicia atropurpurea*) and none of the introduced strains was found to be more productive than the commercial seed.

Composite samples from each treatment were submitted for chemical analyses. The crude protein content on a dry matter basis ranged from 14.7 to 19.5 per cent. protein and it is clear that these crops provide a very valuable source of protein for animals during summer when the protein content of the pastures is low.

The protein content of the hay compares very favourably with bran and pollard which are already in use for summer feed for dairy cattle.

Yields of 64 cwt. per acre of dry material suggests conservation of fodder of this nature could be used to replace a consider-

able proportion of the bran and pollard already supplied to dairy cattle.

The following comments can be made concerning the species grown.

***Vicia atropurpurea*—Commercial Purple Vetch.**

This variety gave highest air-dry forage yields. It is late maturing, but in the hilly country at Wokalup the season is sufficiently lengthy for it to reach a suitable hay cutting stage satisfactorily. It is later in maturity than the Algerian oats grown in association and reached a hay stage of maturity when the oats were too far advanced for hay.

All strains of Purple vetch were vigorous throughout the growing period, even in the early seedling stages. The habit of growth was fairly thin stemmed and leafy, this being a favourable characteristic for hay making. Weather conditions for hay making should be ideal when this type is ready for cutting.

***Vicia atropurpurea*—Purple Vetch C.P.I. 10374.**

Maturity for hay cutting is slightly later for this variety than Commercial, but in other characteristics it appears similar.

It does not appear to have any particular advantages over Commercial variety.

***Vicia atropurpurea*—Purple Vetch C.P.I. 10117.**

This strain was also similar to Commercial Purple and C.P.I. 10374, except that the flowering date was five days earlier. Maturity for hay, however, was the same as the Commercial. This variety does not appear to have any advantage over Commercial Purple vetch.

***Vicia dasycarpa*—Woolly Pod Vetch C.P.I. 9189.**

Air-dry forage yields of this variety were numerically but not significantly less than Commercial Purple vetch. Flowering date was 15 days earlier than Commercial Purple vetch, but maturity for hay was slightly later.

In appearance *Vicia dasycarpa* was always nearly as good as Purple vetch in vigour of growth. Plants were uniform and fine stemmed. The early flowering date may be of importance in some seasons and for this reason, this variety is worthy of further trial. It is later than Algerian oats in reaching a suitable hay stage.

Vicia sativa — Common Vetch — Golden Tare.

Yields of air-dry forage were numerically, but not significantly less than Commercial Purple. The date of flowering was nearly five days earlier than Commercial Purple, and maturity for hay was at the same time. General appearance was not especially promising. Its habit of growth was rather straggly and thick stemmed.

Vicia sativa—Malta Vetch P4059.

Air-dry forage yields of this variety were significantly lower than Commercial Purple vetches and numerically but not significantly lower than other strains of Purple vetch, *V. dasycarpa* and Golden Tare.

This variety was distinctly earlier than all others except *Vicia articulata*. It gave fairly vigorous growth, but was rather thick stemmed. By the end of October it was very erect for a vetch, but the pods became swollen early in November and thereafter it lodged rather badly.

The chemical analysis indicated that this vetch gave highest protein yield of all varieties. It appears worthy of further trial in comparison with *Vicia articulata* as an early variety or for sowing in the spring months.

Vicia articulata.

The air-dry and forage yields of this strain were significantly lower than those of Purple vetch and numerically but not significantly less than other species. This variety was early in flowering and maturity

and compared with Malta vetch. In general appearance it was fairly good; the plants being leafy and thin stemmed. In this trial it tended to lodge rather badly.

Vicia articulata is tolerant to attack by red mite and lucerne flea and has an ability to hold its seed exceptionally well without shattering. Because of its earliness, *Vicia articulata* may be preferable to late varieties for areas where the season is short. Because of its fine stemmed leafy nature and tolerance to insects it may be more useful than Malta vetch in some early districts. Tendencies to lodge can be overcome by a lighter vetch and a heavier oat rate of seeding.

CONCLUSION

Commercial Purple vetch (*Vicia atropurpurea*) gave the best yield of air-dry matter and was suitable as a hay variety at Wokalup even though late in maturity.

Vicia articulata is early in maturity and suitable as a hay variety for areas with a shorter growing season. *Vicia articulata* and Malta vetch (*Vicia sativa*) merit further trial.

All the vetches gave a high yield of hay, which on analysis, was found to be very nutritious and could be used to replace portion of the concentrate fodder purchased by dairy farmers.

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WOKALUP RESEARCH STATION VETCH SPECIES EXPERIMENT, 1952 CHEMICAL ANALYSES OF MIXED VETCH AND OAT HAYSTAGE FORAGE SAMPLES

All figures are derived from composite samples for each strain.

Species and Strain.	Date Cut.	Chemical Analyses, Percentage on Dry Matter Basis.				
		Crude Protein.	Crude Fat.	Crude Fibre.	N Free Extract.	Ash.
<i>Vicia articulata</i> , C.P.I. 9186-7	11-11-52	15.2	1.1	30.8	45.3	7.69
<i>V. atropurpurea</i> , Purple vetch—commercial	5-12-52	15.0	1.3	30.6	46.2	6.95
<i>V. atropurpurea</i> , C.P.I. 10117	5-12-52	17.4	1.4	27.5	46.6	7.12
<i>V. atropurpurea</i> , C.P.I. 10374	8-12-52	15.8	1.2	31.6	43.8	7.55
<i>V. dasycarpa</i> , C.P.I. 9189	8-12-52	14.8	1.1	30.9	45.3	7.87
<i>V. sativa</i> —commercial—Golden Tares	5-12-52	14.7	1.1	30.1	45.5	8.63
<i>V. sativa</i> —Malta vetch	11-11-52	19.5	.9	28.0	43.3	8.26

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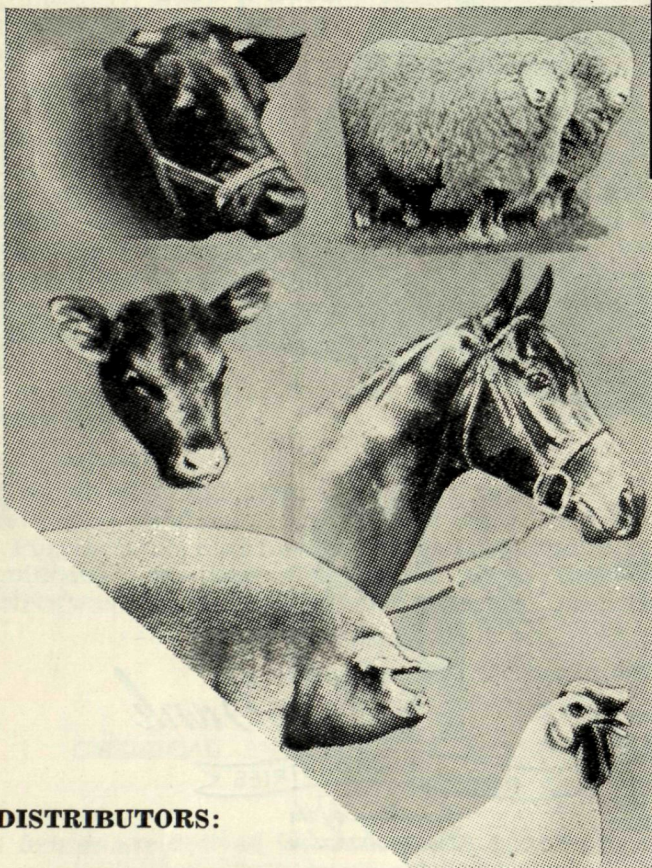
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