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72/W/P/1 Potatoes Formalin and Potato Cyst Nematode

Rothamsted Research

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72/W/P/1

POTATOES

FORMALIN AND POTATO CYST NEMATODE

Object: To study the effects of formalin on yield of potatoes and incidence of *Heterodera rostochiensis* - Woburn Long Mead and Butt Close.

Sponsor: A.G. Whitehead.

Design: Long Mead: 3 blocks of 8 plots, Butt Close: 2 blocks of 8 plots.

Whole plot dimensions: 2.84 x 6.10. Area harvested: 0.00087.

Treatments (T): Dazomet: None (0), 336 kg (D) together with all combinations of:-

1. Rates of formalin (40% formaldehyde): 1.25 tonnes (F1), 2.5 tonnes (F2), 5.0 tonnes (F4).
2. Methods of application of formalin: Undiluted (0), in 27,000 l water (W).

Basal applications: 1510 kg (13:13:20). Weedkiller: Chlorbromuron at 1.7 kg with paraquat at 0.42 kg ion in 370 l, (Long Mead). Linuron at 1.1 kg with paraquat at 0.42 kg ion in 370 l, (Butt Close). Fungicide: Mancozeb at 1.3 kg in 430 l. Fungicide with insecticide: Mancozeb at 1.3 kg with demeton-s-methyl at 0.25 kg in 430 l.

Cultivations, etc.:

Long Mead: Ploughed: 8 Oct, 1971. Dazomet and undiluted formalin applied and plots rotary cultivated twice, remaining plots rotary cultivated and formalin drench applied: 8 Dec. Ploughed: 29 Feb, 1972. NPK applied: 30 Mar. Rotary cultivated, potatoes planted: 6 Apr. Inter-row rotary cultivated and earthed up: 19 Apr. Weedkiller applied: 8 May. Fungicide applied: 5 July. Fungicide with insecticide applied: 26 July. Haulm mechanically destroyed: 14 Sept. Lifted: 22 Sept. Previous crops: Potatoes 1970 and 1971.

Butt Close: Deep-tine cultivated: 1 Nov, 1971. Dazomet and undiluted formalin applied and plots rotary cultivated twice, remaining plots rotary cultivated and formalin drench applied: 7 Dec. Ploughed: 14 Feb, 1972. NPK applied: 29 Mar. Rotary cultivated, potatoes planted, inter-row rotary cultivated and earthed up: 20 Apr. Weedkiller applied: 15 May. Fungicide applied: 5 July. Fungicide with insecticide applied: 26 July. Haulm mechanically destroyed: 14 Sept. Lifted: 20 Sept. Previous crops: Potatoes 1970 and 1971.

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NOTE: Soil samples were taken before treatments were applied and after harvest for cyst and egg counts of *Heterodera rostochiensis*.

Standard error per plot. Total tubers, tonnes/hectare:

Long Mead: 7.17 or 26.8% (14 d.f.)

Butt Close: 3.67 or 23.5% (7 d.f.)

TABLES OF MEANS

LONG MEAD

F

O	D	F1	F2	F4	F1W	F2W	F4W	Mean
TOTAL TUBERS: TONNES/HECTARE								
18.2	29.4	27.6	26.3	34.3	21.6	25.5	31.5	26.8

STANDARD ERROR OF DIFFERENCES. F 5.86

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

88.6	92.7	93.2	93.6	94.7	90.4	88.7	92.7	91.8
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BUTT CLOSE

F

O	D	F1	F2	F4	F1W	F2W	F4W	Mean
11.4	26.7	12.7	13.2	20.5	12.4	11.9	16.1	15.6

STANDARD ERROR OF DIFFERENCES. F 3.67

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

79.5	93.1	81.7	85.1	91.7	81.8	77.1	89.0	84.9
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