Seminario

Manejo del riego y suelo en el cultivo del palto

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Gobierno de Chile
Ministerio de Agricultura

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RE-EVALUATION OF IRRIGATION WATER AMOUNTS UNDER CHANGING GROWING CONDITIONS OF AVOCADOS IN ISRAEL

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Average water and fertilizer quantities applied during 5 years

	Relative water amount (%)			
	85	100	115	130
Water (mm)	530-800	610-990	710-1200	800-1430
N (kg/ha)	164-266	186-331	215-399	230-477
P_2O_5 (kg/ha)	60	75	90	107
K_2O (kg/ha)	164-235	186-292	215-352	230-420

The effect of water amount and growth retardant on the annual increase (%) in trunk circumference (5 yrs avg.)

Cultivar	Growth retardant	Relative water amount (%)				S.E. (Water)	Avg	S.E. (Gr. R)	Sig.
		85	100	115	130				
Ettinger	+	2.4	4.2	3.8	4.2	0.55	3.7	0.28	N.S
	-	3.8	2.8	3.8	3.7		3.5		
	Avg.	3.1b	3.5ab	3.8a	3.9a	0.39	3.6		0.049
Hass	+	2.8	4.3	4.4	3.4	0.55	3.8	0.28	N.S
	-	3.0	5.1	3.2	3.2		3.6		
	Avg.	2.9b	4.7a	3.8ab	3.3ab	0.39	3.7		0.027

The effect of water amount and growth retardant on the number of fruits/ tree (5 yrs avg.)

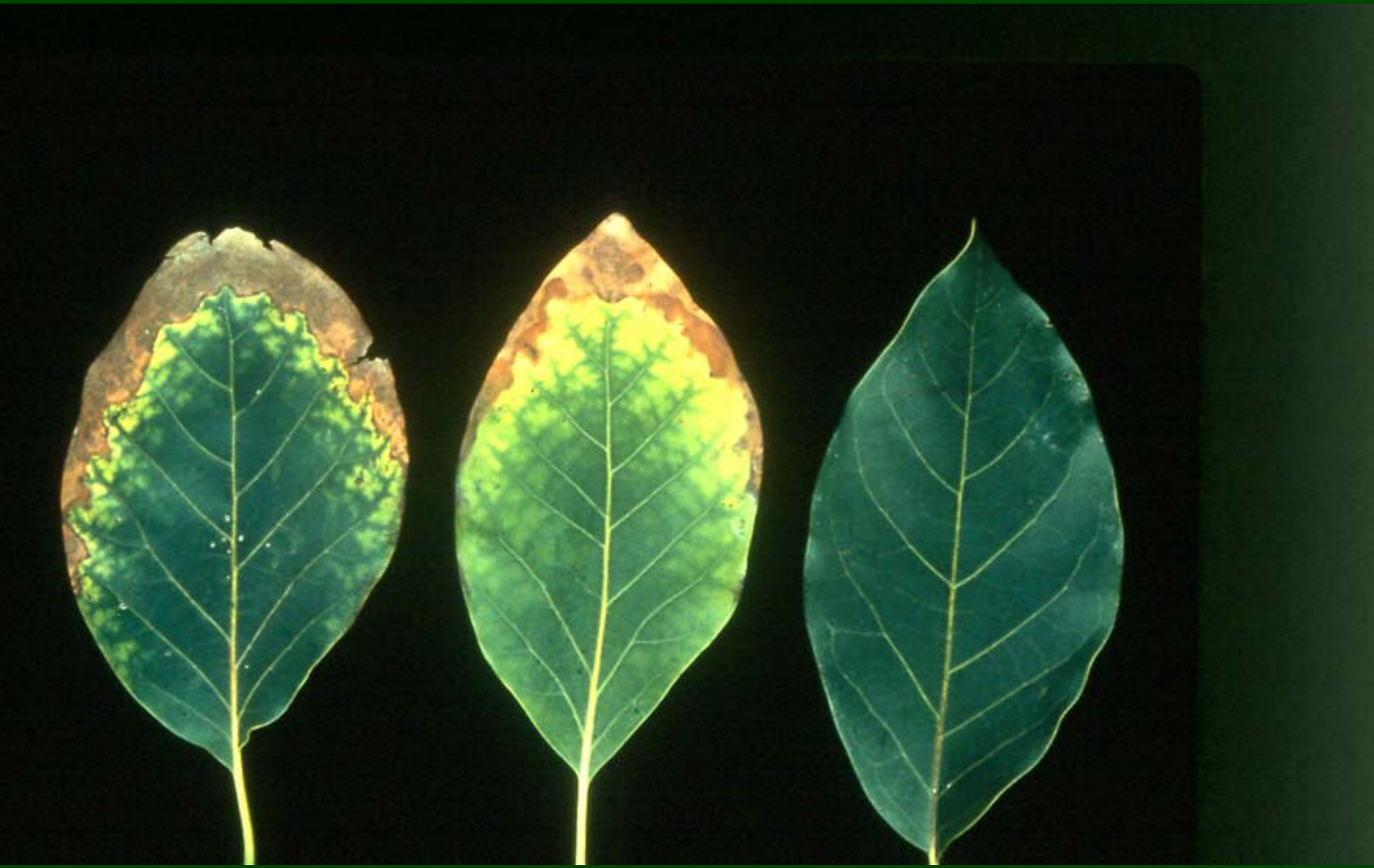
Cultivar	Growth retardant	Relative water amount (%)				S.E. (Water)	Avg.	S.E. (Gr R)	Sig.
		85	100	115	130				
Ettinger	+	190.0a	176.8a	120.9b	125.2b	13.9	153.2	6.9	0.040
	-	154.7	144.6	181.5	135.0		154.0		
	Avg.	172.4a	160.7ab	151.2ab	130.1b	9.8	153.6		0.040
Hass	+	280.3	277.6	264.5	256.7	18.2	269.8	9.1	N.S.
	-	260.5	263.0	294.1	292.0		277.4		
	Avg.	270.4	270.3	279.3	274.4	12.9	273.6		N.S.

The effect of water amount and growth retardant on fruit weight (g) (5 yrs avg.)

Cultivar	Growth Retardant	Relative water amount (%)				Avg.
		85	100	115	130	
Ettinger	+	282	284	296	291	288.4
	-	287	288	292	289	289.1
	Avg.	285	286	294	290	288.7
Hass	+	197	204	205	205	202.7
	-	197	197	201	197	197.8
	Avg.	197	200	203	200	200.2

The effect of water amount and growth retardant on the yield (t/ha) (5 yrs avg.)

Cultivar	Growth retardant	Relative water amount (%)				S.E. (Water)	Avg.	S.E. (Gr. R)	Sig.
		85	100	115	130				
Ettinger	+	14.5	11.4	12.1	14.6	1.12	13.1	0.59	N.S.
	-	13.8	10.0	13.0	10.8		11.9		
	Avg.	14.2a	10.7b	12.6ab	12.7ab	0.83	12.5		0.058
Hass	+	15.0	14.8	14.1	16.5	0.82	15.1	0.41	N.S.
	-	15.5	14.9	15.3	16.2		15.5		
	Avg.	15.2	14.8	14.7	16.3	0.58	15.3		N.S.



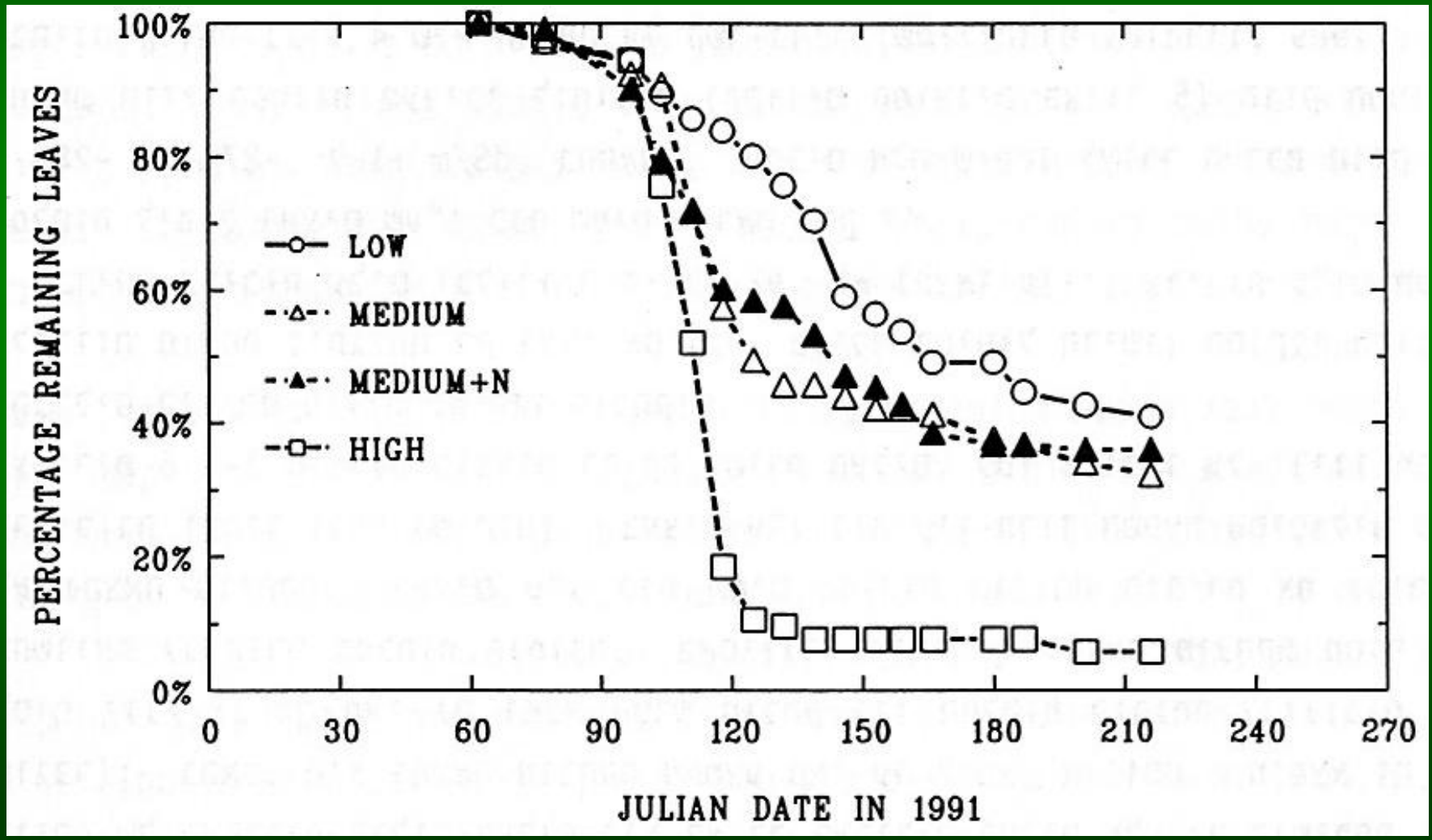
Effects of irrigation water salinity on some soil parameters in 0-60 cm layer during 3 irrigation seasons

Parameter	Chloride concentration (mg L^{-1})				S.E.
	90	250	250-420	420	
Cl (meq $L^{-1}L$)	3.3 c	7.7 b	8.8 b	11.7 a	0.5
Na (meq L^{-1})	2.8 c	6.5 b	7.1 ab	7.7 a	0.2
EC (dS m^{-1})	1.03 c	1.40 b	1.80 ab	2.04 a	0.06
SAR	1.08 c	2.46 b	2.73 ab	2.91 a	0.13
$N\text{-}NO_3$ (mg kg^{-1})	3.8 a	3.8 a	3.4 ab	3.0 b	0.3

The effect of salinity and rootstock on leaf burns in the autumn (0 - no burns; 3 - sever scorching)

Cultivar	Rootstock	Chloride concentration (mg L^{-1})				S.E.
		90	250	250-420	420	
Ettinger	Mexican	0.4 c	1.6 b	1.9 ab	2.3 a	0.2
	West-Indian	0 b	0.5 ab	0.5 ab	0.9 a	0.25
Hass	Mexican	0.2 b	1.3 a	1.4 a	1.8 a	0.3
	West-Indian	0	0.3	0.1	0.1	0.15

Leaf shedding of Ettinger/Mexican rootstock for 4 salinity & Nitrogen treatments



The effect of salinity and rootstock on cumulative yield (kg/tree) for the first 7 years after planting

Cultivar	Rootstock	Chloride concentration (mg L^{-1})				S.E.
		90	250	250-420	420	
Ettinger	Mexican	139 a	99 b	83 b	87 b	10.6
	West-Indian	174 a	152 ab	152 ab	121 b	13.3
Hass	Mexican	116 a	95 ab	63 b	68 b	13.2
	West-Indian	154 a	145 ab	139 ab	116 b	10.2

Effect of salinity and rootstock on fruit size (g)

Cultivar	Rootstock	Chloride concentration (mg L^{-1})				S.E.
		90	250	250-420	420	
Ettinger	Mexican	298 b	302 ab	297 b	322 a	5.6
	West-Indian	295	293	297	300	3.2
Hass	Mexican	152	143	150	140	4.2
	West-Indian	133 a	166 b	171 b	194 a	6.3

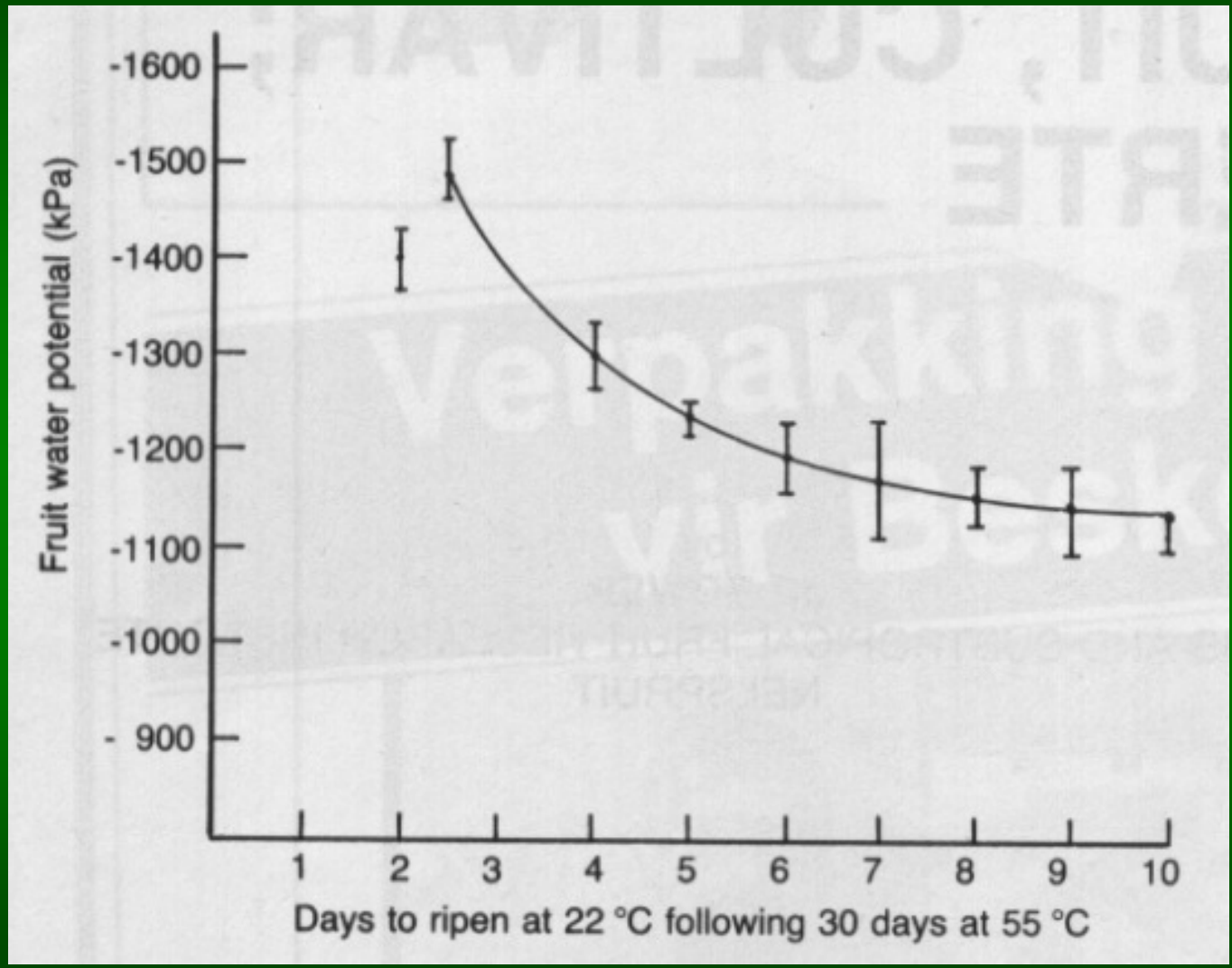
Effect of salinity, irrigation regime and rootstock on the average yields for 'Ettinger' and 'Hass' (kg/tree) 5 years after planting.

Rootstock	Irrigation regime	Chloride concentration (mg L^{-1})			
		90	250	250-420	420
Mexican	Regular	14.4	9.9	9.4	7.8
	Leaching	16.8	13.3	9.3	9.0
	+ N		13.8		
	Average	15.6	11.6	9.4	8.4
West-Indian	Regular	21.2	16.6	17.6	17.7
	Leaching	27.8	22.2	23.6	19.8
	+ N		21.1		
	Average	24.5	19.4	20.6	18.7

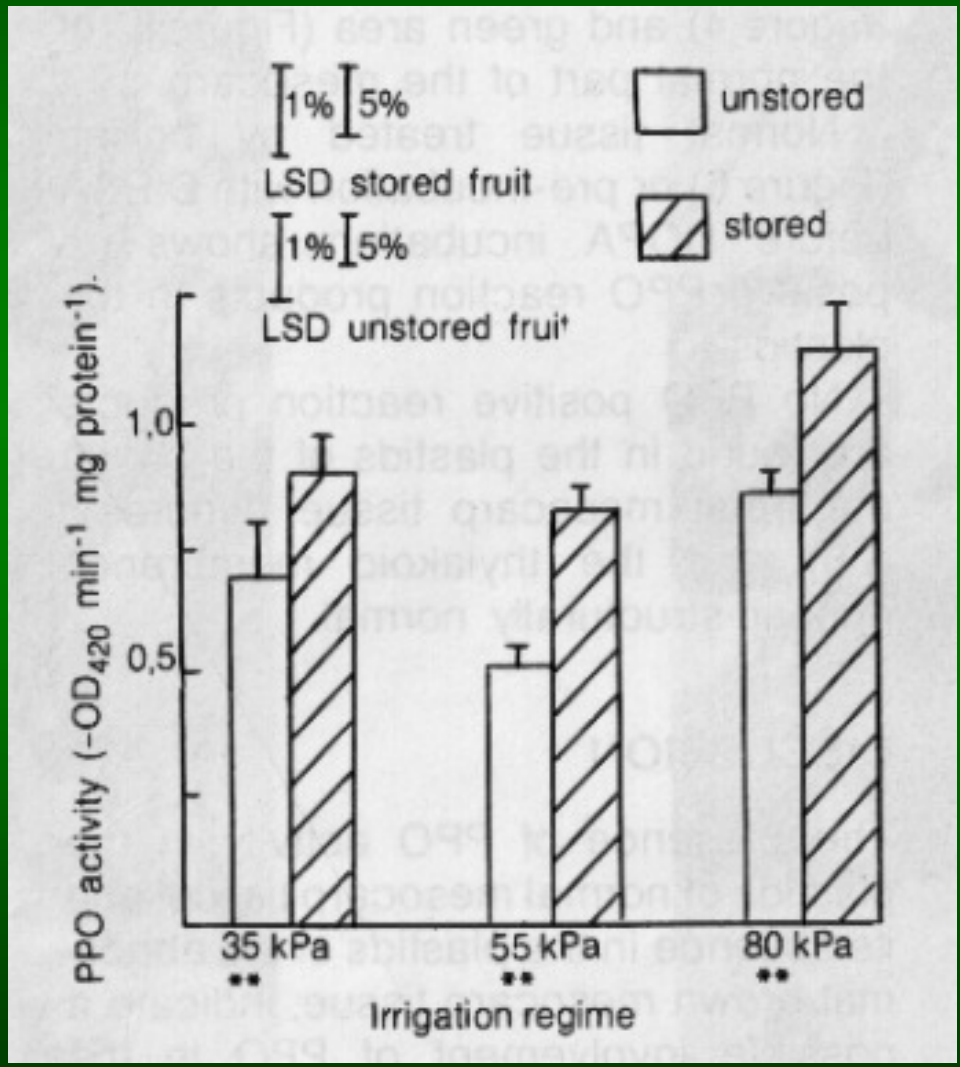
Effect of water amount (and irrigation interval) on avocado fruit oil content (%)

Cultivar	Fruit weight (g)	Water amount (mm) and irrigation interval (days)				S.E.	Sig.
		889 (7)	745(14)	668(21)	594(28)		
Fuerte	445 364 261	14.6 16.3a 14.8ab	16.9 15.8ab 15.2ab	15.3 15.3ab 15.5a	15.2 14.5b 13.5b	1.02 0.56 0.43	N.S. 0.05 0.05
Ettinger	298 277 234	10.7a 10.4a 9.0	10.3ab 10.0a 9.5	9.4c 10.1a 8.9	9.9bc 9.3b 9.2	0.23 0.17 0.22	0.01 0.01 N.S.

Influence of fruit water potential on days to ripening after storage



Influence of irrigation regime on soluble PPO activity on stored and unstored Fuerte avocado fruit for April harvest. Significance at P=0.01 is indicated by **. Bars indicate SE of means, ten samples per mean.



The effect of irrigation (%ET) on flesh/vascular discoloration.