

7. Annual Ring Growth

In the present study, clonal variation in ring growth of 71 clones in TPC Clone Bank, Uthai Thani was studied and evaluated. The age of these clones during the period of the study was 19 years old. The total average ring growth was 6.46 mm, ranging from 5.12 mm to 8.39 mm as shown in Table 22. The superior clones with the widest ring width per year were clone **V100** (8.39 mm year⁻¹), **V118** (7.84 mm year⁻¹), **V124** (7.71 mm year⁻¹), **V111** (7.63 mm year⁻¹), **V30** (7.56 mm year⁻¹), **V49** (7.57 mm year⁻¹), **V34** (7.49 mm year⁻¹), **V84** (7.14 mm year⁻¹) and **V45** (7.12 mm year⁻¹) and clone with poor ring growth were V99 (5.12 mm year⁻¹), V85 (5.26 mm year⁻¹) and V73 (5.37 mm year⁻¹). In the same site, Jaijing (1994) studied ring growth of 8 year-old teak and resulted that the superior clones were V69, V92, V121, V118 and V49.

The differences in multiple regression equation between clones were shown in Table 23. The calculation of ring growth was determined in each clone by the equation for each clone. The R² value ranged from 0.505 (clone V49) to 0.927 (clone V120). Result indicated that annual ring growth in each clone responded very differently to climatic factors. In most case the inverse relationship between ring width and age was found.

The Figure 18 showed the ring indices of all clones and the different trend of ring growth and development during the last 19 years.

Table 22 The annual ring growth of teak in the Clone Bank established in Uthai Thani in 1983

Clones	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
V3	16.69	15.67	16.92	14.63	8.08	7.46	8.21	6.71	3.00	4.75	3.50	3.08	3.88	3.88	3.29	3.50	2.96	4.29	3.88	3.25	6.88
V4	19.71	16.42	13.88	12.79	7.17	11.63	5.04	3.33	2.04	3.00	2.13	2.54	2.88	2.92	2.92	3.46	3.63	3.17	2.29	3.18	6.20
V7	16.56	14.94	13.63	16.06	6.75	7.50	6.63	7.19	4.88	5.06	2.75	3.81	3.31	3.56	3.19	3.81	5.63	4.75	4.44	3.50	6.90
V22	13.13	15.38	11.67	11.42	7.83	8.08	10.42	5.08	3.75	2.17	2.79	1.54	2.33	2.38	2.33	1.46	2.00	2.42	1.56	3.06	5.54
V23	13.00	11.00	11.31	12.44	11.50	7.75	7.00	5.88	3.13	4.00	1.88	3.06	3.63	4.63	2.13	2.94	5.13	3.06	3.13	2.44	5.95
V24	14.25	13.92	11.54	13.54	11.33	9.46	9.21	6.71	4.13	4.46	2.67	2.00	2.63	2.54	1.79	2.33	3.71	1.96	2.06	2.11	6.12
V25	5.00	14.00	12.75	13.25	9.75	10.00	9.13	7.63	6.94	5.63	2.50	3.75	1.81	3.44	2.90	3.08	2.25	3.77	3.69	3.75	6.25
V26	17.50	14.29	14.17	13.50	5.17	5.33	6.71	6.04	2.96	2.67	2.71	2.83	2.79	2.58	2.08	1.88	2.35	3.17	2.13	1.83	5.63
V27	12.25	10.44	11.94	12.00	9.38	3.79	11.42	11.75	6.75	6.83	4.00	3.21	2.96	3.17	3.13	2.54	2.46	2.54	2.38	3.50	6.32
V28	16.75	14.47	11.78	13.02	7.66	2.91	7.03	9.78	3.94	2.41	2.63	3.03	2.91	2.56	2.84	2.69	3.44	3.30	2.63	2.22	5.90
V29	13.50	17.50	7.63	9.38	9.31	12.56	4.44	9.75	3.44	1.81	3.00	3.06	2.15	2.96	2.50	2.92	2.75	2.27	1.63	2.29	5.74
V30	13.40	13.25	10.25	15.75	12.00	9.94	8.50	9.33	6.42	8.92	8.13	4.04	5.46	4.71	4.38	4.54	3.08	2.79	2.58	3.75	7.56
V32	16.58	12.58	9.33	12.25	3.92	5.83	12.96	7.67	4.21	2.63	4.50	2.71	3.25	3.71	3.63	2.67	3.54	5.33	4.58	3.67	6.28
V33	17.63	14.88	12.42	14.83	7.67	7.13	14.21	8.29	3.78	2.45	3.83	2.58	3.28	2.95	3.24	3.16	3.12	4.53	2.53	2.16	6.73
V34	15.90	13.75	14.63	16.38	11.25	10.25	10.25	8.00	5.13	4.50	3.75	3.50	3.06	4.44	4.38	3.69	4.13	5.13	4.44	3.31	7.49
V35	18.88	16.13	13.88	14.04	11.00	14.04	10.79	4.71	2.29	5.96	3.04	1.92	1.67	1.25	1.13	1.33	1.42	1.04	1.29	1.25	6.35
V36	17.00	12.72	12.44	15.00	13.41	3.84	6.19	9.94	5.63	3.19	2.84	2.81	2.56	3.19	3.75	3.91	3.84	6.09	5.59	4.00	6.90
V37	12.83	11.54	11.23	15.25	10.29	7.50	5.71	3.65	3.02	2.27	3.00	2.04	2.65	4.44	3.31	3.31	4.00	2.38	3.13	1.69	5.66
V38	21.25	14.75	11.71	13.21	15.67	2.71	6.46	7.04	5.42	3.42	2.92	3.50	3.33	2.88	3.13	3.54	3.21	4.21	3.56	1.75	6.68
V39	14.50	13.00	6.63	12.00	9.63	14.75	5.63	7.00	4.38	6.63	2.88	4.31	4.13	6.00	5.06	5.25	5.81	5.25	4.94	3.50	7.06
V40	16.29	13.65	12.17	15.75	8.83	6.79	10.25	6.83	4.92	4.29	4.42	4.17	4.13	4.54	4.29	3.61	3.38	4.42	4.00	3.67	7.02
V41	15.25	17.46	14.67	14.14	8.10	6.39	11.34	10.13	6.85	3.63	3.90	2.95	3.72	3.07	3.41	3.54	3.99	4.31	4.68	3.69	7.26
V42	19.00	11.50	9.13	10.50	3.75	4.13	13.75	10.25	8.38	3.38	7.13	4.50	4.00	5.25	6.50	2.38	4.63	4.75	4.25	3.38	7.03
V43	17.25	16.13	11.45	12.80	4.11	4.33	5.98	9.98	4.90	3.14	2.85	2.07	2.41	2.27	2.39	1.85	2.33	2.63	2.27	2.00	5.66

Table 22 (continued)

clones	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
V45	14.69	17.69	14.41	15.00	4.50	10.84	13.91	5.56	3.94	3.78	3.16	2.97	2.75	3.78	2.84	4.25	4.78	4.84	4.69	4.06	7.12
V46	13.25	12.25	4.50	8.00	16.25	6.00	5.50	13.75	2.50	4.50	2.00	2.25	3.25	2.75	2.00	2.25	3.50	3.50	3.50	3.75	5.76
V49	16.75	15.75	12.25	17.88	4.50	4.50	22.75	7.13	5.19	2.63	3.13	3.25	2.94	4.50	4.88	4.75	5.31	4.88	5.00	3.50	7.57
V69	16.75	20.94	19.56	10.69	10.25	8.88	2.13	4.25	8.81	3.44	2.00	1.56	1.38	1.69	1.50	1.56	1.56	1.13	1.19	1.19	6.02
V72	16.50	8.13	10.31	15.19	7.88	8.56	4.50	5.19	3.25	3.81	2.81	4.19	5.94	5.50	2.75	4.13	3.13	3.13	2.77	3.67	6.07
V73	16.25	13.25	12.00	14.63	2.13	2.38	5.60	4.34	4.05	2.56	3.26	2.14	3.19	4.10	4.85	2.33	2.93	3.43	2.05	1.93	5.37
V74	16.33	14.31	10.81	12.97	6.41	6.78	7.16	5.47	3.56	3.44	3.03	3.59	5.47	7.72	5.38	5.56	5.50	5.84	5.00	3.75	6.90
V76	17.92	11.83	12.04	13.29	6.50	6.00	7.29	5.13	4.98	3.91	4.02	5.09	6.04	6.02	4.13	4.66	4.36	4.24	3.70	3.30	6.72
V78	27.50	11.38	15.13	17.75	3.00	4.13	5.00	2.38	1.75	1.75	1.63	1.63	2.75	5.75	2.75	4.25	4.38	3.50	2.75	5.33	6.22
V80	17.44	13.15	16.62	11.48	9.22	8.39	4.53	4.13	3.07	3.95	2.57	3.45	4.13	4.00	2.36	4.14	2.88	2.97	2.48	2.07	6.15
V81	16.75	13.25	15.63	18.88	8.06	6.50	15.13	4.63	5.13	6.81	4.19	2.75	2.31	2.31	2.88	2.44	3.50	3.75	2.31	3.38	7.03
V83	18.33	10.75	11.29	16.50	2.13	2.13	9.38	9.96	4.33	3.42	2.46	2.13	2.38	2.17	2.83	2.38	2.54	3.17	2.96	2.00	5.66
V84	19.25	17.00	17.00	18.00	4.75	3.25	16.00	6.75	4.00	2.75	3.75	2.63	3.50	3.75	4.13	6.25	3.25	3.13	1.50	2.25	7.14
V85	10.00	8.16	6.00	7.20	6.88	6.25	4.63	4.75	4.91	3.91	4.06	5.09	6.78	6.00	3.94	3.47	4.72	3.44	2.28	2.72	5.26
V86	11.25	7.16	6.40	7.15	8.88	4.25	4.23	6.25	5.75	5.06	3.06	6.06	5.19	7.33	1.75	3.94	7.06	5.69	2.00	3.88	5.62
V88	12.38	10.25	8.00	14.63	4.88	4.75	7.38	5.44	4.00	3.75	4.44	6.50	5.50	4.63	6.25	7.38	5.56	3.50	3.38	2.44	6.25
V89	11.20	9.15	8.40	8.10	8.15	6.55	6.25	5.69	3.63	5.06	5.31	12.06	8.19	10.06	2.94	3.56	2.38	3.69	2.69	2.56	6.28
V90	13.19	11.69	11.38	17.58	8.42	9.42	12.96	4.29	3.46	4.67	3.83	3.17	3.03	3.72	2.67	4.53	4.11	3.19	2.53	2.75	6.53
V92	13.50	13.06	13.38	16.06	9.06	4.13	11.19	6.86	3.36	2.89	2.44	1.89	2.16	2.01	1.93	2.46	2.58	2.42	1.97	1.97	5.76
V93	15.13	14.38	10.13	19.50	5.75	18.63	7.13	4.63	2.13	5.38	2.00	3.13	4.50	6.25	2.50	3.50	5.63	4.75	3.25	3.13	7.07
V95	13.56	10.25	13.00	7.33	8.50	18.00	3.83	16.50	5.33	3.33	2.50	2.17	1.50	1.67	3.50	4.17	2.83	3.17	2.83	2.00	6.30
V96	15.75	10.75	10.71	15.46	9.08	9.17	7.00	5.08	6.04	4.42	3.21	3.54	3.83	4.58	3.67	2.88	3.79	4.46	3.42	2.67	6.48
V98	11.00	10.20	9.54	7.45	8.75	7.20	6.75	5.56	2.44	9.04	5.29	7.33	7.50	5.92	3.21	4.63	5.08	4.58	2.67	3.33	6.37
V99	10.00	8.00	6.12	7.20	9.88	8.00	2.88	4.88	4.13	5.94	2.19	4.69	6.06	4.63	1.88	3.44	4.06	3.31	2.06	3.06	5.12

Table 22 (continued)

Clones	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
V100	18.09	20.13	14.16	24.97	5.75	4.44	8.03	5.69	5.44	4.47	5.94	3.22	5.56	5.13	6.28	5.19	9.19	6.94	5.34	3.91	8.39
V110	11.00	10.15	9.40	8.10	8.15	7.00	6.75	5.56	3.75	4.47	6.13	4.38	6.88	7.63	4.50	3.00	3.88	2.75	2.75	2.75	5.95
V111	19.31	17.13	15.56	16.19	3.94	8.44	12.29	5.46	7.25	8.29	3.52	5.77	4.64	4.31	2.73	4.43	4.02	3.64	3.49	2.14	7.63
V112	15.25	14.63	9.63	21.00	2.06	2.19	2.06	11.00	6.63	3.65	3.40	3.63	3.75	3.48	3.75	2.52	2.58	3.81	3.40	2.92	6.07
V113	15.00	7.50	12.00	15.13	8.08	10.96	16.50	8.54	6.67	5.46	4.33	3.54	4.67	5.08	4.83	3.54	4.04	3.28	3.72	3.58	7.32
V114	14.00	10.25	14.08	15.10	4.71	9.83	10.95	6.59	4.50	4.33	2.98	3.30	4.34	4.91	3.22	3.54	4.07	2.75	2.39	3.28	6.46
V115	16.63	15.69	12.56	18.31	9.06	3.25	9.25	5.13	3.06	2.00	2.94	1.63	2.44	3.06	2.56	2.81	3.63	3.69	3.50	3.06	6.21
V116	16.25	9.13	12.38	19.88	1.75	3.25	14.75	5.25	4.00	1.50	3.38	3.25	3.75	3.63	5.75	3.63	2.88	2.25	2.25	2.50	6.07
V117	11.12	10.15	9.36	8.00	5.75	12.33	10.65	6.48	7.76	5.51	4.47	3.29	3.65	4.90	3.22	3.17	4.17	2.82	2.08	1.33	6.01
V118	21.50	14.42	13.25	20.13	9.96	16.50	7.75	3.17	3.25	9.46	2.58	4.21	3.38	4.88	4.04	5.71	4.83	3.67	2.67	1.50	7.84
V119	13.50	13.06	13.38	14.75	4.75	9.50	17.25	2.25	3.00	4.00	2.33	1.67	2.00	1.67	1.33	1.67	3.67	4.00	1.67	1.33	5.84
V120	16.94	15.38	11.19	11.94	5.81	9.42	5.75	4.13	2.42	3.88	4.22	3.63	4.93	3.34	2.63	2.72	3.72	2.63	1.76	2.18	5.93
V121	21.00	19.00	13.94	23.88	13.44	2.63	3.19	15.19	3.21	2.33	2.08	1.76	1.76	1.64	1.95	2.64	2.50	2.94	3.38	2.50	7.05
V122	14.38	14.91	12.16	13.50	9.28	4.63	14.28	5.94	3.22	2.31	1.84	2.06	3.00	4.09	3.41	3.84	3.72	3.66	3.16	2.41	6.29
V123	11.50	10.50	10.00	18.50	4.13	3.38	4.00	3.13	2.75	5.88	2.88	5.38	4.75	5.25	4.38	4.88	5.25	4.88	6.00	8.67	6.30
V124	17.31	13.81	12.38	16.38	7.38	9.56	7.72	5.38	4.09	6.00	3.97	5.63	5.28	6.91	6.13	6.19	4.72	6.88	5.44	3.03	7.71
V126	16.56	13.06	8.94	13.50	8.69	5.69	7.44	4.19	2.69	3.50	3.19	2.19	3.44	6.38	4.31	4.31	6.69	5.75	4.50	4.17	6.46
V127	12.71	14.10	8.33	16.33	3.15	4.15	10.96	6.81	3.19	2.38	6.31	3.56	6.38	6.79	7.83	4.25	6.27	5.96	4.06	4.96	6.92
V128	16.38	15.22	9.13	12.19	6.47	4.13	4.69	4.81	3.44	3.06	3.97	3.03	4.00	6.66	5.69	4.53	4.75	6.09	4.11	4.51	6.34
V129	15.78	11.34	12.22	16.09	3.34	6.25	9.88	6.50	4.69	3.13	2.94	3.56	3.25	3.94	4.22	4.59	3.38	4.03	2.78	2.74	6.23
V130	18.75	14.50	11.21	13.46	7.79	5.46	3.71	5.67	2.13	3.54	5.46	3.96	5.17	5.23	6.54	4.58	4.25	5.00	4.92	4.07	6.77
average	15.53	13.28	11.69	14.19	7.55	7.27	8.52	6.64	4.31	4.15	3.46	3.46	3.80	4.25	3.54	3.59	3.92	3.84	3.19	3.00	6.46

Remark: data was measured from the fist sample disc collected at 15 cm above ground level

Table 23 The linear regression equations of the annual ring of 19 year-old teak in Clone Bank, Uthai thani

Clones	Linear regression equation	F	R ²
V3	$Y = -21.498 + 0.134X_1 + 1.320X_2 - 0.113X_3 + 0.00585X_4 + 0.0793X_5 - 0.946X_6$	14.756	0.881
V4	$Y = 21.715 - 1.187X_1 + 1.412X_2 - 0.0553X_3 + 0.00142X_4 + 0.0702X_5 - 0.910X_6$	16.074	0.889
V7	$Y = -6.104 - 0.317X_1 + 1.376X_2 - 0.0637X_3 + 0.0025X_4 + 0.0464X_5 - 0.774X_6$	9.613	0.828
V22	$Y = 10.321 - 0.456X_1 + 0.682X_2 - 0.00039X_3 + 0.00068X_4 + 0.0394X_5 - 0.786X_6$	13.341	0.870
V23	$Y = 8.801 - 0.0235X_1 - 0.310X_2 - 0.0611X_3 + 0.00263X_4 + 0.151X_5 - 0.656X_6$	8.279	0.805
V24	$Y = 21.924 - 0.369X_1 - 0.109X_2 - 0.032X_3 + 0.00079X_4 + 0.102X_5 - 0.8X_6$	15.893	0.888
V25	$Y = 43.491 - 0.866X_1 + 0.595X_2 + 0.0342X_3 + 0.00064X_4 - 0.222X_5 - 0.57X_6$	5.498	0.733
V26	$Y = -27.977 + 0.13X_1 + 1.482X_2 - 0.0823X_3 + 0.00391X_4 + 0.1X_5 - 0.904X_6$	17.065	0.895
V27	$Y = -29.135 + 1.141X_1 - 0.224X_2 - 0.0634X_3 + 0.0028X_4 + 0.124X_5 - 0.687X_6$	8.807	0.815
V28	$Y = -34.213 + 0.544X_1 + 0.529X_2 - 0.0332X_3 + 0.228X_4 - 0.782X_5 - 0.782X_6$	9.832	0.831
V29	$Y = 70.996 - 1.847X_1 + 0.0772X_2 + 0.119X_3 - 0.00727X_4 + 0.0193X_5 - 0.556X_6$	14.091	0.876
V30	$Y = 11.996 + 0.134X_1 - 0.136X_2 - 0.0408X_3 + 0.00026X_4 + 0.0416X_5 - 0.667X_6$	15.631	0.887
V32	$Y = -16.545 + 0.0936X_1 + 0.954X_2 - 0.0353X_3 - 0.000438X_4 + 0.104X_5 - 0.592X_6$	5.236	0.724
V33	$Y = -9.095 + 0.0533X_1 + 0.654X_2 - 0.0525X_3 + 0.0016X_4 + 0.13X_5 - 0.852X_6$	7.434	0.788
V34	$Y = 12.336 - 0.243X_1 + 0.473X_2 - 0.0613X_3 + 0.00259X_4 + 0.0338X_5 - 0.808X_6$	8.367	0.807
V35	$Y = 37.757 - 0.84X_1 + 0.283X_2 - 0.0715X_3 + 0.0005X_4 + 0.0728X_5 - 1.059X_6$	19.450	0.907
V36	$Y = -25.315 + 0.746X_1 - 0.523X_2 - 0.0491X_3 + 0.0027X_4 + 0.316X_5 - 0.728X_6$	4.475	0.691
V37	$Y = 5.153 - 0.207X_1 + 0.435X_2 - 0.0533X_3 + 0.00326X_4 + 0.0648X_5 - 0.706X_6$	5.489	0.733
V38	$Y = -43.357 + 1.168X_1 - 1.167X_2 - 0.0366X_3 + 0.00242X_4 + 0.541X_5 - 0.877X_6$	12.830	0.865

Table 23 (continued)

Clones	Linear regression equation	F	R ²
V39	$Y = 68.499 - 1.631X_1 + 0.0828X_2 + 0.0346X_3 - 0.00537X_4 - 0.0093X_5 - 0.364X_6$	6.318	0.760
V40	$Y = -16.694 + 0.276X_1 + 0.676X_2 - 0.0503X_3 + 0.0024X_4 + 0.104X_5 - 0.753X_6$	9.813	0.831
V41	$Y = -11.169 - 0.0427X_1 + 1.023X_2 - 0.0105X_3 + 0.00183X_4 + 0.062X_5 - 0.819X_6$	9.207	0.822
V42	$Y = -43.193 + 0.832X_1 + 0.828X_2 + 0.00403X_3 - 0.00193X_4 + 0.149X_5 - 0.513X_6$	5.073	0.717
V43	$Y = -24.168 + 0.0083X_1 + 1.449X_2 - 0.0108X_3 - 0.00016X_4 + 0.0976X_5 - 0.799X_6$	15.095	0.883
V45	$Y = 22.852 - 1.156X_1 + 1.927X_2 - 0.0396X_3 + 0.0014X_4 - 0.105X_5 - 0.799X_6$	6.930	0.776
V46	$Y = 19.572 + 0.367X_1 - 2.617X_2 + 0.047X_3 - 0.005X_4 + 0.444X_5 - 0.424X_6$	5.835	0.745
V49	$Y = -35.353 + 0.453X_1 + 1.406X_2 - 0.0518X_3 + 0.00291X_4 + 0.078X_5 - 0.805X_6$	2.044	0.505
V69	$Y = 6.772 - 0.858X_1 + 1.532X_2 + 0.01749X_3 + 0.00306X_4 + 0.02645X_5 - 1.131X_6$	13.527	0.871
V72	$Y = 3.094 - 0.159X_1 + 0.674X_2 - 0.099X_3 + 0.0032X_4 + 0.0477X_5 - 0.664X_6$	4.908	0.710
V73	$Y = -56.447 + 0.512X_1 + 2.276X_2 - 0.0714X_3 + 0.0044X_4 + 0.05X_5 - 0.773X_6$	13.947	0.875
V74	$Y = -14.157 - 0.229X_1 + 1.206X_2 - 0.0409X_3 + 0.00168X_4 + 0.12X_5 - 0.567X_6$	7.821	0.796
V76	$Y = -26.975 + 0.244X_1 + 1.077X_2 - 0.0723X_3 + 0.0034X_4 + 0.131X_5 - 0.684X_6$	11.727	0.854
V78	$Y = -63.057 + 0.486X_1 + 2.291X_2 - 0.212X_3 + 0.00745X_4 + 0.26X_5 - 1.078X_6$	7.144	0.781
V80	$Y = -7.727 - 0.159X_1 + 0.9X_2 + 0.116X_3 + 0.00616X_4 + 0.126X_5 - 0.92X_6$	16.381	0.891
V81	$Y = -32.904 + 0.739X_1 + 1.07X_2 - 0.149X_3 + 0.0067X_4 + 0.0685X_5 - 1.03X_6$	7.495	0.789
V83	$Y = -51.331 + 0.796X_1 + 1.652X_2 - 0.107X_3 + 0.00336X_4 + 0.0874X_5 - 0.809X_6$	5.745	0.742
V84	$Y = -56.109 + 0.639X_1 + 2.043X_2 - 0.128X_3 + 0.00792X_4 + 0.117X_5 - 1.116X_6$	7.839	0.797
V85	$Y = 3.604 - 0.0754X_1 + 0.0228X_2 + 0.01307X_3 - 0.00049X_4 + 0.0747X_5 - 0.264X_6$	5.345	0.728

Table 23 (continued)

Clones	Linear regression equation	F	R ²
V86	$Y = -1.224 + 0.28X_1 - 0.845X_2 - 0.0162X_3 - 0.00059X_4 + 0.239X_5 - 0.233X_6$	2.773	0.581
V88	$Y = -15.940 - 0.0111X_1 + 1.141X_2 - 0.0262X_3 + 0.00245X_4 + 0.0229X_5 - 0.437X_6$	3.251	0.619
V89	$Y = -7.572 + 0.407X_1 - 0.197X_2 + 0.01613X_3 - 0.00026X_4 + 0.0846X_5 - 0.316X_6$	1.347	0.402
V90	$Y = 16.723 - 0.369X_1 + 0.665X_2 - 0.086X_3 + 0.00322X_4 - 0.0238X_5 - 0.759X_6$	5.320	0.727
V92	$Y = -25.281 + 0.586X_1 + 0.497X_2 - 0.085X_3 + 0.00527X_4 + 0.12X_5 - 0.904X_6$	7.673	0.793
V93	$Y = 88.675 - 2.524X_1 + 1.894X_2 - 0.0395X_3 - 0.00254X_4 - 0.299X_5 - 0.668X_6$	6.024	0.751
V95	$Y = 108.704 - 2.347X_1 + 0.277X_2 + 0.01819X_3 - 0.000479X_4 - 0.239X_5 - 0.540X_6$	4.260	0.681
V96	$Y = 10.317 - 0.289X_1 + 0.575X_2 - 0.0431X_3 + 0.00112X_4 + 0.0266X_5 - 0.663X_6$	7.007	0.778
V98	$Y = -8.37 + 0.429X_1 - 0.33X_2 - 0.079X_3 + 0.00253X_4 + 0.173X_5 - 0.412X_6$	6.082	0.753
V99	$Y = 24.899 - 0.306X_1 - 0.726X_2 - 0.00842X_3 - 0.00063X_4 + 0.129X_5 - 0.326X_6$	5.165	0.721
V100	$Y = -48.979 + 0.131X_1 + 2.675X_2 - 0.0747X_3 + 0.00514X_4 + 0.0552X_5 - 0.887X_6$	4.317	0.683
V110	$Y = -10.245 + 0.327X_1 + 0.171X_2 - 0.0314X_3 + 0.00158X_4 + 0.0786X_5 - 0.436X_6$	7.652	0.793
V 111	$Y = -18.458 - 0.2X_1 + 2.164X_2 - 0.0795X_3 + 0.0032X_4 - 0.0196X_5 - 0.939X_6$	17.608	0.898
V 112	$Y = -39.102 + 0.78X_1 + 2.485X_2 - 0.00408X_3 + 0.00052X_4 - 0.0803X_5 - 0.7X_6$	3.682	0.648
V 113	$Y = 13.279 + 0.0718X_1 + 0.426X_2 - 0.0919X_3 + 0.0024X_4 - 0.0846X_5 - 0.66X_6$	4.403	0.688
V 114	$Y = 8.3 - 0.418X_1 + 1.648X_2 - 0.105X_3 + 0.0043X_4 - 0.155X_5 - 0.764X_6$	11.164	0.848
V 115	$Y = -38.126 + 0.55X_1 + 0.823X_2 - 0.0719X_3 + 0.00449X_4 + 0.214X_5 - 0.92X_6$	6.265	0.758
V 116	$Y = -55.268 + 0.818X_1 + 2.302X_2 - 0.122X_3 + 0.007X_4 - 0.0719X_5 - 0.85X_6$	3.290	0.622
V 117	$Y = 50.207 - 1.121X_1 + 0.592X_2 + 0.0156X_3 - 0.00265X_4 - 0.153X_5 - 0.435X_6$	13.055	0.867

Table 23 (continued)

Clones	Linear regression equation	F	R ²
V 118	$Y = 45.591 - 1.302X_1 + 1.154X_2 - 0.123X_3 + 0.00152X_4 - 0.0235X_5 - 0.948X_6$	7.456	0.789
V 119	$Y = 10.127 - 0.474X_1 + 1.333X_2 - 0.103X_3 + 0.0039X_4 - 0.0633X_5 - 0.873X_6$	4.131	0.674
V 120	$Y = 6.499 - 0.683X_1 + 1.251X_2 - 0.037X_3 + 0.000373X_4 + 0.0664X_5 - 0.763X_6$	25.404	0.927
V 121	$Y = -37.987 + 0.76X_1 + 0.302X_2 - 0.0506X_3 + 0.00247X_4 + 0.311X_5 - 1.149X_6$	3.929	0.663
V 122	$Y = -22.445 + 0.402X_1 + 0.294X_2 - 0.0467X_3 + 0.00357X_4 + 0.197X_5 - 0.795X_6$	5.370	0.729
V 123	$Y = -38.570 + 0.38X_1 + 1.816X_2 - 0.1X_3 + 0.0055X_4 - 0.0093X_5 - 0.524X_6$	2.234	0.528
V 124	$Y = -2.576 - 0.363X_1 + 1.354X_2 - 0.0705X_3 + 0.00239X_4 + 0.0306X_5 - 0.642X_6$	6.578	0.767
V 126	$Y = -16.236 + 0.1X_1 + 0.297X_2 - 0.0581X_3 + 0.0012X_4 + 0.262X_5 - 0.566X_6$	5.526	0.734
V 127	$Y = -38.598 + 0.316X_1 + 1.839X_2 - 0.0195X_3 + 0.00165X_4 + 0.0027X_5 - 0.472X_6$	2.933	0.595
V 128	$Y = -31.560 + 0.127X_1 + 1.014X_2 - 0.014X_3 + 0.00055X_4 + 0.22X_5 - 0.543X_6$	9.300	0.823
V 129	$Y = -15.271 - 0.132X_1 + 1.844X_2 - 0.0781X_3 + 0.0034X_4 - 0.052X_5 - 0.731X_6$	7.280	0.784
V 130	$Y = -38.343 + 0.38X_1 + 0.995X_2 - 0.0605X_3 + 0.00263X_4 + 0.235X_5 - 0.671X_6$	7.983	0.800

Where;

Y = Expected ring width (mm)

X₁ = High temperature (°C)

X₂ = Low temperature (°C)

X₃ = The number of rainy day (days)

X₄ = Annual rainfall (mm)

X₅ = Relative humidity (%)

X₆ = Age (years)

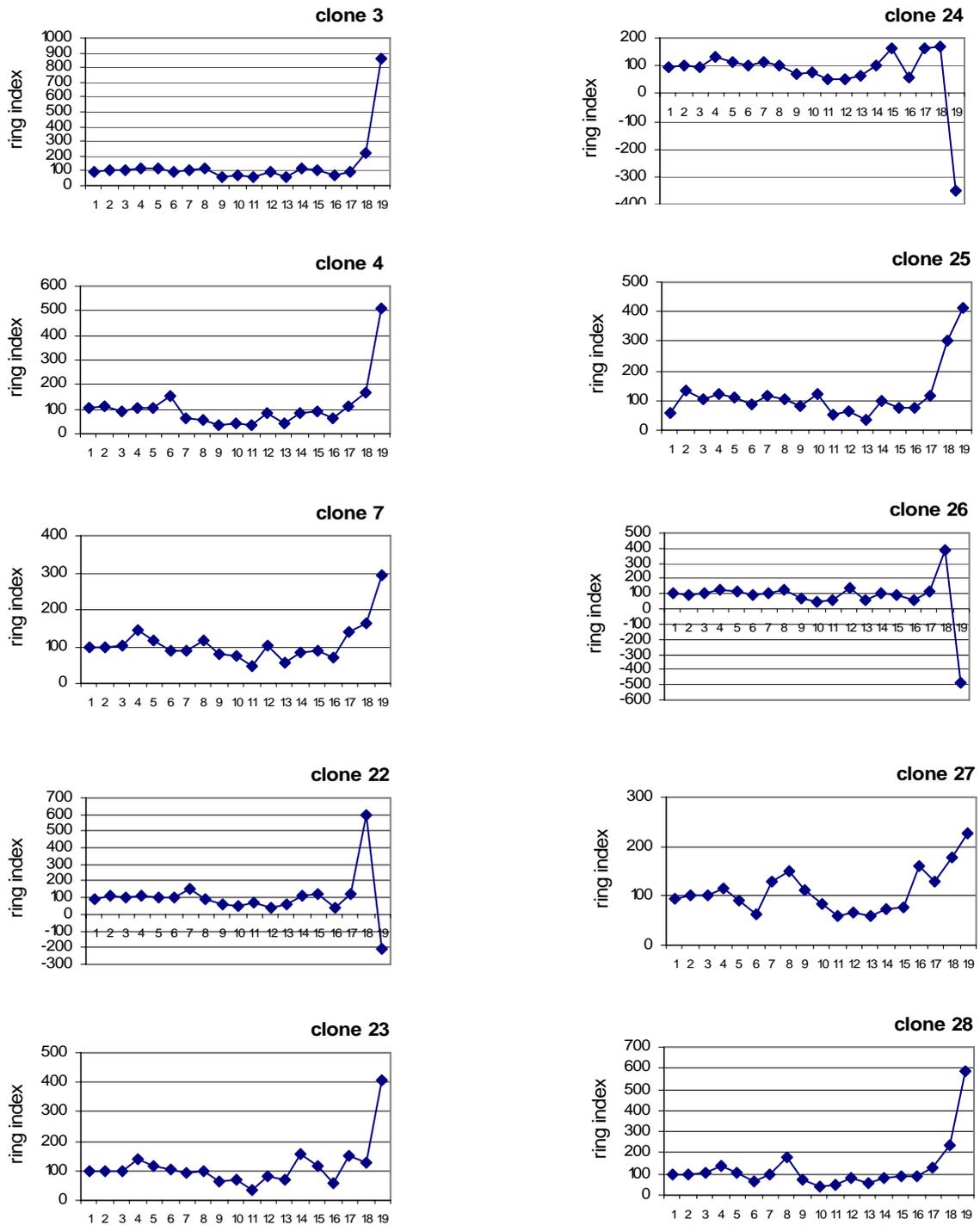


Figure 18 Ring indices of 19 years old teak in Clone Bank established in Uthai Thani in 1983.

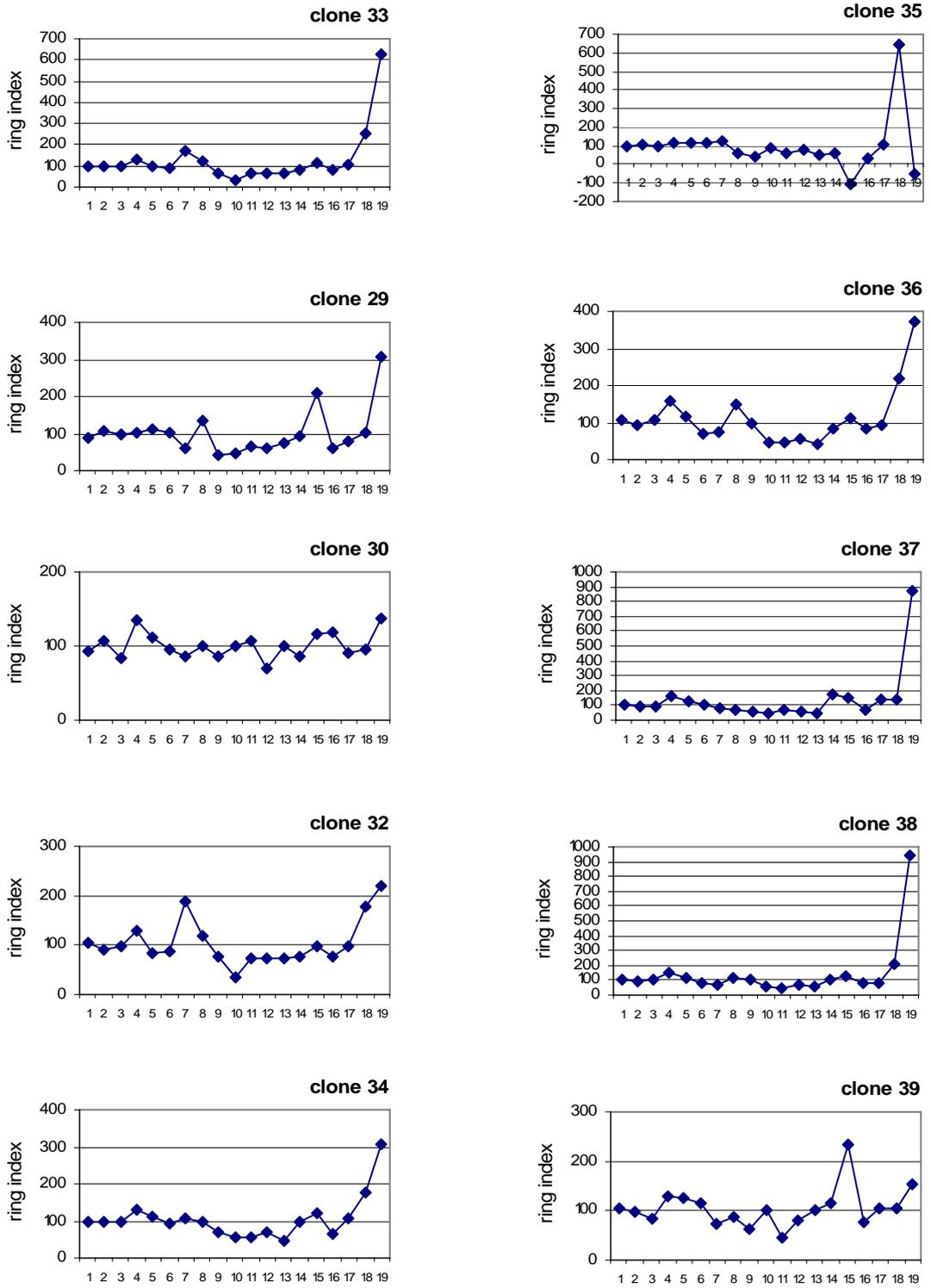


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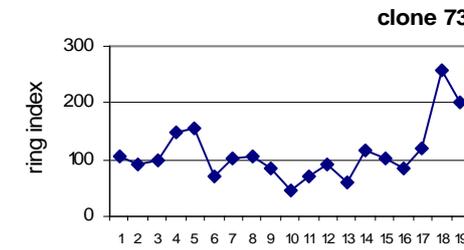
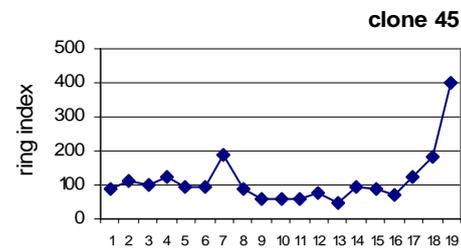
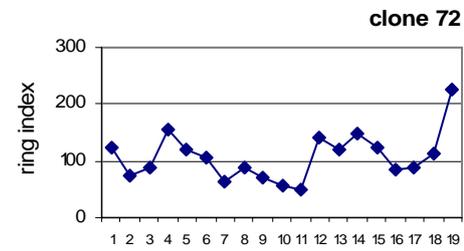
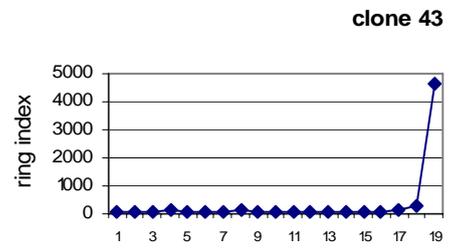
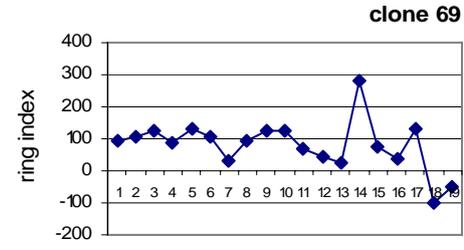
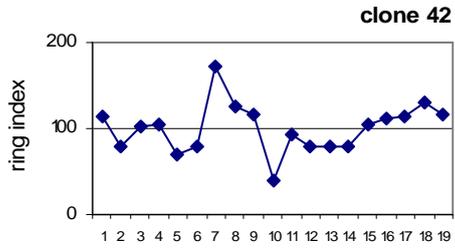
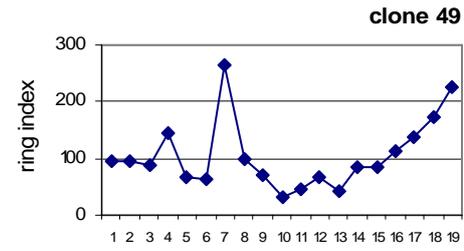
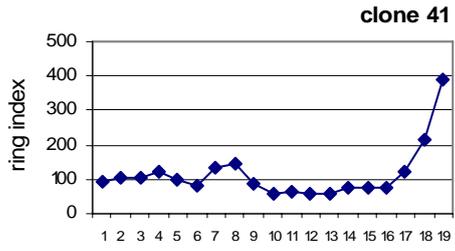
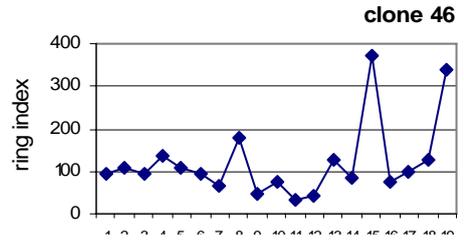
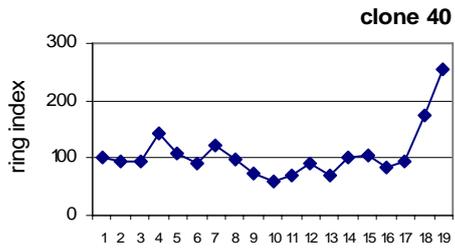


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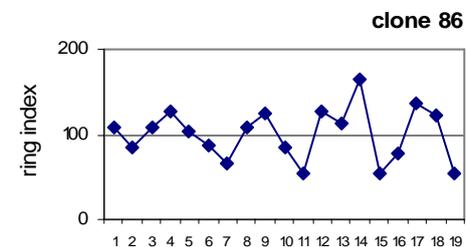
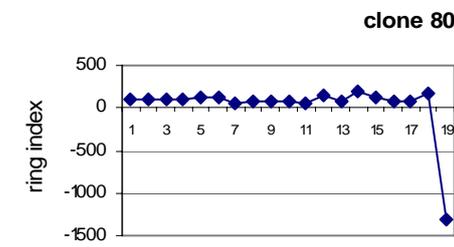
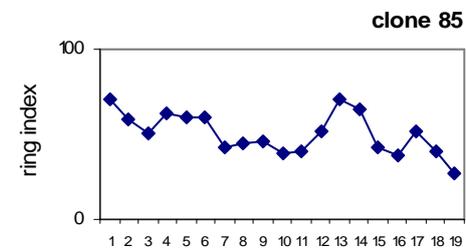
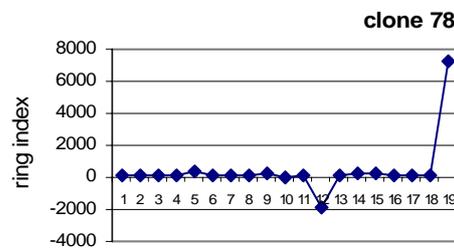
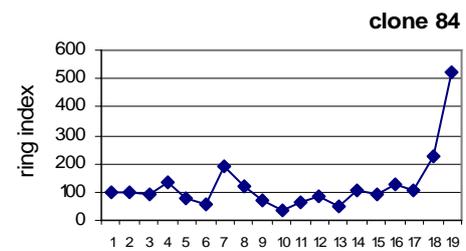
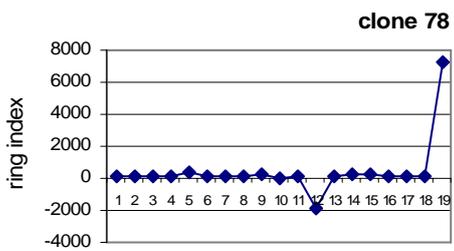
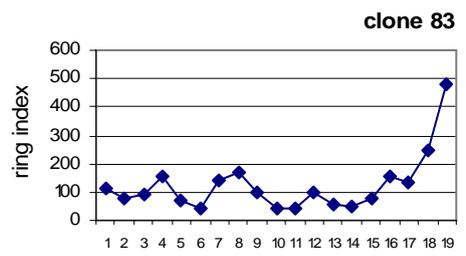
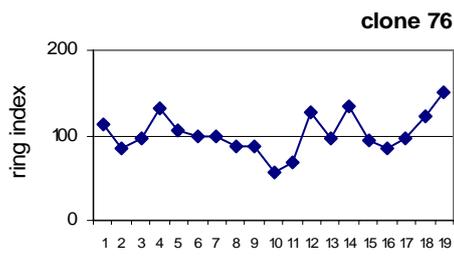
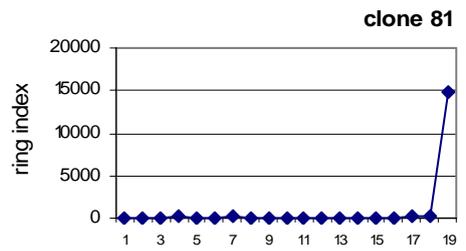
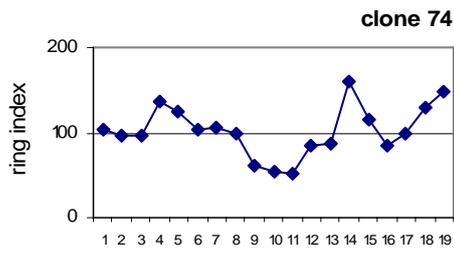


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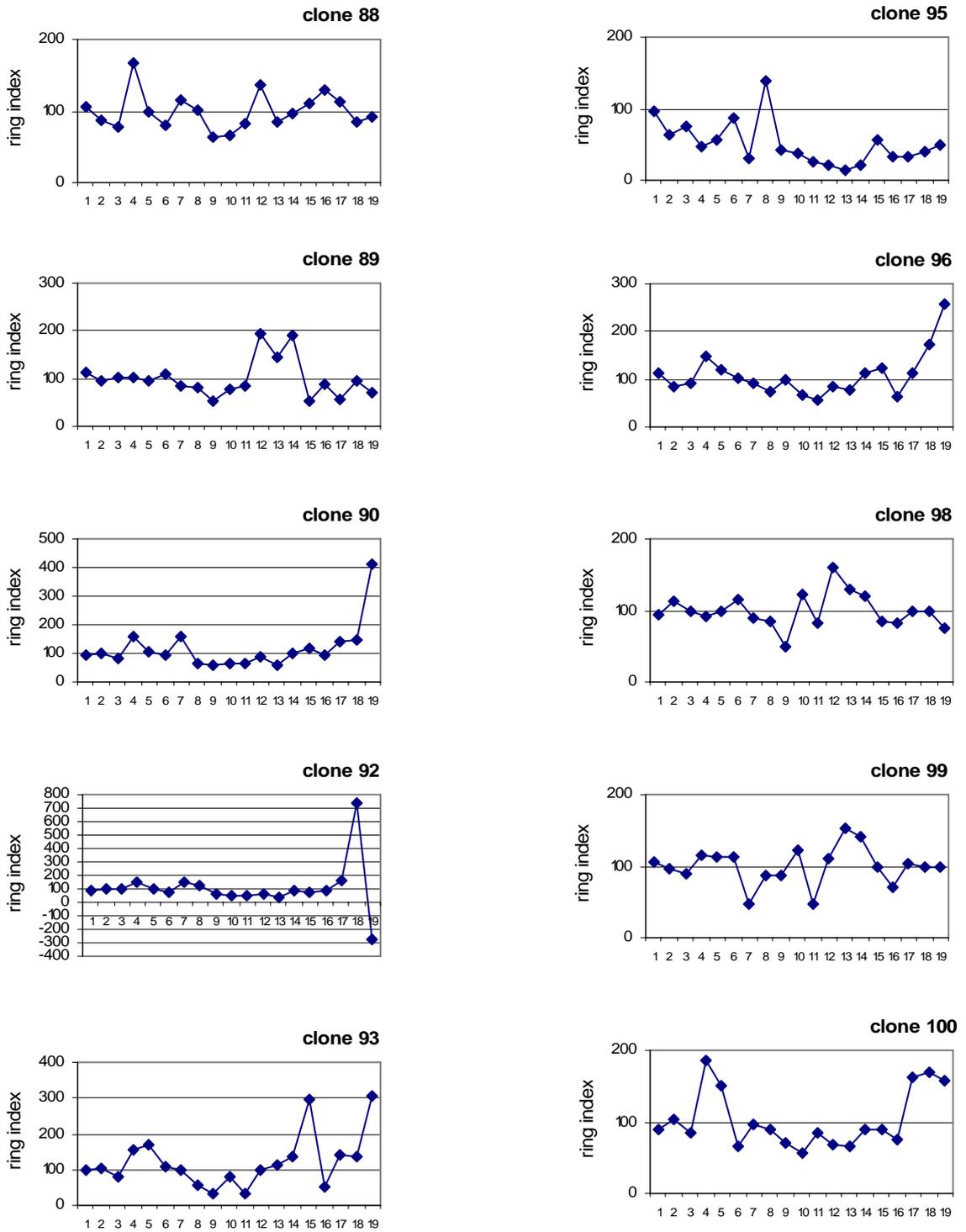


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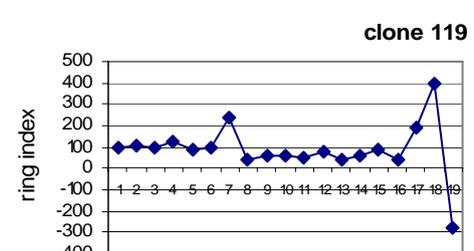
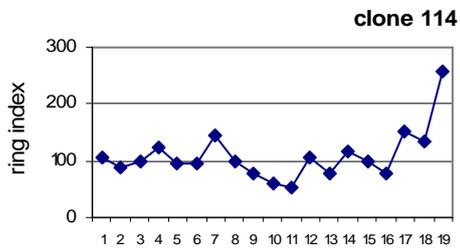
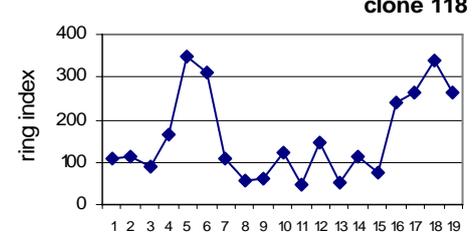
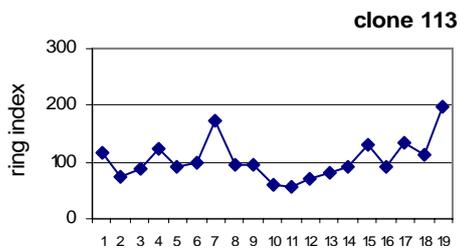
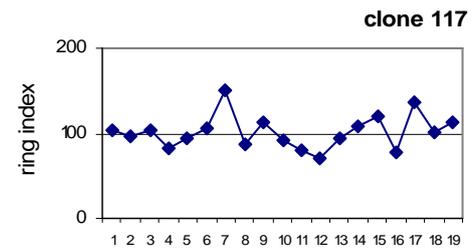
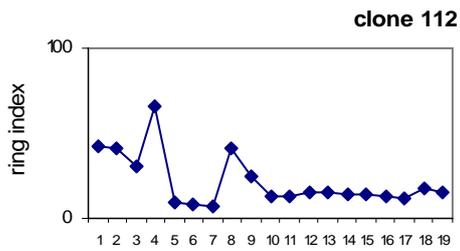
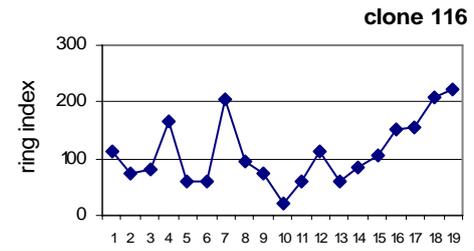
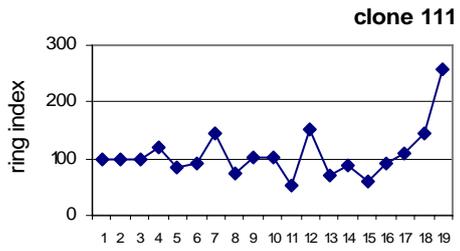
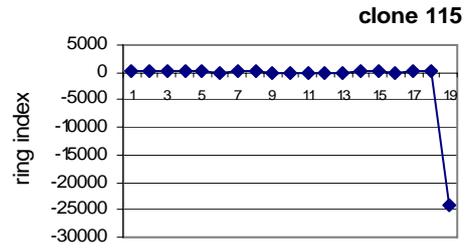
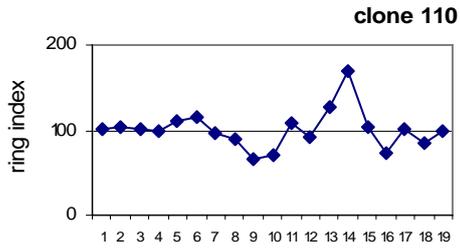


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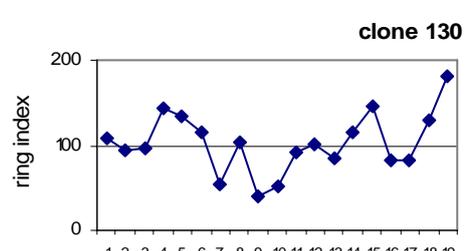
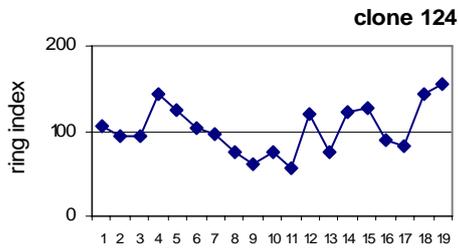
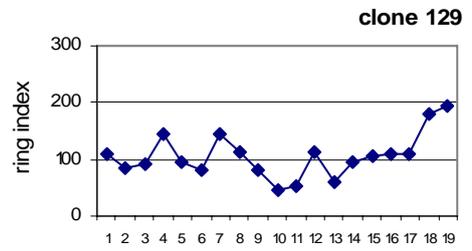
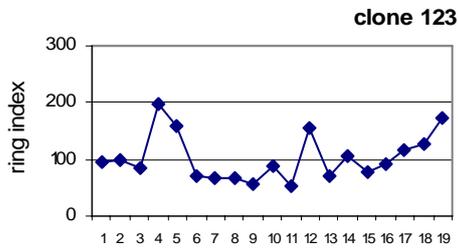
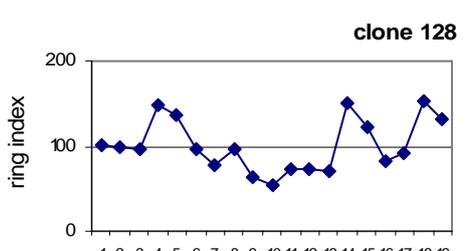
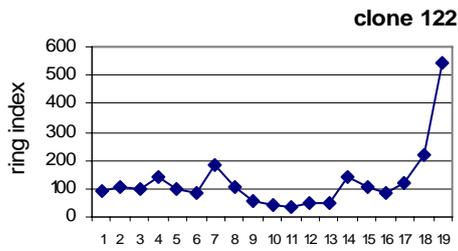
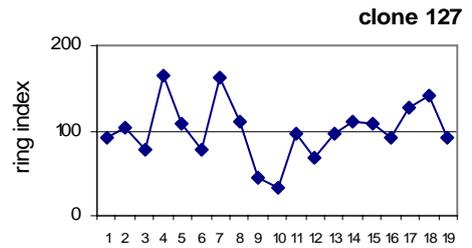
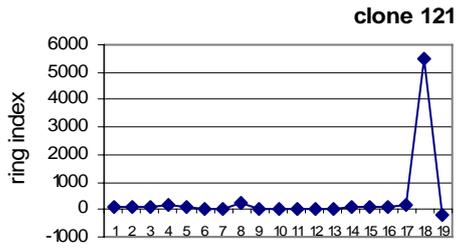
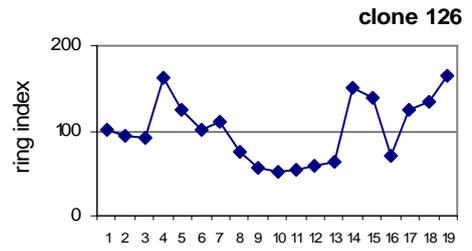
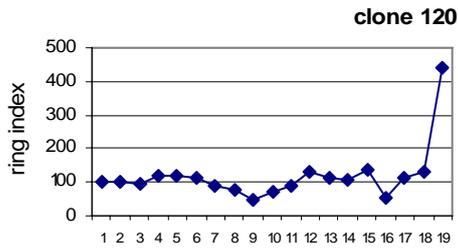


Figure 18 (continued).