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SUMMARY OF EXPERIMENTAL RESULTS.

R. WEIR

February, 1974

Wheat protein survey	
Seeding rate x grain protein	72NA33
Seeding rate x grain protein	72M28
Temperature effects on flower set of lupin	72GL4

PLANT RESEARCH DIVISION

WESTERN AUSTRALIAN
DEPARTMENT OF AGRICULTURE

WHEAT PROTEIN SURVEY

A survey of 130 farmers in 13 Shires of the high protein area around Merredin was undertaken in the few weeks prior to the 1972 harvest. Grain samples were forwarded by farmers after supplying site data including yield estimate. A soil sample was collected on which % soil N was determined. This information together with grain protein percentage was included in multiple regression, and stepwise regression analyses. The table below summarises the stepwise treatment.

	Factor	Function	% of variability lost by removal from regression
1.	Date of planting	quadratic	0
2.	Variety soft vs medium	linear	0.1
3.	Soil texture	linear	0.2
4.	Varieties hard vs medium	linear	0.3
5.	Soil texture	quadratic	0.3
6.	Cropping history	linear	0.5
7.	% Soil nitrogen	quadratic	0.6
8.	Legume history + or -		1.0
9.	Date of planting	linear	1.4
10.	Rainfall	linear	1.3
11.	Rainfall	quadratic	0.8
12.	% soil nitrogen	linear	5.0
13.	Yield estimate	linear	6.4
14.	Yield estimate	quadratic	0.2
15.	Cropping history	quadratic	24.5

Cropping history was treated by rating sites numerically as good where there was a first crop after good legume build up through to the lowest rating for those which had more than one crop without legumes. This was the singularly most important factor although it included consideration of legume history. In the multiple regression, legume history, cropping history and soil nitrogen were significantly correlated with each other as would be expected.

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SEEDING RATE x GRAIN PROTEIN

73NA33

Location: C. Russell. Wickepin.

Soil Type: Grey gravelly sand.

Vegetation: Wandoo, mallee scrub.

History of

Site: Cleared 1952. Clover paddock since '69.
Sown 30/6/72 with 90 lb/ac super.

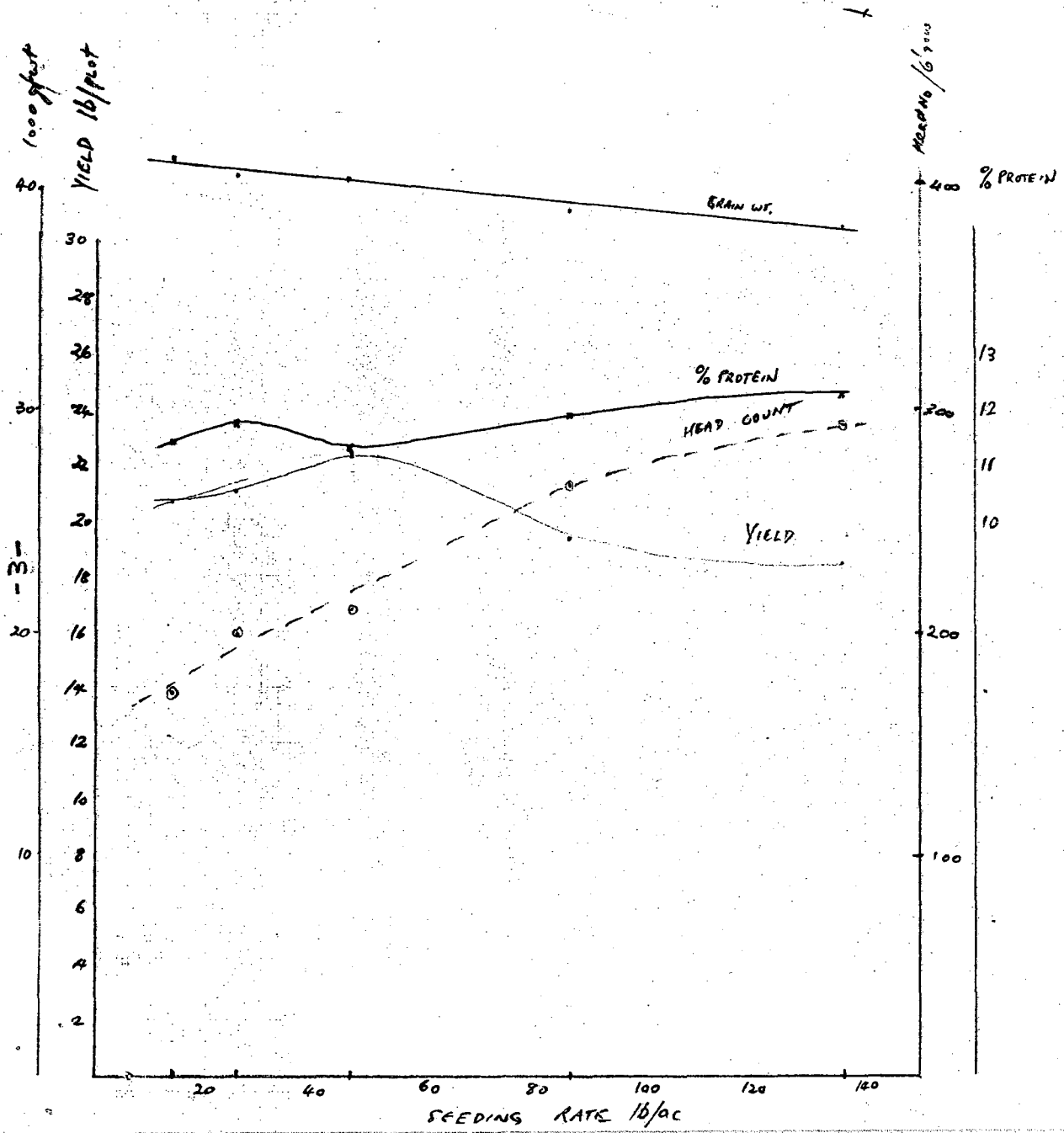
Results: In addition to yield and grain protein, head densities, plant densities and 1000 grain weights were obtained. The accompanying graphs show that grain protein varies only slightly over the normal seeding rate range.

Statistical data showed the two highest seeding rate to have significantly higher grain protein. There was no seeding rate by variety interaction.

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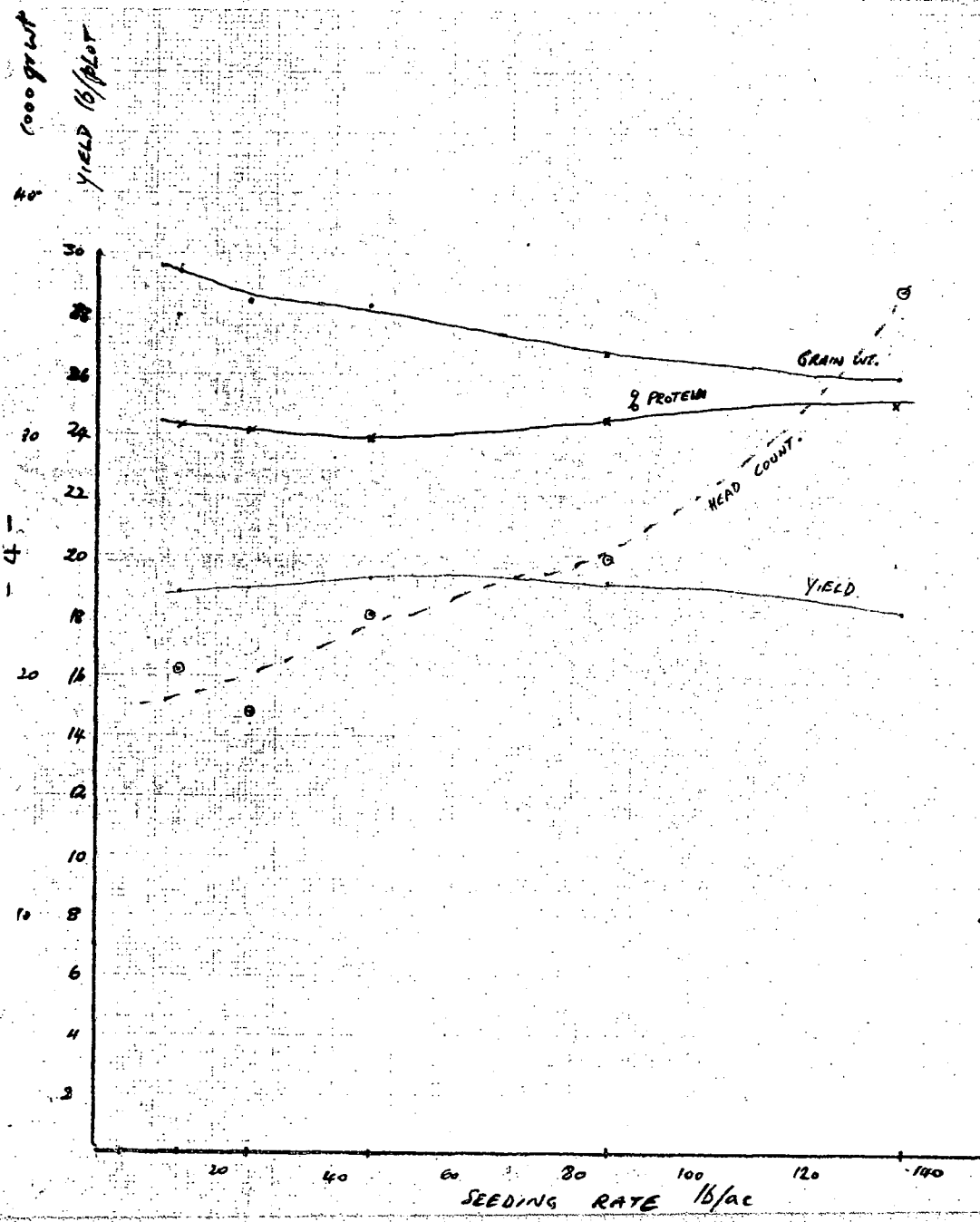
72NA 33
PINNACLE

409



72 NA 33
GLUCUE

410

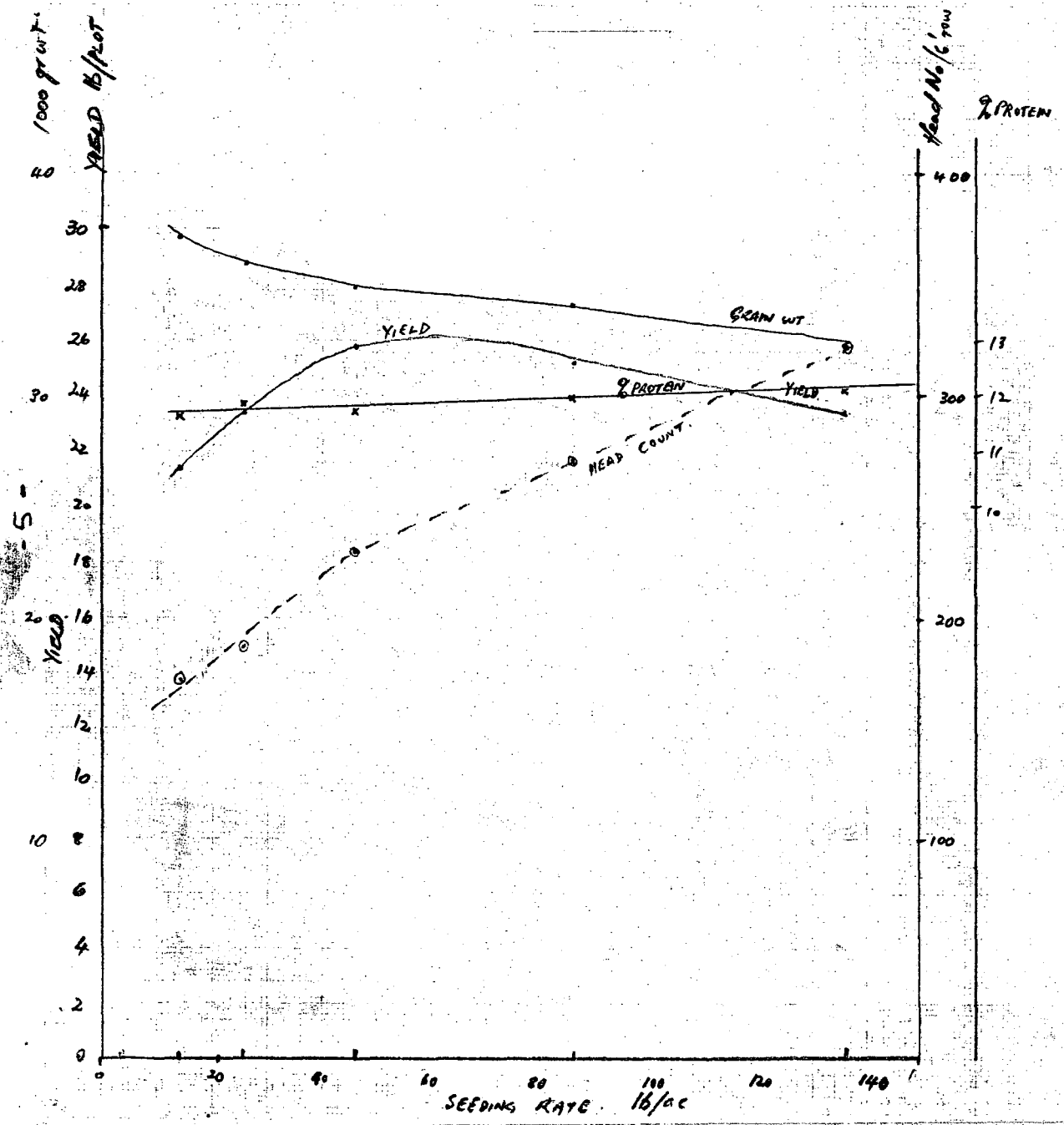


Head No/1/8' row

% PROTEIN

1400
13
12
11
10
200
100

SEEDING RATE lb/ac



SEEDING RATE x GRAIN PROTEIN

Location: Merredin Research Station.

Soil Type: Red clay loam.

History of

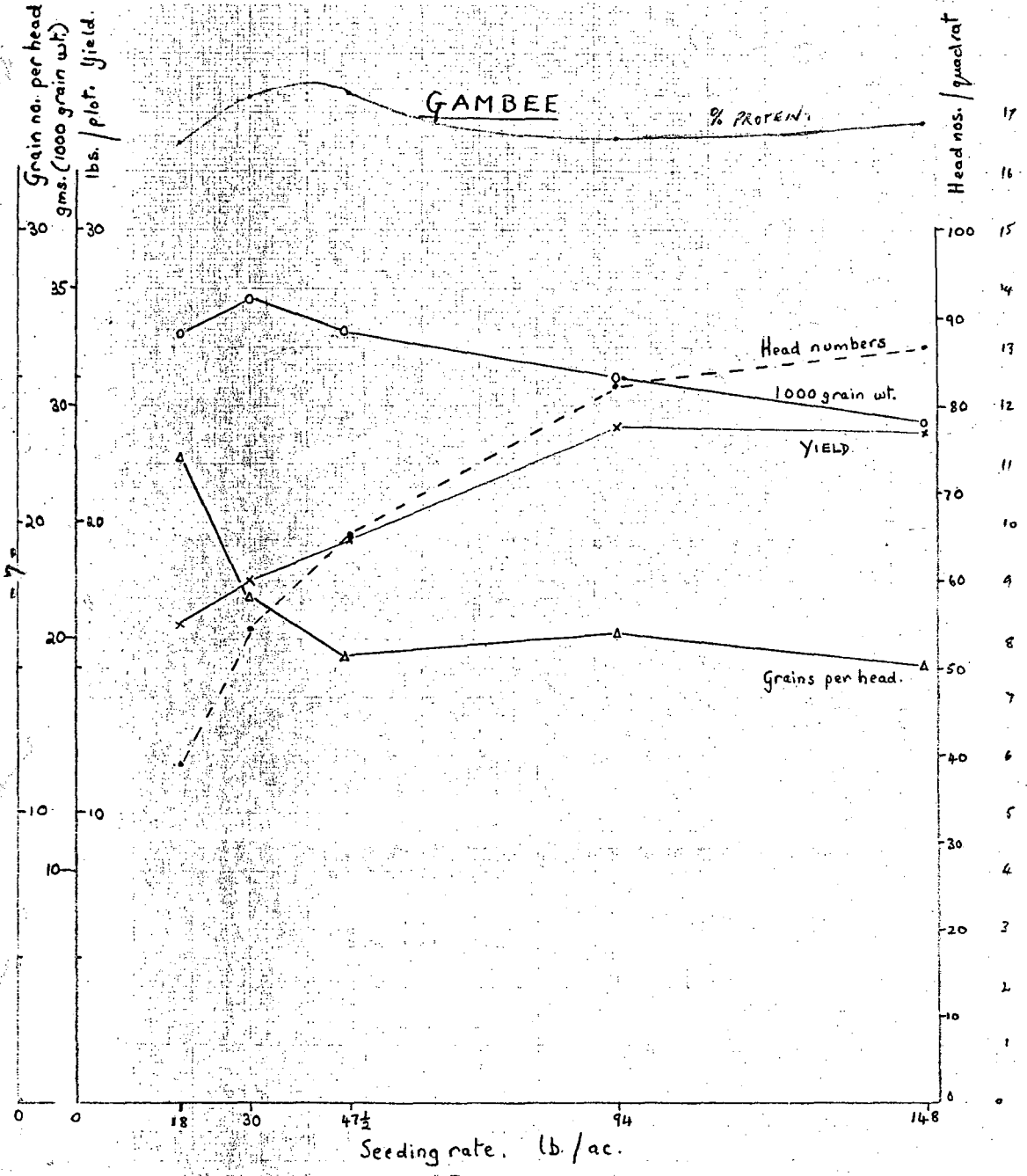
Site: Old land good cyprus stand since '69.

Sown 30/6/72 with 90 lb/ac super.

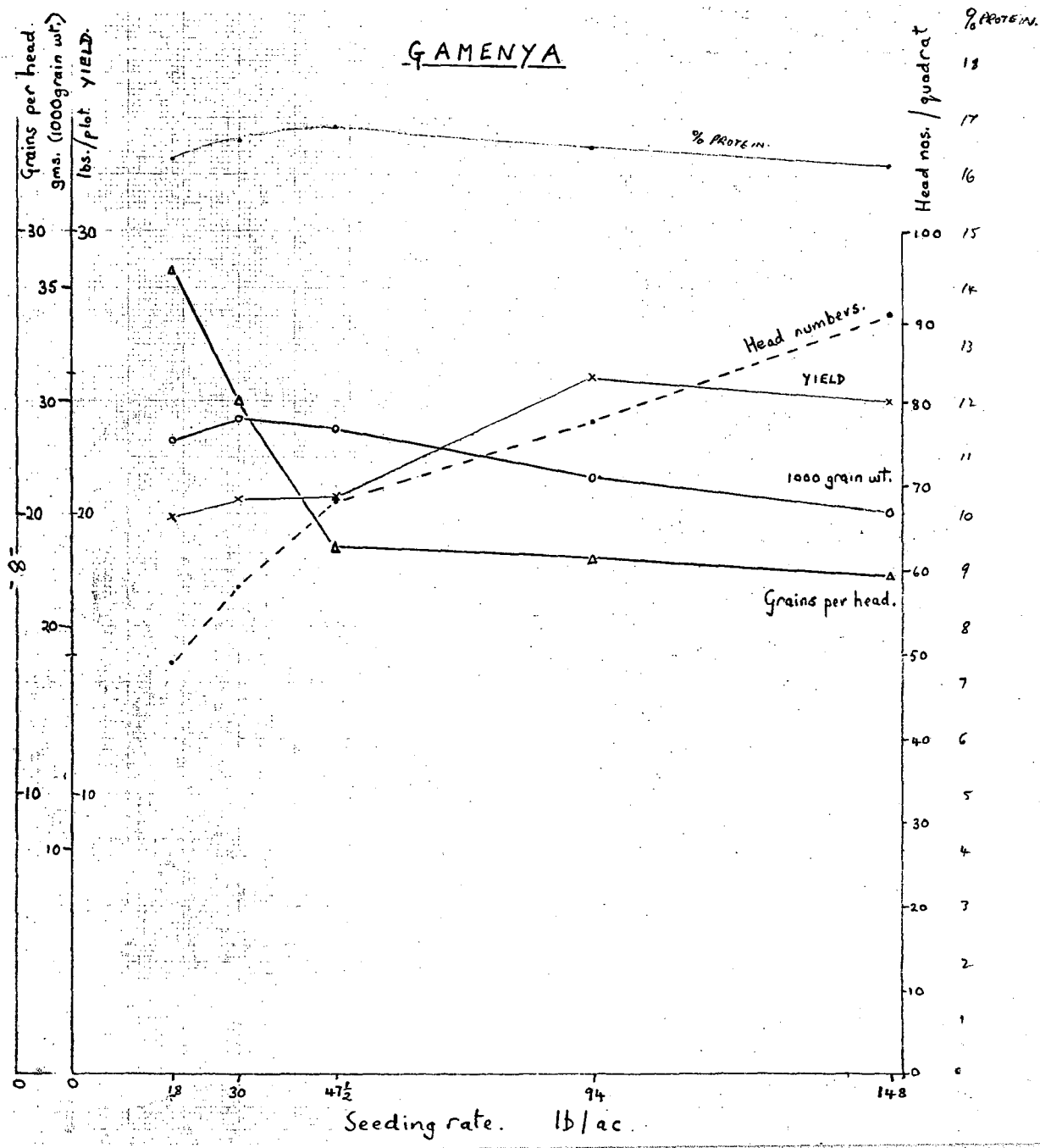
Results: Yields, grain protein and some yield components were recorded. The accompanying graphs show the results. Once again there was only small variation in grain protein over the normal seeding rate range with the highest protein mean over the three cultivars at 45 lb/ac. The protein figures obtained were high but in keeping with the season. Again no seeding rate by variety interaction was recorded.

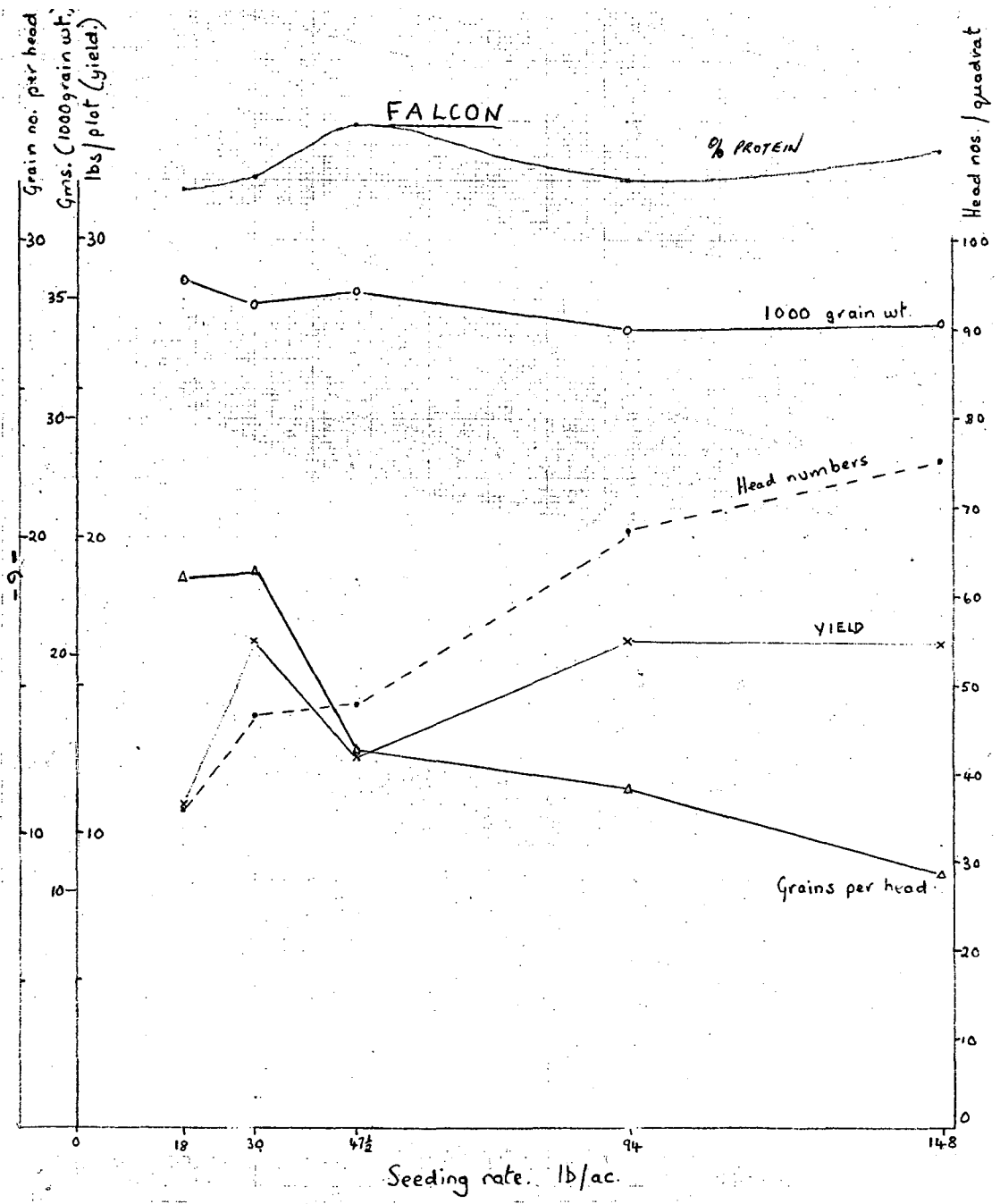
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GAMENYA





TEMPERATURE EFFECTS ON FLOWER SETTING OF LUPINS.

An experiment was carried out in the phytotron aimed at determining the effects of temperatures on lupin yields from flower bud formation onwards. Uniharvest lupins were grown with laterals removed to give a large inflorescence. The results obtained are shown below.

Treatment	Mean Seed wt per spike (g)	Mean Seed wt (g)	Seed No per spike at harvest	Seed per flower node	Mean flower Node No.	Mean pod no. per spike
1. 15°C from bud formation to cessation of flowering	6.30	0.14	46.7	0.82	57.1	35.0
2. 25°C from bud formation to cessation of flowering	0.57	0.07	8.8	0.17	53.3	13.1
3. 5°C from bud formation for 15 days	6.53	0.14	47.1	0.77	61.5	39.7
4. 25°C from bud formation for 7-10 days	4.54	0.15	31.3	0.57	55.1	27.2
5. 5°C from 1st flower opening for 15 days	6.35	0.14	45.6	0.76	59.8	34.8
6. 25°C from 1st flower opening for 3 days.	5.66	0.14	39.4	0.67	58.5	36.0
7. 5°C from 1st pod 1 cm. for 15 days	6.09	0.14	44.0	0.74	59.2	32.5
8. 25°C from 1st pod 1 cm. for 4 days	5.07	0.15	33.8	0.58	58.6	24.3

It may be seen that 25°C was very damaging to yield particularly when applied throughout the flowering period. The low temperature treatment did not affect yield. It may be noticed that seed production was greatly reduced by the 25°C treatment, but flower production was not.