The Park Grass Plots at Rothamsted 1856 -1949

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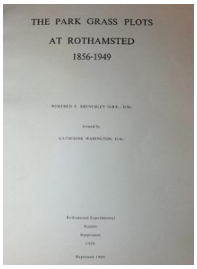

Figures

Rothamsted Research

Rothamsted Research (1958) *Figures ;* The Park Grass Plots At Rothamsted 1856 -1949, pp 137 - 158 **- DOI: https://doi.org/10.23637/ERADOC-1-154**

RANUNCULUS ACRIS ET BULBOSUS

Occur on all plots, occasionally in fair amount, R.acris being the more important of the two species.

QUANTITY

Variable (1.0 - 9.8 percent)

Plots	6, 7, 8	Minerals with and without potash
	19, 20	F.Y.M. with and without minerals and nitrate of soda

Small (under 1 percent)

Plots	2, 3, 12	Unmanured
	4^1	Super
	5^1, 5^2	Unmanured or minerals after ammonium salts till 1897
	13	F.Y.M. and fish guano alternately
	15	Minerals
	16, 17	Nitrate of soda with and without minerals

Almost or entirely suppressed

Plots 1, 4^2, 9, 10, 11^1, 11^2, 14, 18.

Ranunculus spp. encouraged by:-

(a) Minerals
(b) Starved soils
(c) F.Y.M.

Ranunculus spp. suppressed by:-

(a) Ammonium salts

LIMED

QUANTITY

Increased

Plots	1	Ammonium salts
	2, 3	Unmanured
	4^1, 7	Minerals
	13, 19LL	F.Y.M. with and without fish guano
	17	Nitrate of soda

Decreased

Plot	8	Minerals without potash

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RUMEX ACETOSA Fig. 22.

Rumex acetosa occurs on all plots. It is usually fairly plentiful where manuring is incomplete, but less so in the presence of heavy dressings of ammonium salts or nitrate of soda. Lime usually increases it when applied with ammonium salts and super or minerals, but decreases it if given with minerals alone or with F.Y.M. Its prevalence varies greatly with season and the following grouping is approximate only.

UNLIMED

QUANTITY

Fairly large

Plots	1	Ammonium salts
	2, 3, 12	Unmanured
	4^1	Super
	5^2	Minerals after ammonium salts till 1897
	6, 7, 8	Minerals with and without potash
	13, 20	F.Y.M. with fish guano or with minerals and nitrate of soda
	18	Minerals without super and ammonium salts

Small

Plots	4^2	Super and ammonium salts
	5^1	Unmanured after ammonium salts till 1897
	$9, 10, 11^2$	Minerals and ammonium salts
	14, 16, 17	Nitrate of soda with and without minerals
	15	Minerals
	19	F.Y.M. after minerals and nitrate of soda

Trace or absent

Plot	11^1	Minerals and heavy ammonium salts

Rumex acetosa encouraged by:-

(a) Minerals
(b) Ammonium salts
(c) Organic manures
(d) Starved soils

Rumex acetosa not encouraged by:-

(a) Sodium nitrate
(b) Heavy nitrogenous manures

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LIMED

QUANTITY

Increased

Plots	4^2	Super and ammonium salts
	10	Minerals without potash and ammonium salts

Decreased

Plots	7	Minerals
	13	F.Y.M. and fish guano alternately
	18	Minerals without super and ammonium salts
	20	F.Y.M., minerals and nitrate of soda

Plots with Rumex acetosa among the three chief species of the whole herbage.

	Unlimed			Limed		
	First	Second	Third	First	Second	Third
1919	-	5^1,5^2,6,7,9,18	4^2,13,15,19	-	1	8
1948 or 1949	-	-	-	-	-	10

Rumex acetosa in Plant Communities

Occurs in a great variety of associations, of which Festuca rubra is always a prominent member when Rumex is plentiful.

SCABIOSA ARVENSIS (Knautia arvensis)

As it flowers late, little is usually found in the hay samples and data are chiefly obtained from observations on the aftermath.

UNLIMED

QUANTITY

Usually present

Plots	2, 3, 5^1, 12	Unmanured
	5^2, 6, 7, 8	Minerals

Occasional

Plots	1	Ammonium salts
	13	F.Y.M. and fish guano alternately
	20	F.Y.M., minerals and nitrate of soda

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Usually absent

All other plots.

LIMED

Scabiosa is a marked feature of the aftermath on Plot 8 (minerals without potash), and also sometimes on Plots 2, 3, 12 (unmanured). It has greatly increased and may on occasions reach a figure as high as 8 or 10 percent, e.g. Plots 3 and 8 respectively in 1936.

SPIREA ULMARIA (Filipendula ulmaria)

May occur locally in fair quantity, but more usually absent.

UNLIMED

QUANTITY

Sometimes appreciable

Plots	7, 8	Minerals with and without potash (3 percent 1938; 2 percent 1940 Plot 7)

LIMED

QUANTITY

Much increased

Plot	8	Minerals without potash

Trace

Plot	1	Ammonium salts
	3	Unmanured

Suppressed

Plot	7	Minerals

STELLARIA GRAMINEA

UNLIMED

Less plentiful than previously, but a small quantity is found on a few plots viz.

Plots	1	Ammonium salts
	2, 3, 12	Unmanured
	7, 8, 15	Minerals with and without potash
	13	F.Y.M. and fish guano alternately

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LIMED

Quantity usually slightly decreased, except occasionally with ammonium salts (Plot 1) or minerals (Plot 7).

TARAXACUM VULGARE (T. officinale).

Flowers and dies down early and is much more abundant where it occurs than the hay analyses indicate. Has increased considerably since 1919, particularly on the limed areas.

UNLIMED

QUANTITY

Small

Plots	14, 16	Minerals and nitrate of soda (up to 3 percent Plot 14)
	13, 19, 20	F.Y.M. with and without other fertilizers

Very small

Plots 3, 6, 7, 8, 15, 17, 18.

Absent

All other plots.

LIMED

QUANTITY

Very much increased

Plot	18	Minerals without super and ammonium salts

Considerably increased

Plots	7, 9	Minerals with and without ammonium salts
	13	F.Y.M. and fish guano alternately

Slightly increased

Plots	1	Ammonium salts
	4^1	Super
	2, 3	Unmanured
	11^1, 11^2	Minerals and heavy ammonium salts
	14, 16	Minerals and nitrate of soda
	19, 20	F.Y.M. with and without minerals and sodium nitrate

Unaffected

Plots 4^2, 8, 10, 15, 17.

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TRAGOPOGON PRATENSIS

Has increased since 1915, especially on the limed areas.

UNLIMED

QUANTITY

Fairly plentiful (up to 3 percent)

Plot	20	F.Y.M., minerals and nitrate of soda

Small (under 1 percent)

Plots	3	Unmanured
	6, 7, 15	Minerals

Traces or Absent

All other plots.

LIMED

QUANTITY

Considerably increased

Plots	2	Unmanured
	7, 9	Minerals with and without ammonium salts
	13, 19	F.Y.M. with and without fish guano
	14, 16	Minerals and nitrate of soda
	18	Minerals without super and ammonium salts

URTICA DIOICA

Rarely present, but has occurred in fair amount as follows:-

UNLIMED

Plots	7	Minerals (0.9 percent 1947; 1.7 percent 1948)
	8	Minerals without potash (0.2 percent 1947).

LIMED

Plot	7	Minerals (trace in 1948).

VERONICA CHAMAEDRYS

Occurs in small quantities and is encouraged by lime.

https://doi.org/10.23637/ERADOC-1-154

UNLIMED

QUANTITY

Very small

Plots 3, 12	Unmanured
4^1	Super
5^1, 5^2	Unmanured or minerals after ammonium salts till 1897
6, 7, 8	Minerals with and without potash
13, 19	F.Y.M. with and without fish guano
17	Nitrate of soda
20	F.Y.M., minerals and nitrate of soda

LIMED

QUANTITY

Increased

Plots 2, 3	Unmanured
7, 8, 15	Minerals with and without potash
19(LL)	F.Y.M. after minerals and nitrate of soda.

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Species present 1940-49 in very small amounts which rarely, or never, appear in the Hay Samples.

SPECIES	PLOTS Unlimed	Limed
Agropyron repens	20	-
Bellis perennis	4^1,17	2
Cardamine pratensis	19	-
Chrysanthemum leucanthemum	3,4^1	2,8
Crepis spp.	-	19
Festuca loliacea	-	9,19
Fritillaria meleagris	17 (considerable)	-
Galium mollugo	-	13
Geum urbanum	-	7,19
Hypericum perforatum	12	-
Lapsana communis	-	18
Ophioglossum vulgatum	17	2
Potentilla sterilis	12,17	-
Potentilla tormentilla (P.erecta)	5^1	-
Prunella vulgaris	-	13
Rosa spp.	12,5^1,5^2	17
Rubus spp.	1,4^2,18	-
Senecio jacobea	2,3	1,2,4^1,4^2,8
Stachys betonica (S.officinale)	12	-
Stellaria media	20	18,20
Thymus serpyllum	12	3
Veronica serpyllifolia	12	-
Viola canina	5^1	-

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Fig.1.

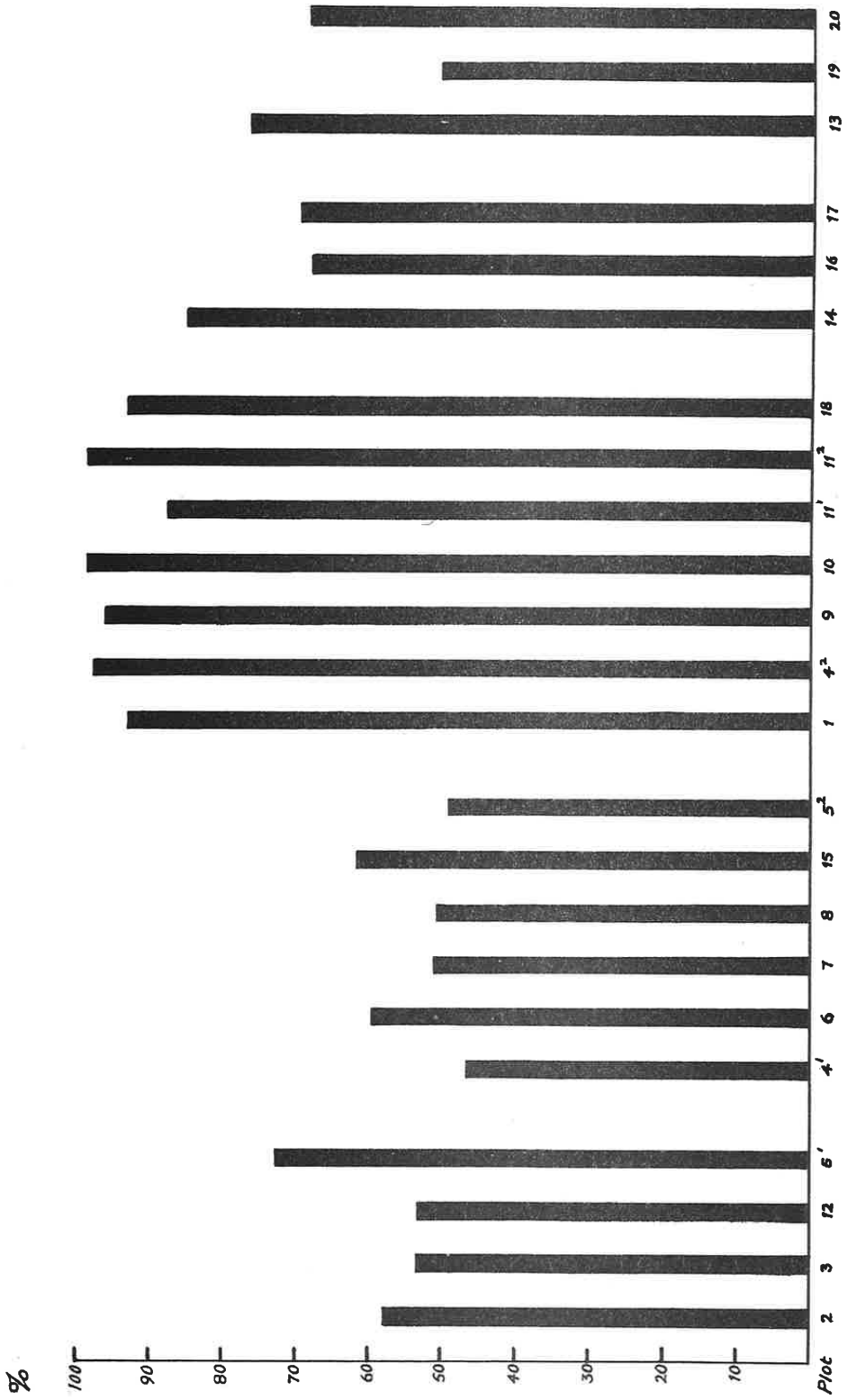

Fig. 1. Percentage of GRAMINEAE in 1947

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Fig.2.

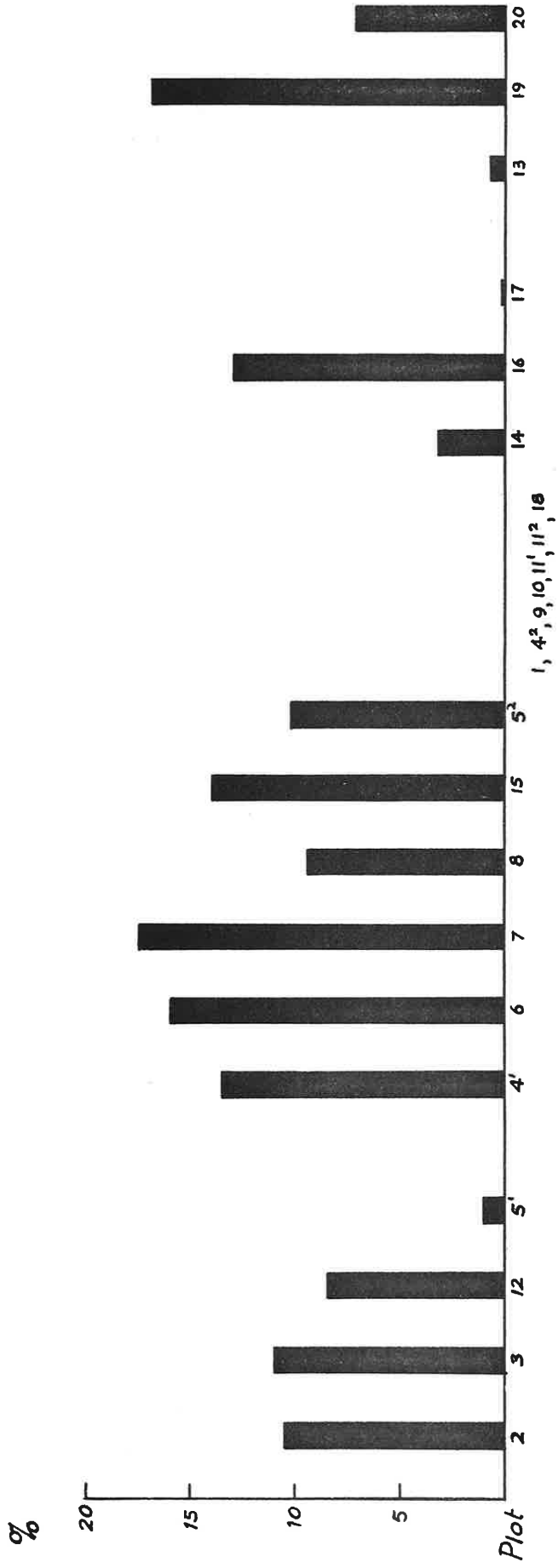

Fig. 2. Percentage of LEGUMINOSAE in 1947

https://doi.org/10.23637/ERADOC-1-154

Fig.3.

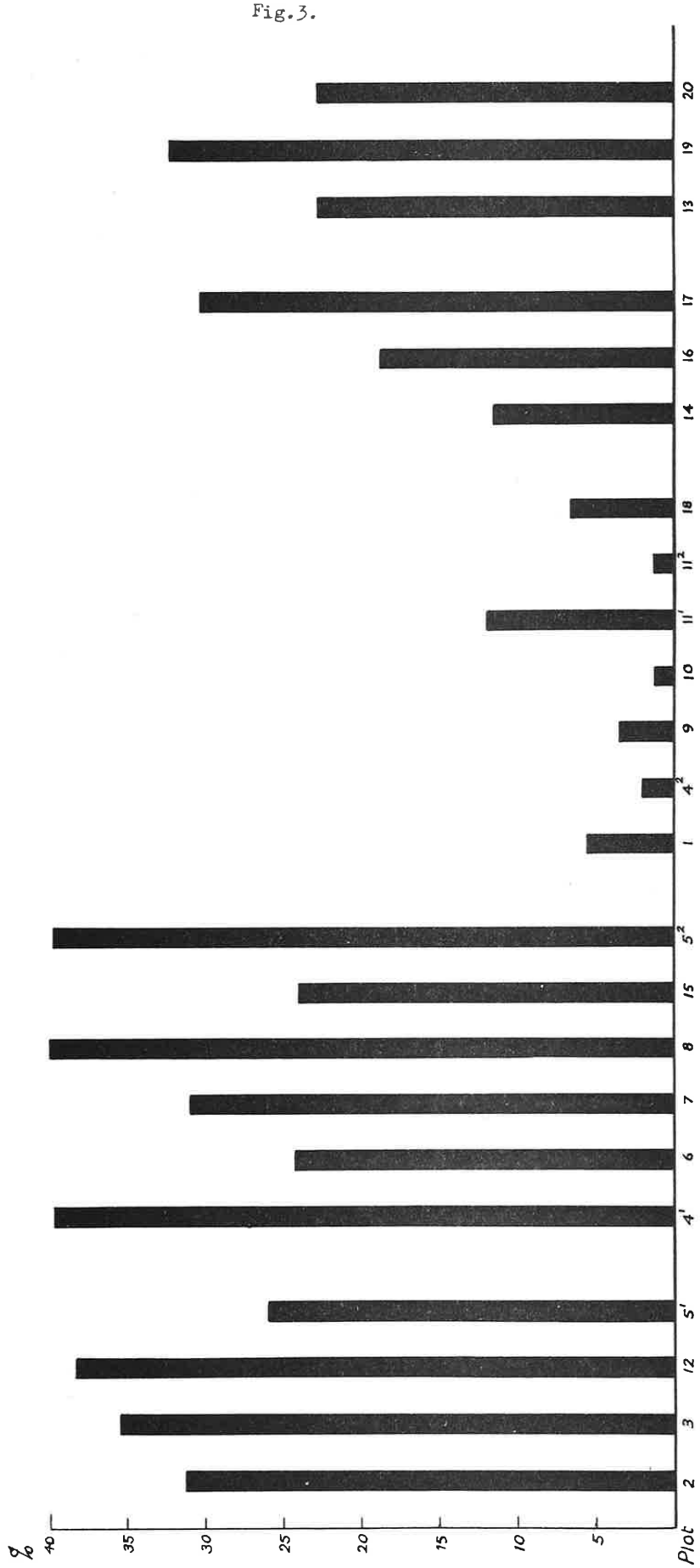

Fig. 3. Percentage of MISCELLANEOUS SPECIES in 1947

Fig.4.

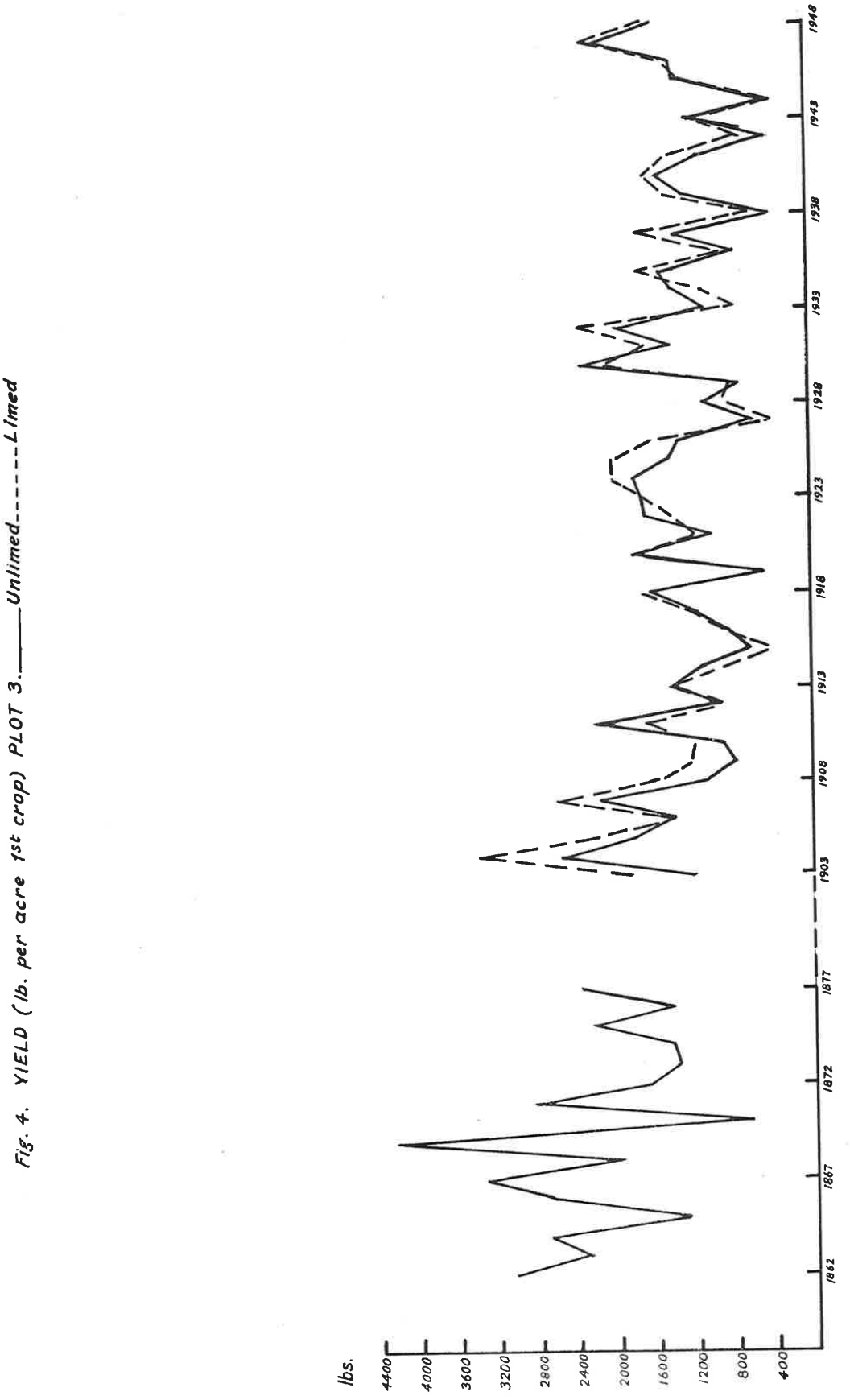

Fig. 4. YIELD (lb. per acre 1st crop) PLOT 3.——Unlimed- - - - - Limed

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Fig.5.

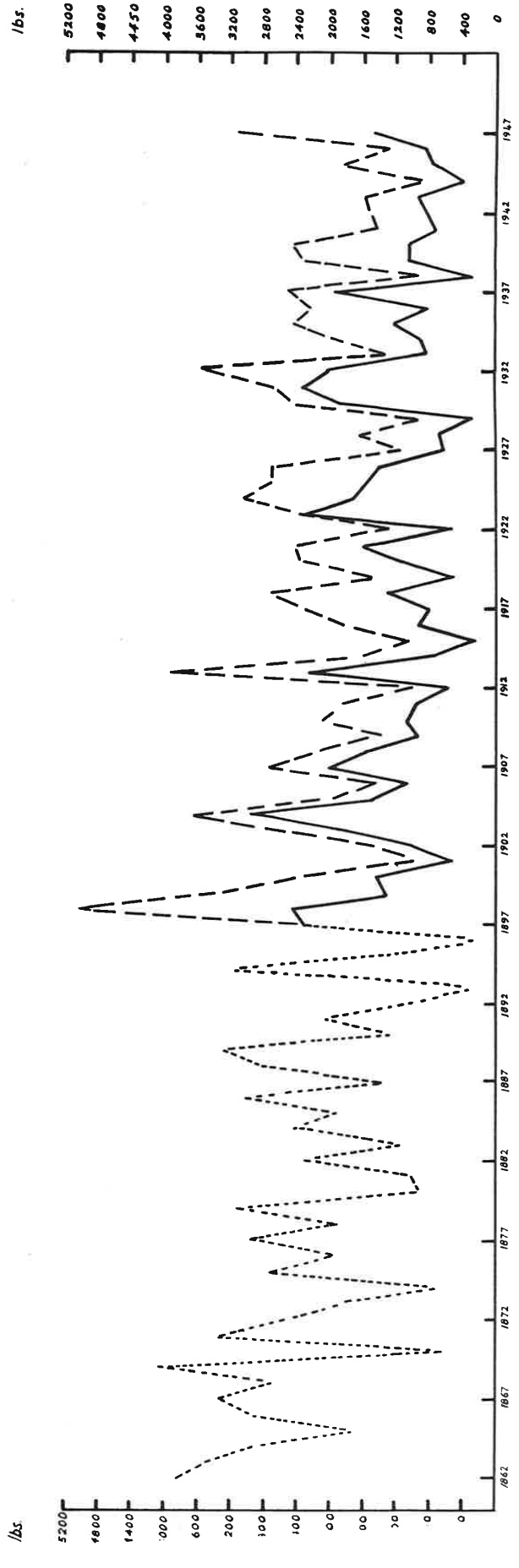

Fig. 5. YIELD (lb. per acre 1st crop) PLOT 5. showing effect of change in manuring in 1897

..... 1862 - 1897 Ammonium salts _____ 1898 - 1947

Unmanured (PLOT 5^1). - - - - - - 1898 - 1947 Minerals (PLOT 5^2).

Fig.6.

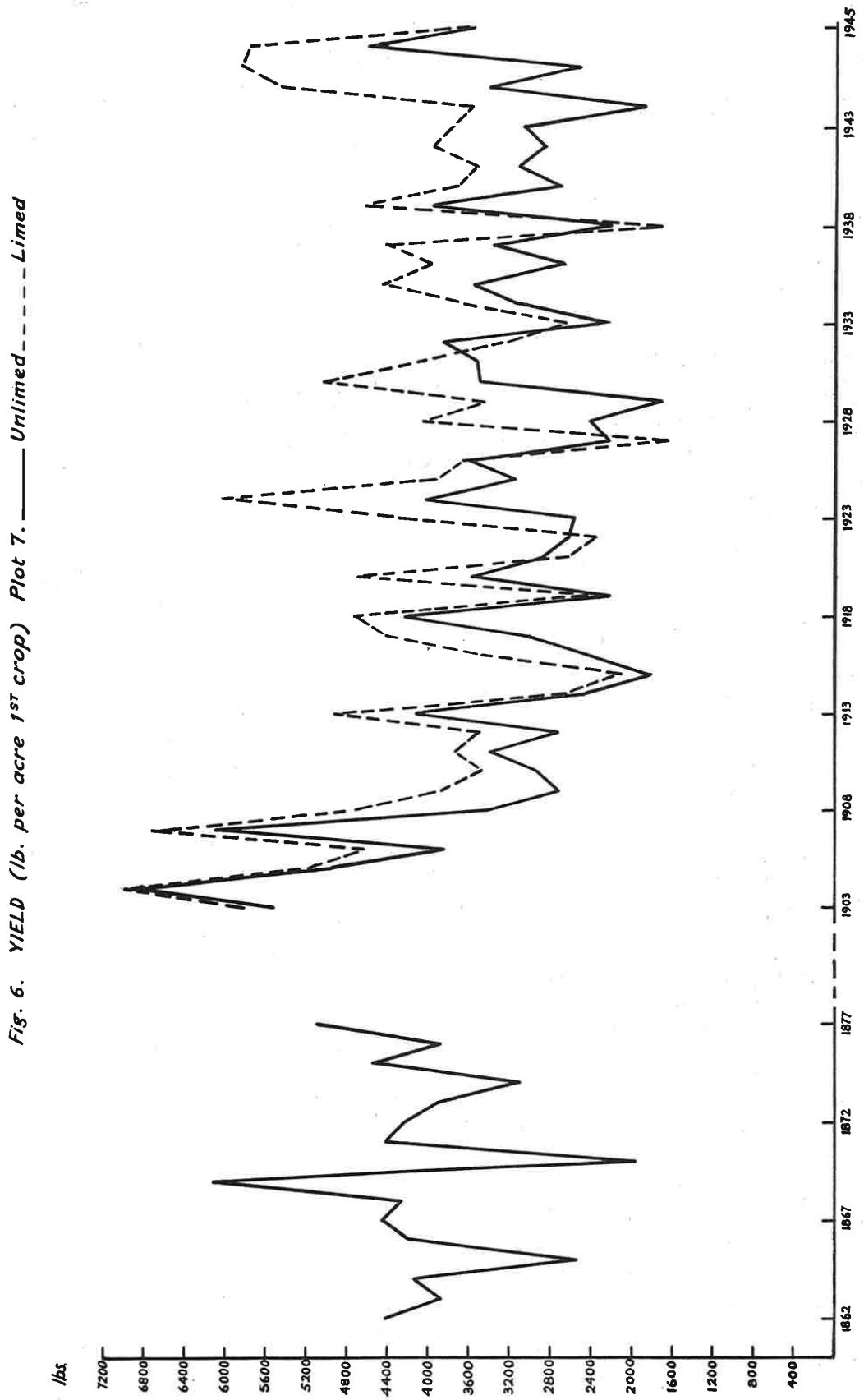

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Fig.7.

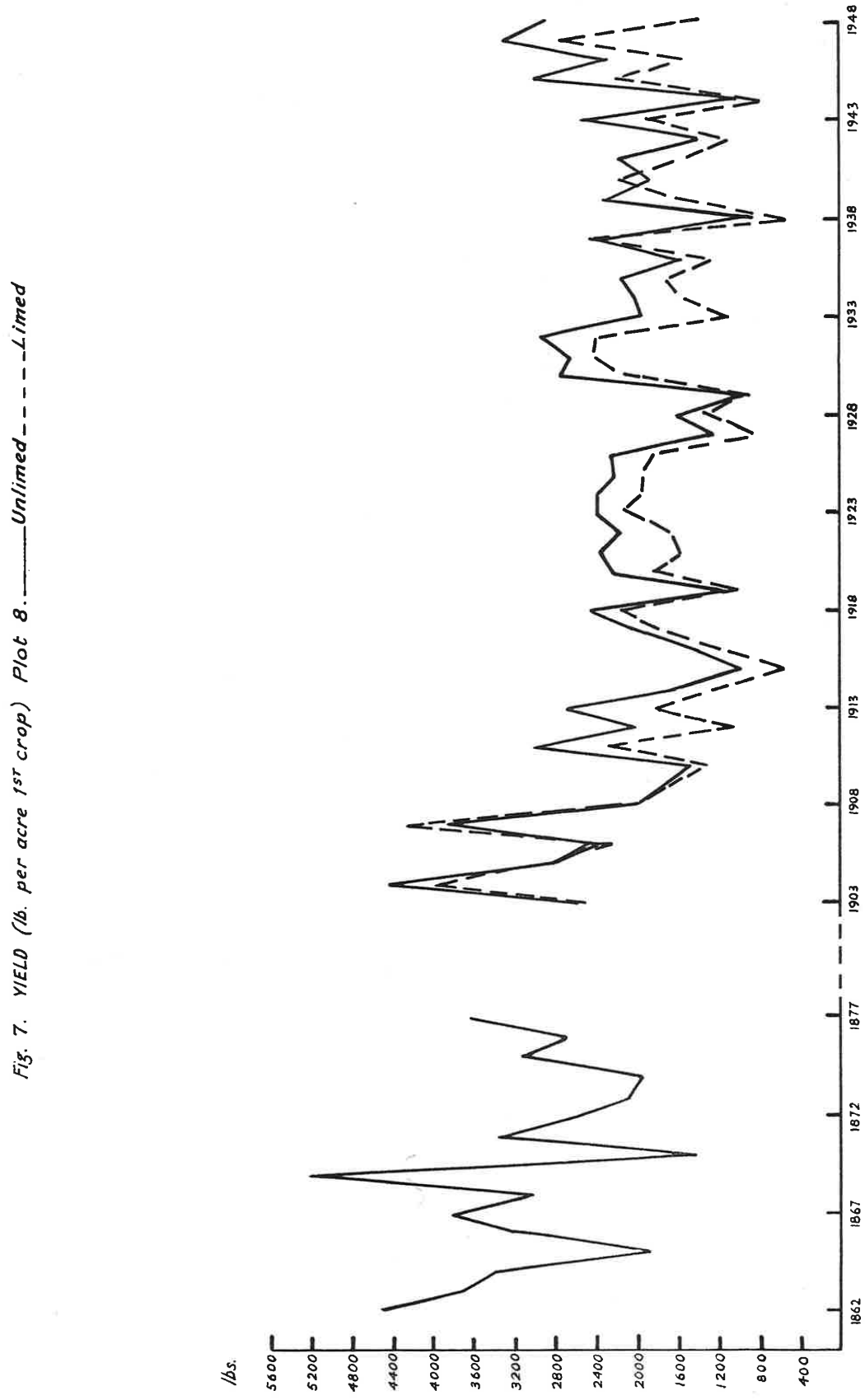

Fig. 7. YIELD (lb. per acre 1st crop) Plot 8.——Unlimed - - - -Limed

Fig.8.

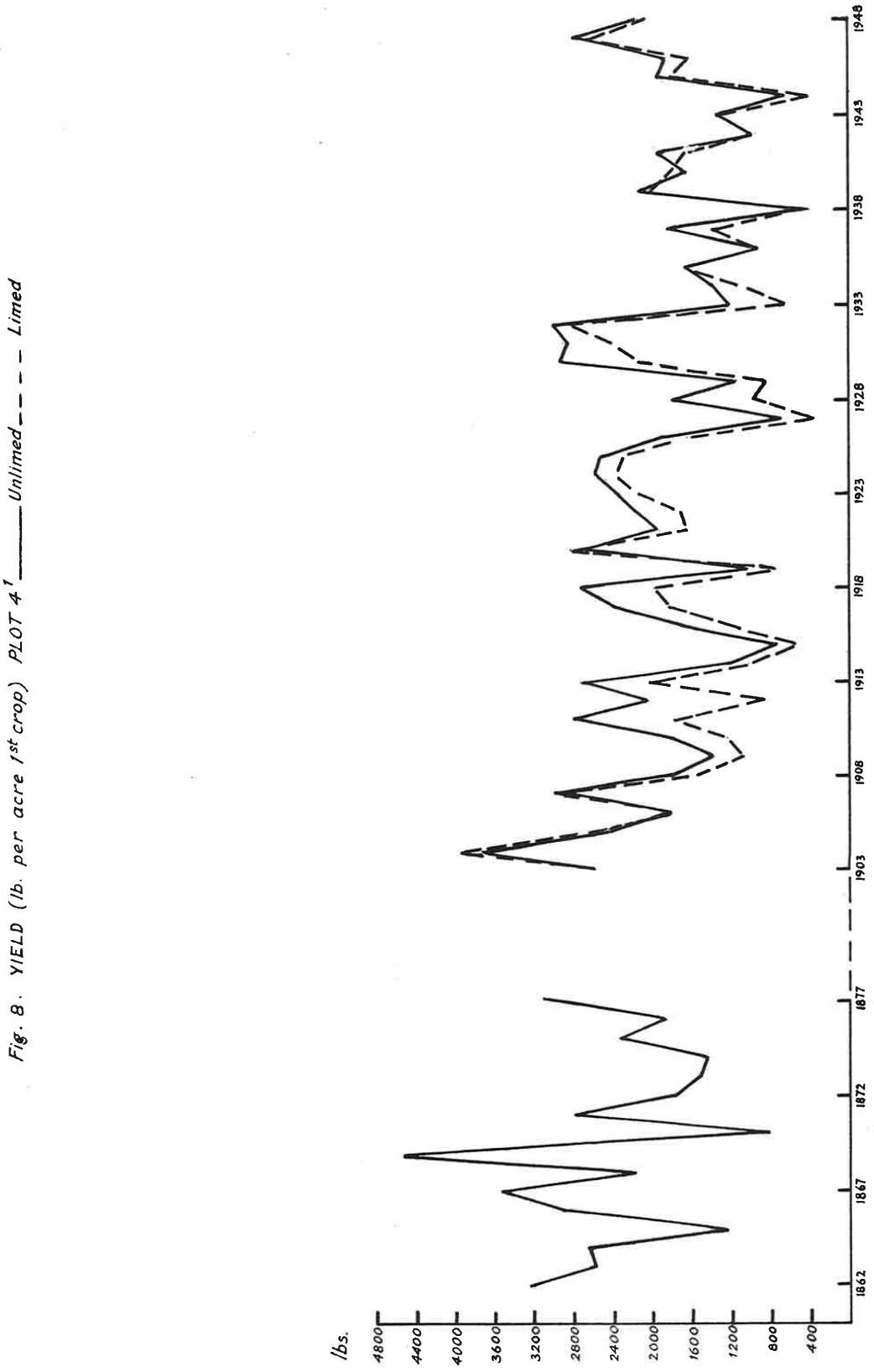

Fig. 8. YIELD (lb. per acre 1st crop) PLOT 4' ——— Unlimed - - - - Limed

Fig.9.

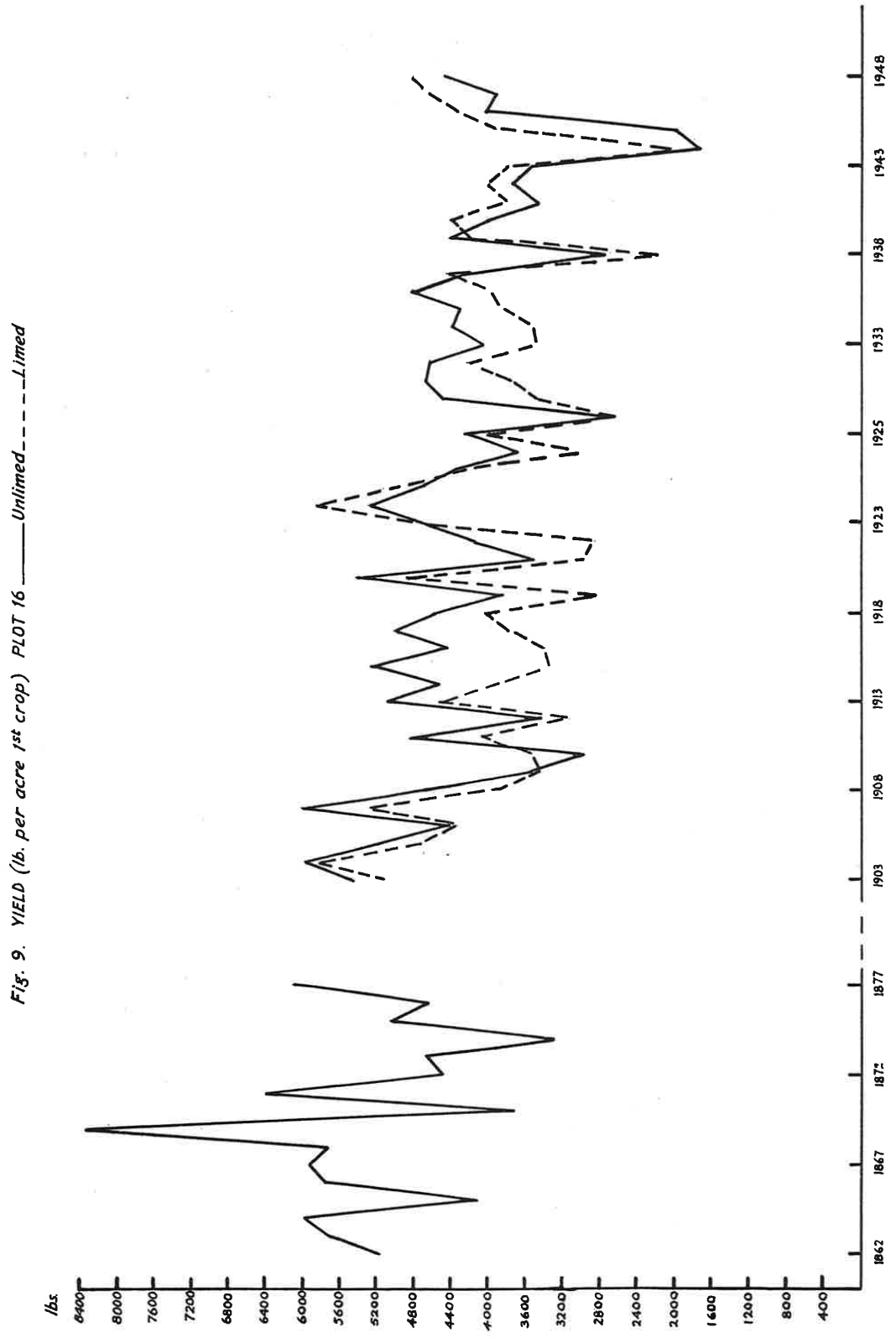

Fig. 9. YIELD (lb. per acre 1st crop) PLOT 16 ——Unlimed- - - -Limed

Fig. 10.

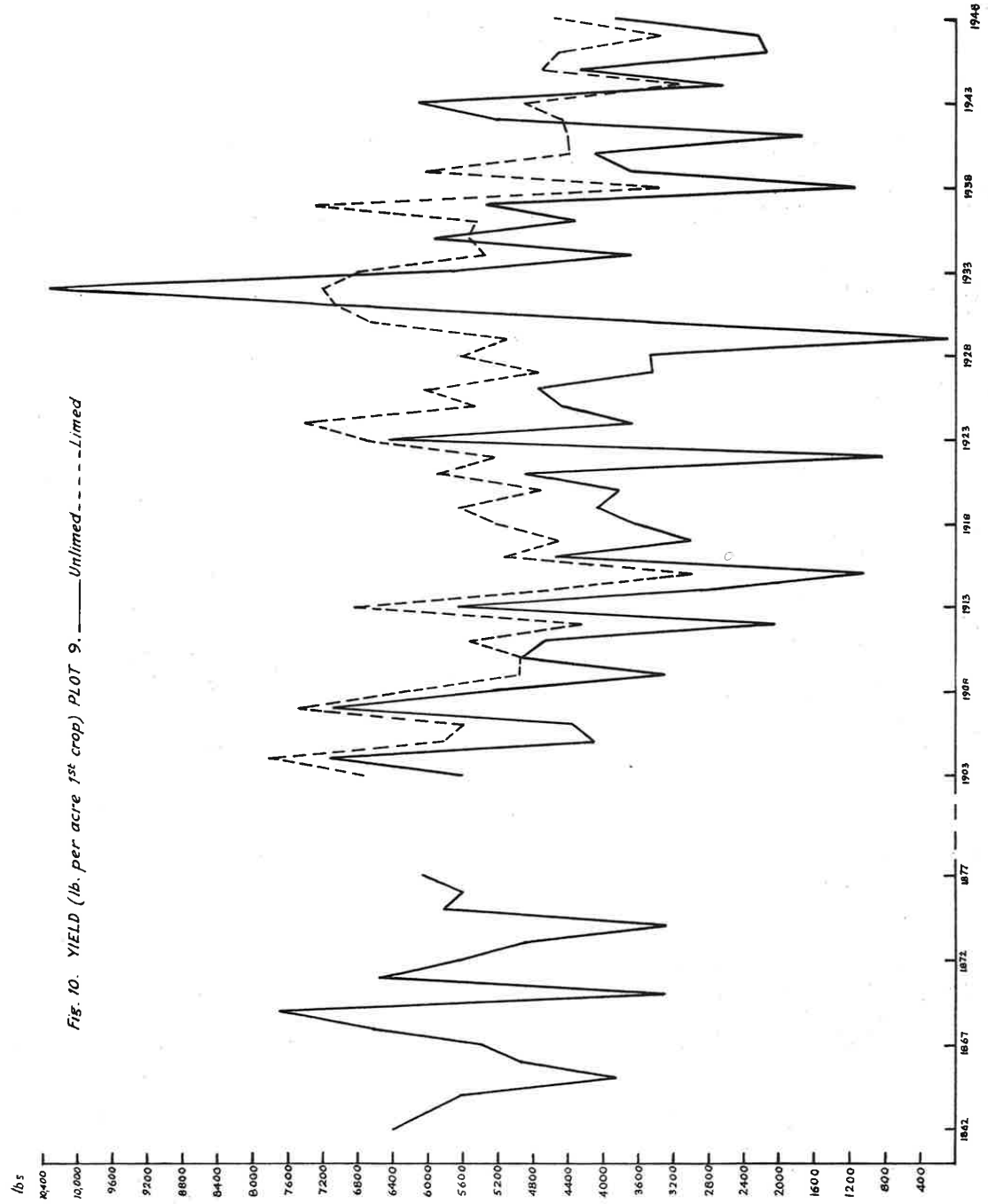

Fig. 10. YIELD (lb. per acre 1st crop) PLOT 9. ——Unlimed - - - -Limed

Fig.11.

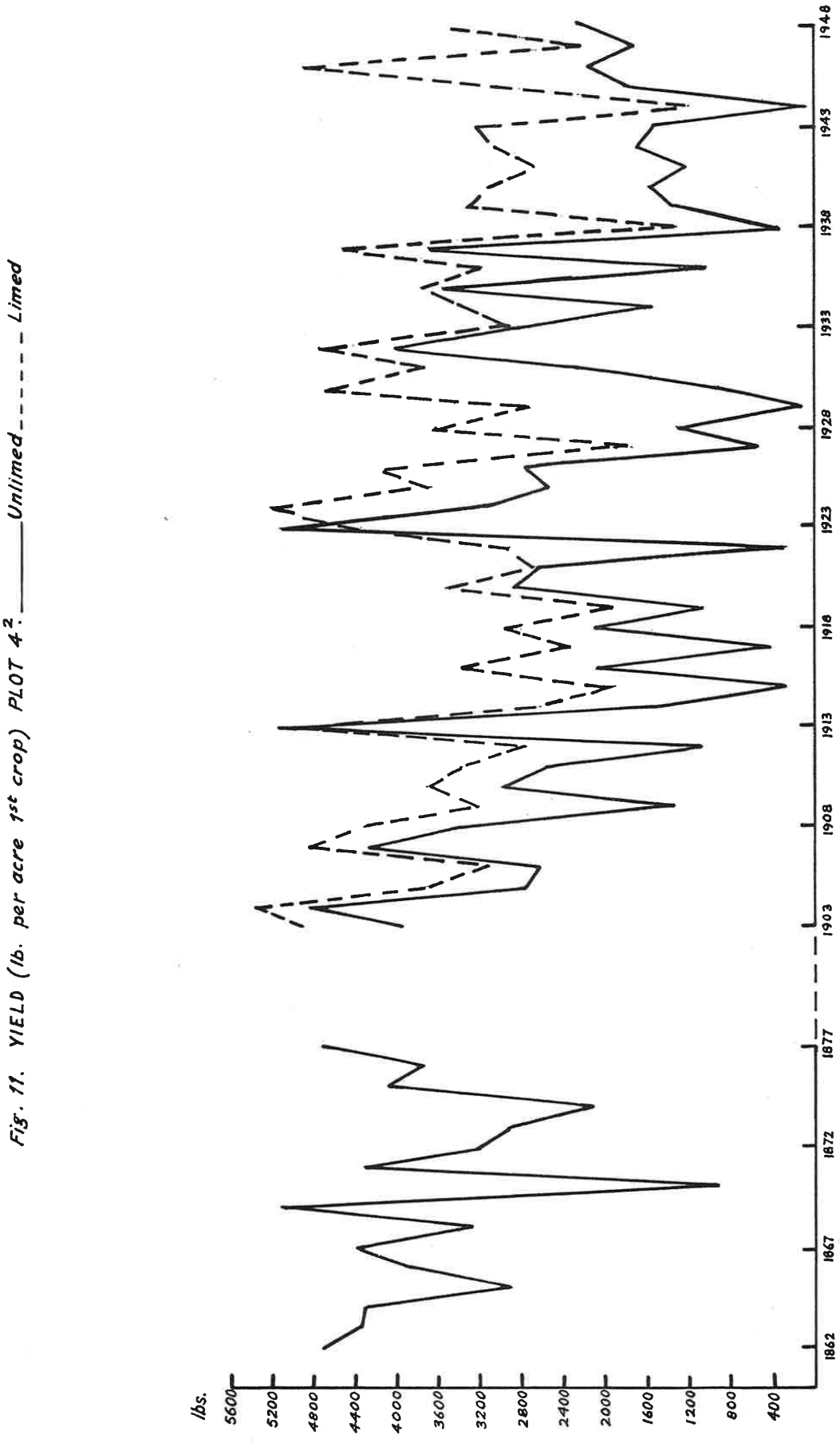

Fig. 11. YIELD (lb. per acre 1st crop) PLOT 4². _____ Unlimed - - - - - Limed

Fig. 12.

Fig. 12. Percentage of Agrostis vulgaris in 1947

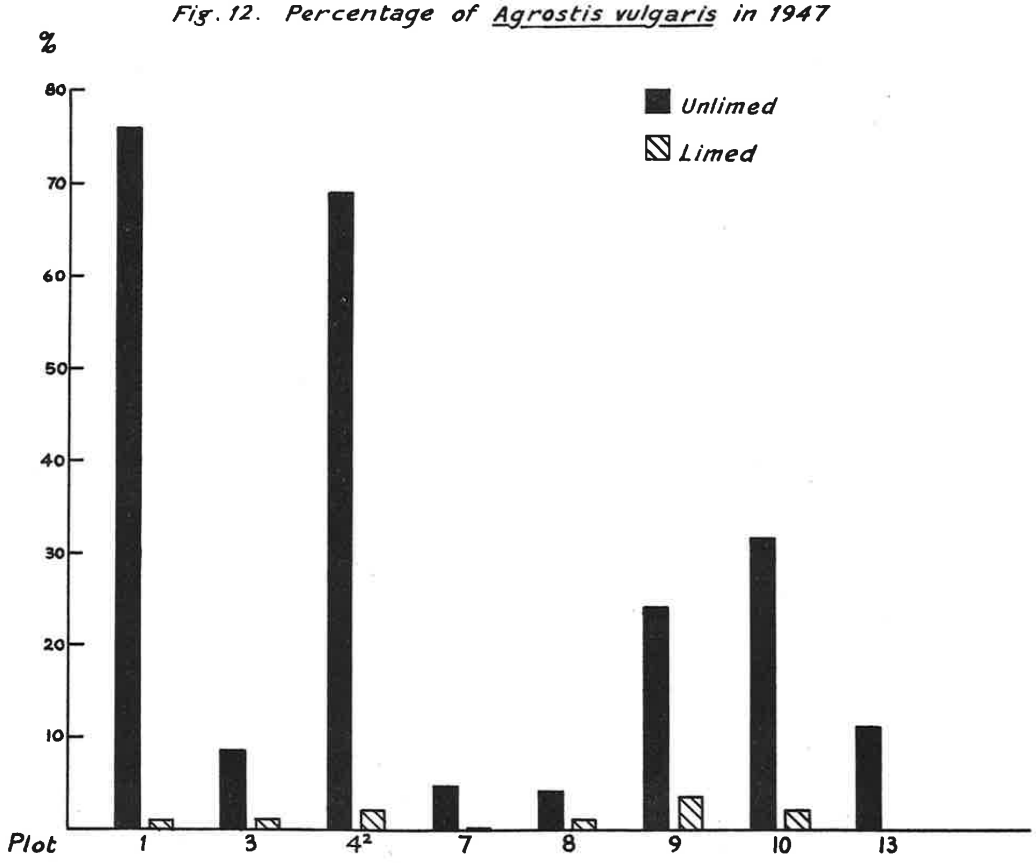

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Fig. 13.

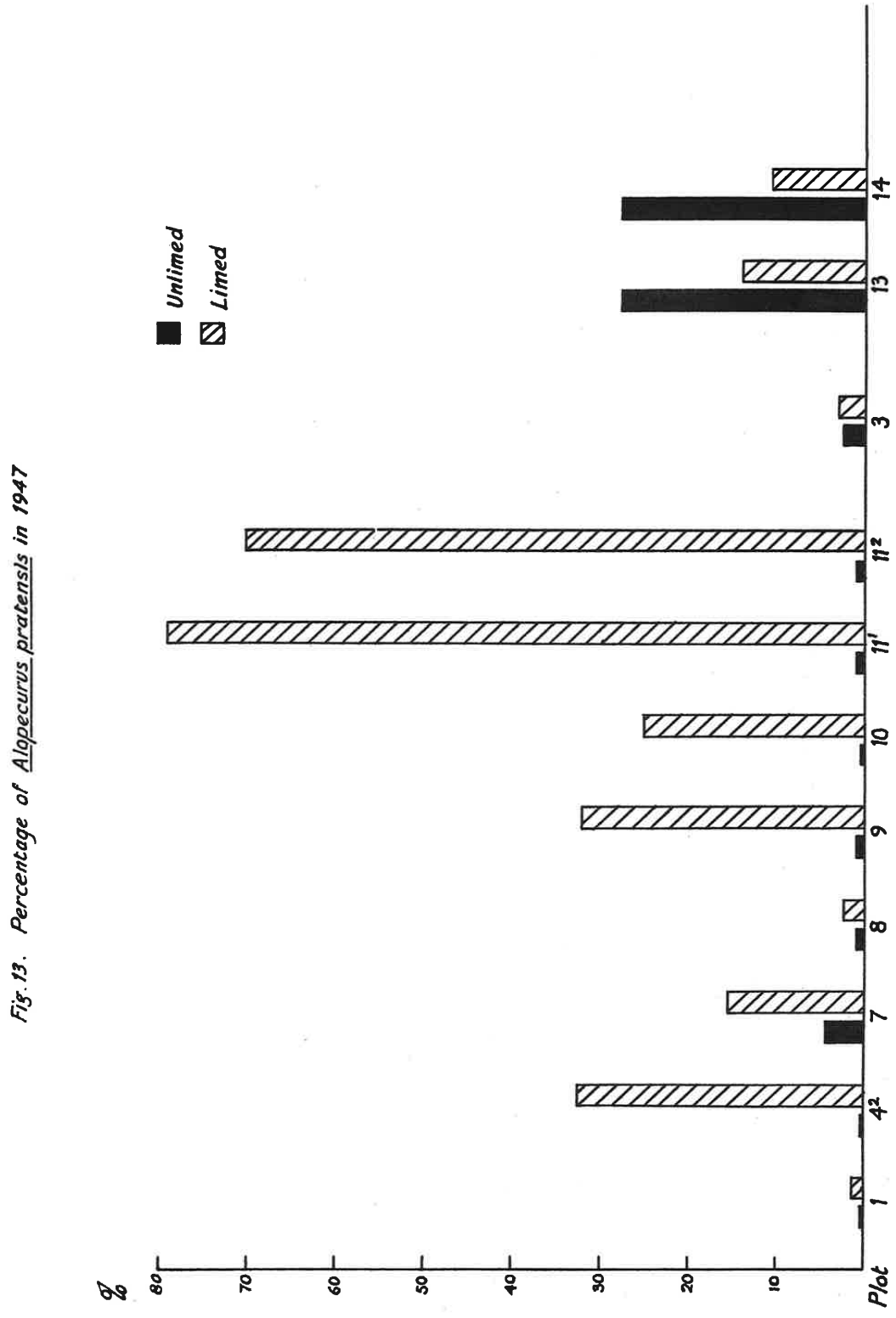

Fig. 13. Percentage of Alopecurus pratensis in 1947

Fig. 14.

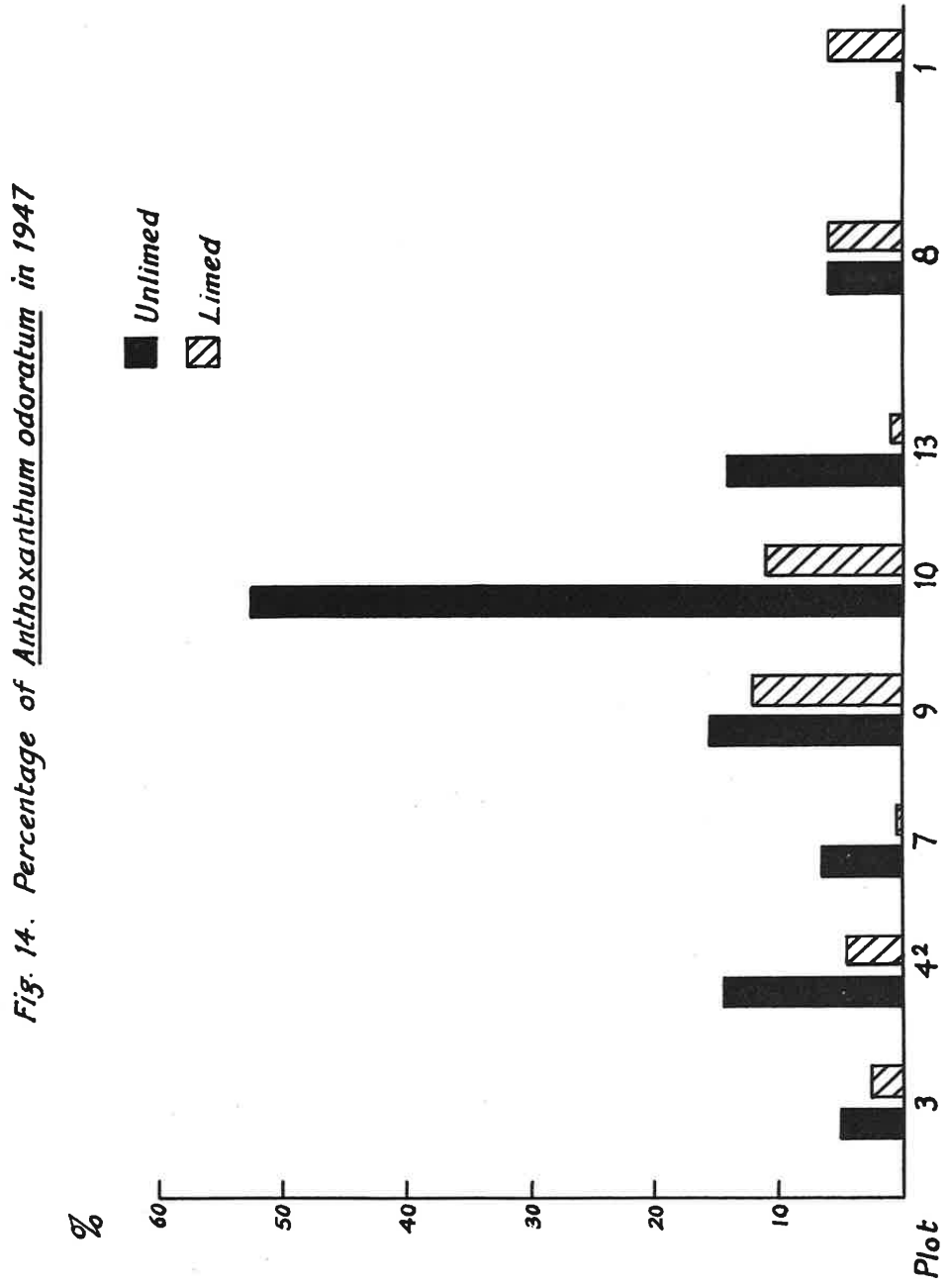

Fig. 14. Percentage of Anthoxanthum odoratum in 1947