

*W. H. H. H.*

**MANAGEMENT OF EUCALYPTS  
COOPERATIVE**

**FOREST RESEARCH INSTITUTE  
PRIVATE BAG  
ROTORUA**

**EARLY RESULTS FROM THE NELDER  
SPACING TRIALS**

**SERGIO CALDERON**

**REPORT NO. 1**

**DECEMBER 1986**

EARLY RESULTS FROM THE NELDER  
SPACING TRIALS

SERGIO CALDERON

REPORT NO. 1

DECEMBER 1986

NOTE : Confidential to participants of the management of  
Eucalyptus species cooperative.

: This material is unpublished and must not be cited  
as a literature reference.

## EARLY RESULTS FROM THE NELDER SPACING TRIALS

These results are from spacing trials in the Rotorua Conservancy. The species and locations are E. regnans (Murupara), E. nitens (Murupara), E. saligna (Kawerau).

Overhead No. 1 gives data for E. regnans established in 1978. The first column indicates the arc number for the Nelder trial and the second column the initial stocking equivalent in stems/ha which corresponds to the arc number. The next three columns give the mean dbh in cm, for 1980, 1983 and 1984 for each arc/stocking. These trends are illustrated in the succeeding overheads.

No. 2 illustrates the figures given in overhead No. 1. There was no detectable difference in mean dbh at age 2 across the range of stockings but by ages 5 and 6 there was a strong uniform effect of competition at stockings greater than 1500 stems/ha. For stockings less than this there was a progressive increase in mean diameter as stockings reduced.

No. 3 illustrates the same trends converted to basal area. Basal area increases as stocking increases but in a curvilinear fashion due to the larger trees at low stockings.

No. 4 shows the height/diameter relationships for the various stockings. As stocking level reduces trees become shorter for a given diameter.

No. 5 shows the frequency distribution of stem dbh; as it varies with initial stocking rate. The previously illustrated trend of increasing mean dbh with decreasing stocking is confirmed. There is a change in distribution about the mean. As stocking decreases the distribution becomes more dispersed.

The height and diameter data shown in the previous overheads were used with the standard NZFS volume table to calculate tree and then total volumes per hectare. These are shown in overhead No. 6 for E. regnans at age 7.

Similar values were calculated for E. nitens (No. 7) and E. saligna (No. 8). For both these two species stockings higher than 4444/ha were included because of the possibility of firewood/biomass yields.

For No.'s 6, 7, and 8 the volume is shown on the left hand histogram and mean annual increment on the right hand histogram. The most relevant stocking for high stand density pulpwood regimes is approximately 4400 stems/ha and for this stand density the MAI values for the 3 species are approximately:

<u>E. regnans</u>	25 m <sup>3</sup> /ha/an
<u>E. nigens</u>	40 m <sup>3</sup> /ha/an
<u>E. saligna</u>	30 m <sup>3</sup> /ha/an

Note that in all cases the eucalypt establishment was very good and the site index of adjacent radiata pine was very high; 32 m at Murupara and 35 m at Kawerau.

FIG. 1

ARC N	I. STOCKING (STEM/HA)	MEAN D.B.H.		
		1980	1983	1984
1	4444	3.60	8.00	8.75
2	3380	3.99	8.99	9.90
3	2551	3.43	9.12	10.20
4	1924	3.22	8.89	10.15
5	1457	3.46	10.00	11.50
6	1111	3.47	10.58	12.40
7	835	3.65	11.24	13.05
8	634	3.69	11.82	14.05
9	480	3.47	11.91	14.60
10	364	3.68	14.04	16.90
11	275	4.15	15.33	18.45
12	209	3.92	16.21	19.65
13	158	3.83	15.77	19.75
14	120	4.33	16.80	20.75
15	91	3.69	15.11	19.55

FIG. 2

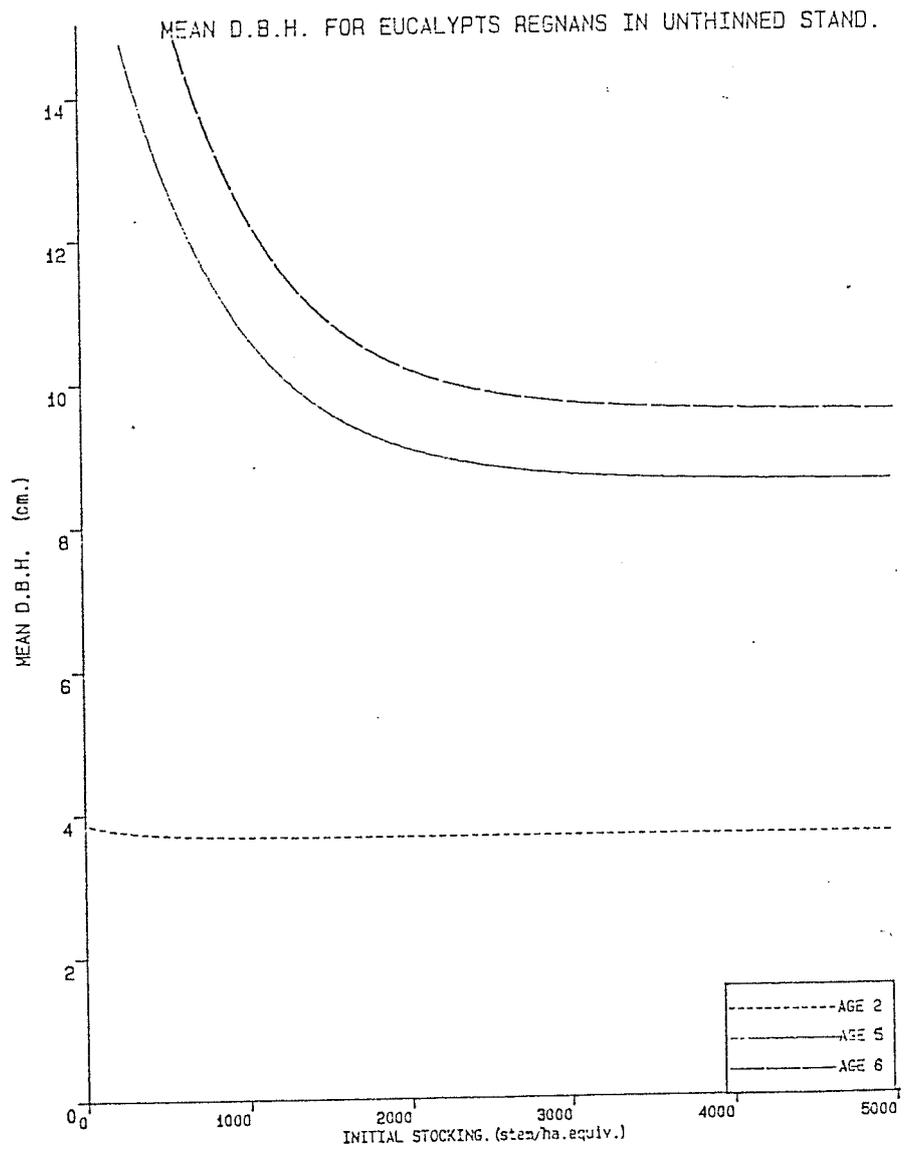


FIG. 3

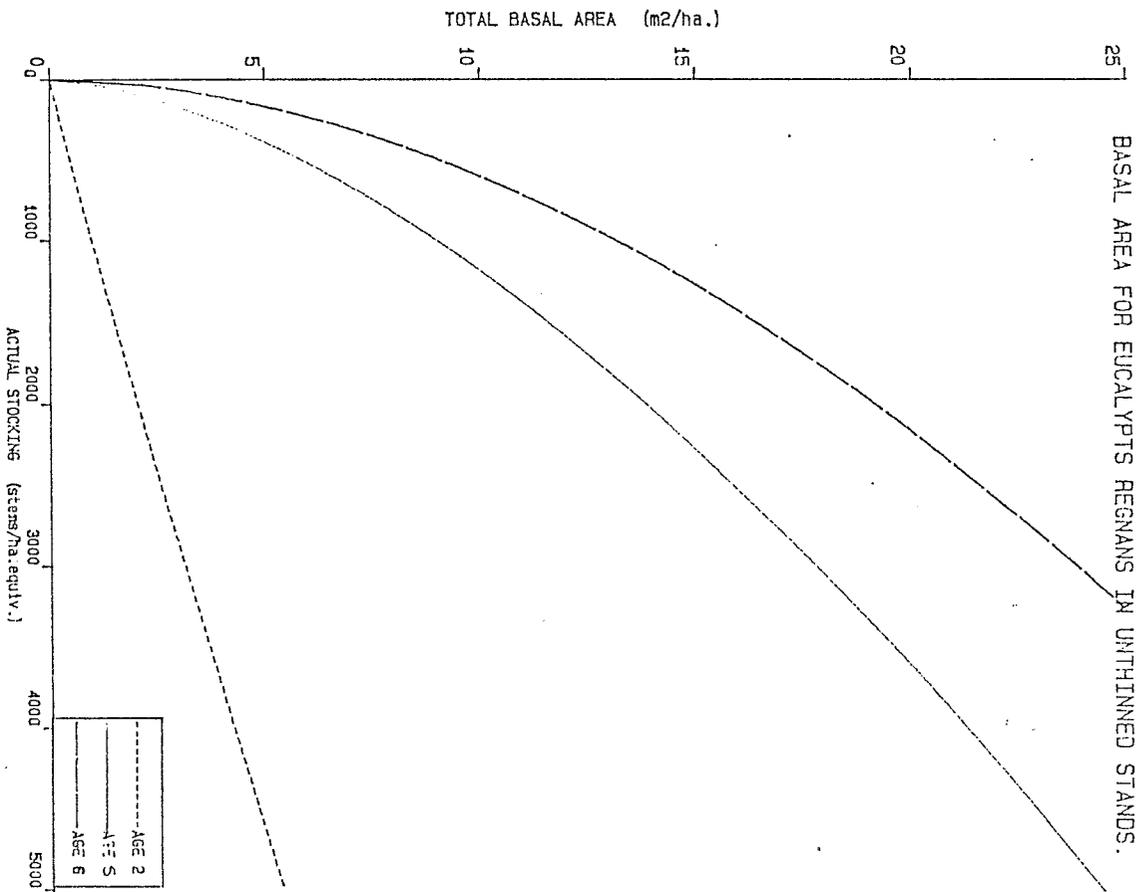


FIG. 4

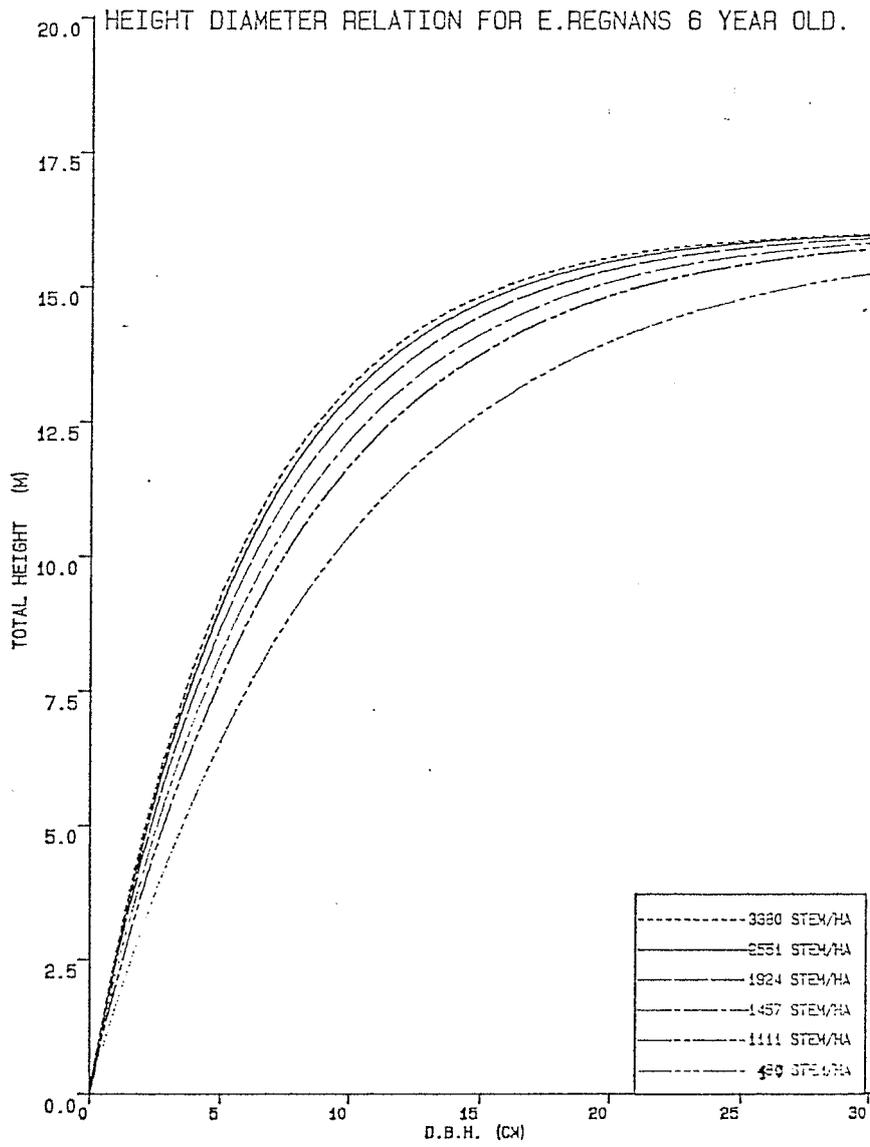


FIG. 5

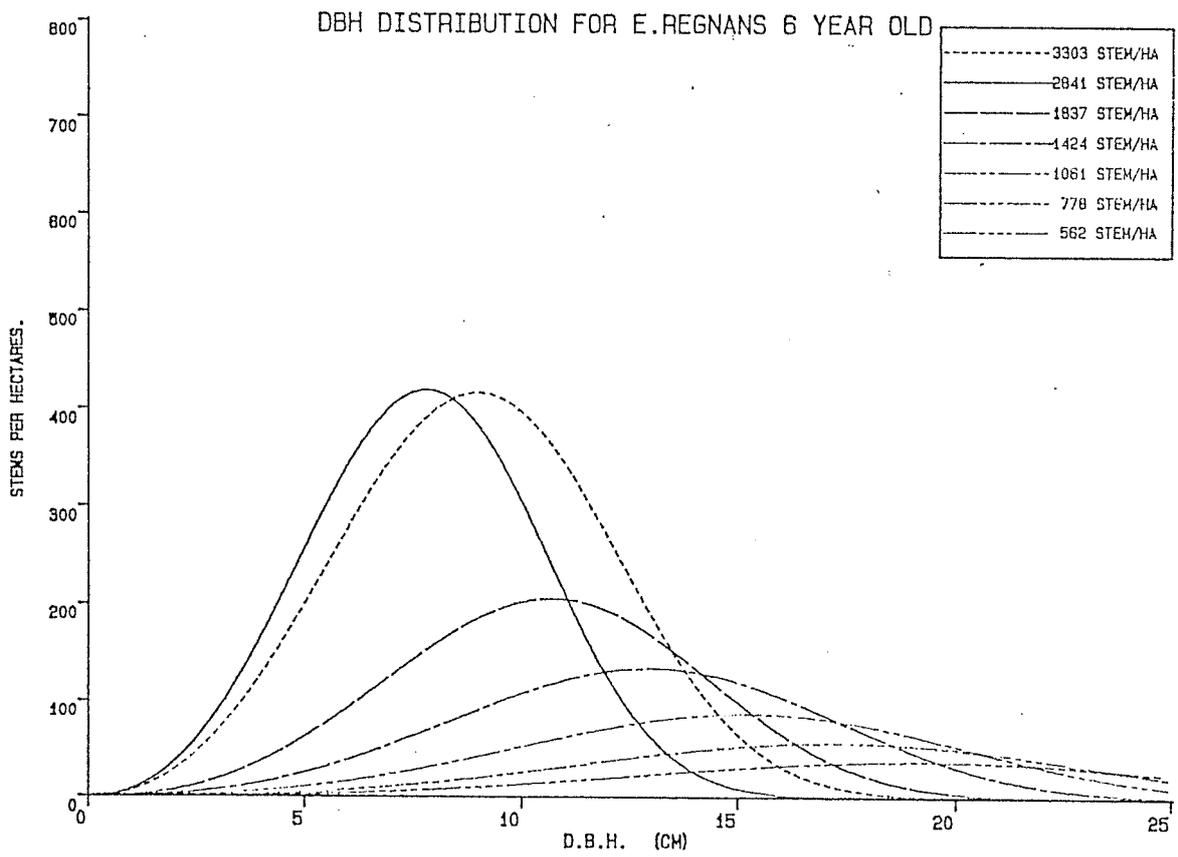


FIG. 6

E. REGNANS - AGE 7

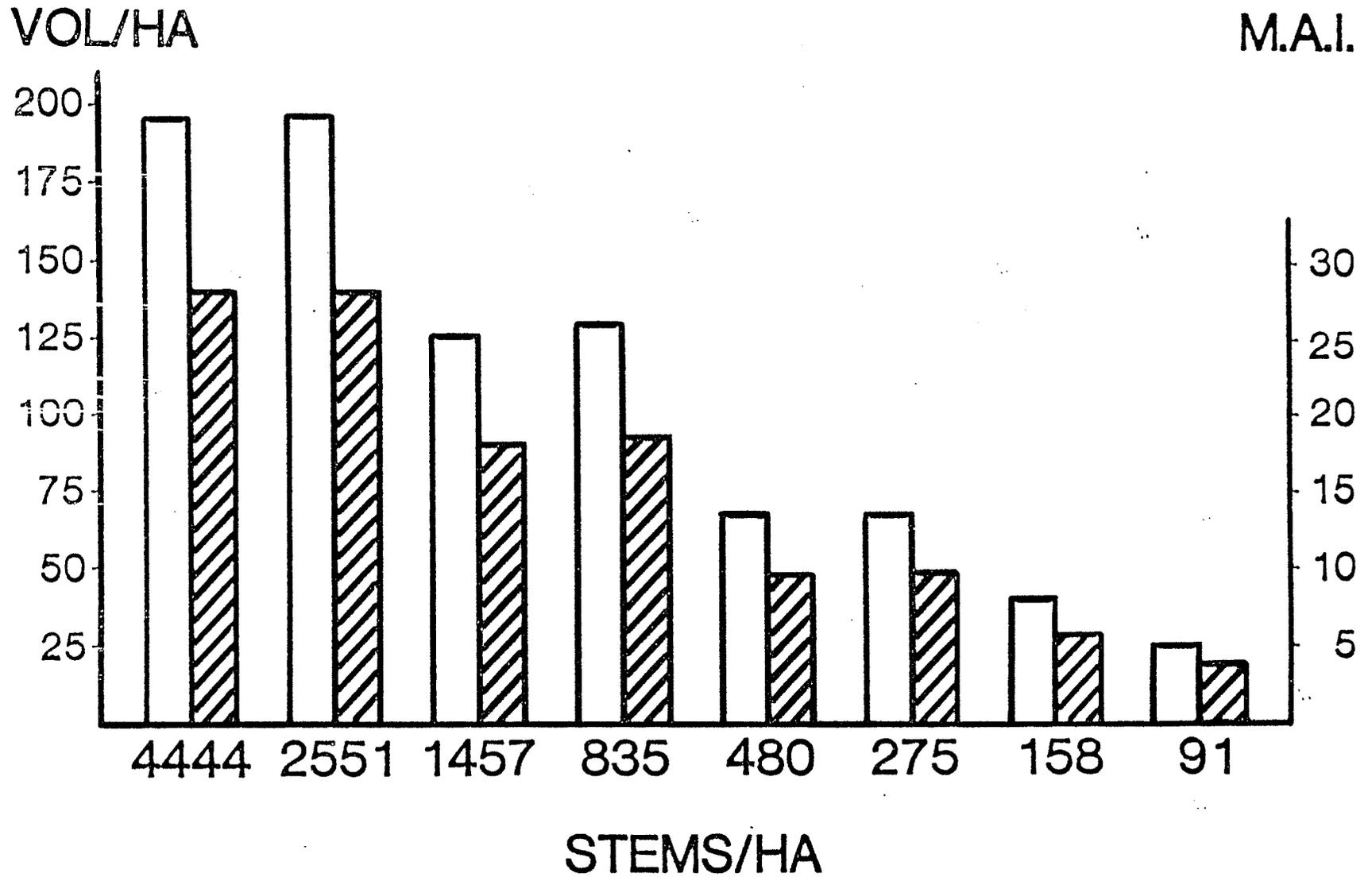


FIG. 7

E. NITENS - AGE 6

VOL/HA

M.A.I.

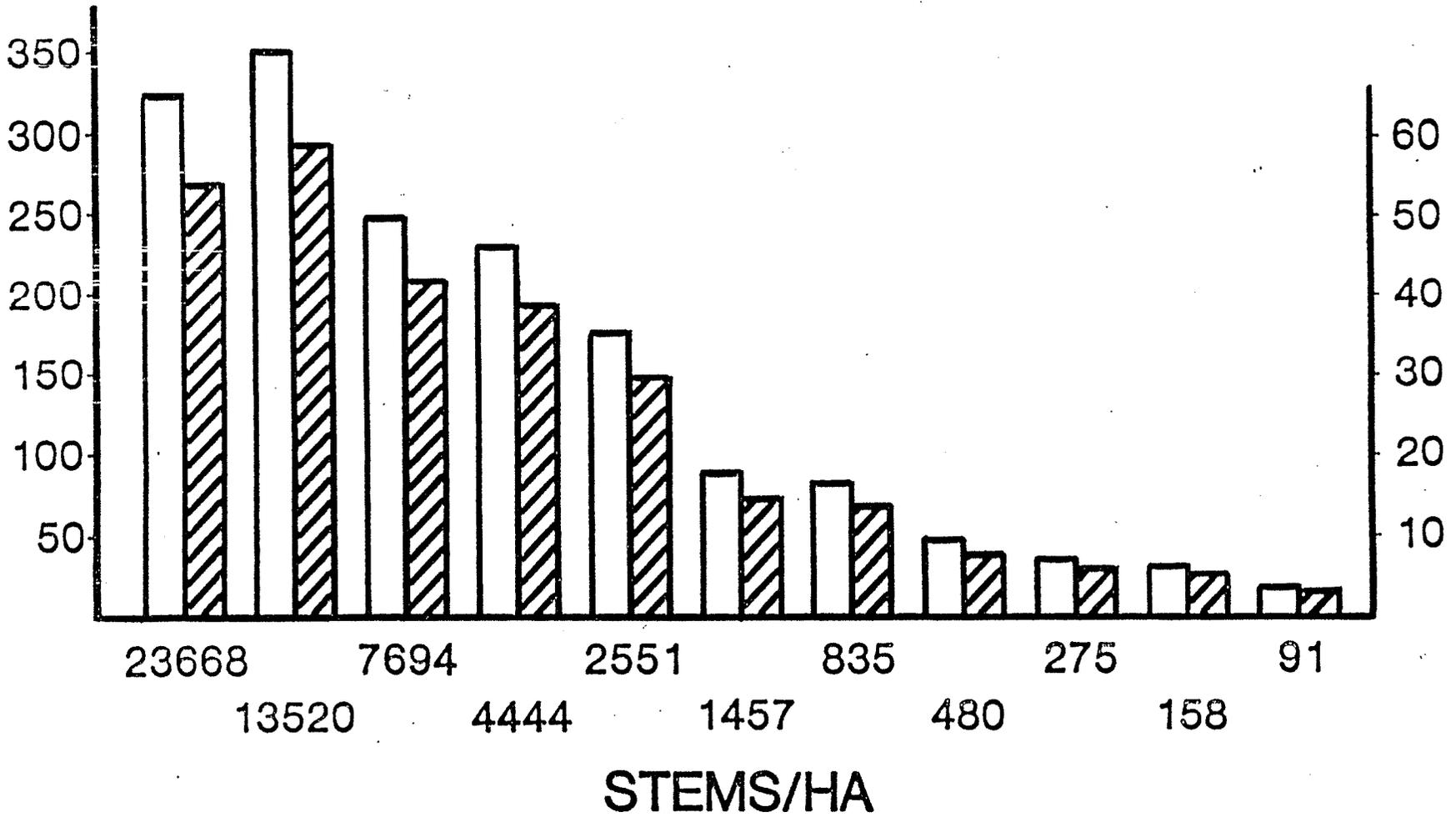


FIG. 8

E. SALIGNA - AGE 5

VOL/HA

M.A.I.

