

SEASONAL INCIDENCE OF RING-NECK ON AVOCADOS AND POSSIBLE CAUSES

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OPSOMMING

Ring-nek van avokados is 'n verskynsel waar die stingel van avokados oppervlakkig beskadig word. Weens gebrek aan inligting ten opsigte van oorsaak en beheer is Studie gedoen om seisoensvoorkoms tussen kultivars en verskillende boorde te bepaal en deur blaaren grondontledings indikasies te kry op moontlike oorsake.

Kultivars het heelwat verskil, Fuerte die mees sensitiewe en Hass die meer bestānde kultivar.

Simptome op Fuerte het vroeg in November reeds begin.

Blaar ontledings het gedui op die volgende:

Hoë stikstof ge-assosieer met laer persentasie ring-nek simptome. Hoar potas ge-assosieer met hoer persentasie ring-nek simptome. Magnesium tekort ge-assosieer met hoer persentasie ring-nek simptome. Hoer mangaan ge-assosieer met laer persentasie ring-nek simptome.

Hierdie is slegs 'n voorlopige opname en genoemde norme moet op hierdie stadium slegs dien as hulp vir verdere ondersoeke.

SUMMARY

Ring-neck appears as a surface lesion on the pedicle of the avocado. As very little is known about the causes and control of this phenomenon a study was made of the seasonal occurrence between the cultivars and different orchards. Soil and leaf analyses were carried out to determine possible correlations between ring-neck and nutrient deficiencies.

Considerable variation was found between the cultivars, with Fuerte being the most sensitive and Hass more resistant. The symptoms on Fuerte appeared early in November. Leaf analyses showed the following:

A high nitrogen associated with a lower percentage of ring-neck symptoms.

A high potassium associated with a higher percentage of ring-neck symptoms.

A deficiency in magnesium associated with a higher percentage of ring-neck symptoms.

A high manganese associated with a lower percentage of ring-neck symptoms.

This is a preliminary survey and can only serve as a guide-line to further investigations.

INTRODUCTION

Ring-neck was first described by Coit (1928) as a blemish, usually on the fruit stem or pedicel consisting of irregular areas of superficial dried tissues which become separated from the living tissue. Sometimes a complete ring of necrotic surface tissue, separates from the pedicels, and peels off, leaving a scar. Occasionally similar lesions develop on the fruit. Coit (1927) suggested that ring-neck may be caused by some organism. When affected in the early stages of growth fruit ceases to grow and remains stunted and small.

In Southern Africa ring-neck was first recorded in 1940 by Deeds (1940) in Penhalonga, Rhodesia.

At Westfalia it was found that fruit associated with ring-neck was retarded in growth and abnormal in shape. The seed and/or seed coat was found to be affected to some degree and in severe cases died. Cracking of the fruit skin was also found.

Darvas (1979) found that ring-neck is not due to a fungal pathogen. The object of this investigation was to:

- a) Determine the seasonal incidence of ring-neck on avocados of Fuerte, Edranol and Hass.
- b) Determine the incidence of ring-neck in 2 different localities.
- c) To get indications as to the cause of ring-neck of avocados through leaf and soil analysis.

PROCEDURE

From 1978-11-07 to 1979-04-24 1 000 fruit per block were inspected for the presence of ring-neck symptoms on a weekly basis in 2 areas, each representing blocks of Fuerte, Edranol and Hass.

Leaf and soil analysis were taken for each block during March, 1979.

DISCUSSION AND CONCLUSION

1. Seasonal incidence of Fuerte, Edranol & Hass

According to Fig. 1 the following observations were made:

On Fuerte ring-neck appeared early November and had the highest incidence of $\pm 13\%$

On Edranol ring-neck appeared late February and built up to $\pm 9\%$

On Hass ring-neck appeared during November at a low incidence, and decreased during December to $\pm 5\%$, probably due to fruit drop.

2. The incidence of ring-neck in 2 different localities

According to Figs. 2, 3 and 4 the following comments can be made:

On Fuerte at Westfalia, block 37 was a higher incidence ($\pm 17\%$) than Fowey, block 9A ($\pm 10\%$)

On Edranol at Westfalia, block 31 was a higher incidence ($\pm 15\%$) of ring-neck than Fowey, block 10 ($\pm 6\%$)

On Hass at Fowey, block 9C was a slightly higher incidence ($\pm 6\%$) than Westfalia, block 37 ($\pm 4\%$)

Different orchards of Fuerte and Edranol showed a marked difference in the incidence of ring-neck. The Hass orchards varied less.

3. Leaf and Soil Analysis

According to Table 1 the following points are noteworthy:

Nitrogen: A high level of N is associated with a lower incidence of ring-neck.

Potash: A higher level of K is associated with a higher incidence of ring-neck.

Magnesium: A low level of Mg is associated with a higher incidence of ring-neck

TABLE 1: Results of leaf analysis on three cultivars and two localities

	Leaf Analysis												Soil Analysis							
	Block	N	P	K	Ca	Mg	Zn	Cu	Mn	Fe	B	pH	Resist.	Ca	Mg	K	P	Al		
FOWEY																				
Fuerte	9A	2,80	0,12	0,90	1,15	0,73	67	11	520	109	37	5,8	1 850	800	250	125	16,0	5,4		
Edranol	10	2,44	0,14	0,81	1,35	0,54	71	10	475	70	21	5,51	1 700	825	133	55	15,0	3,6		
Hass	9C	2,68	0,15	0,87	1,15	0,78	83	10	415	72	21	5,7	1 450	775	188	98	2,0	5,4		
Average		2,64	0,14	0,86	1,21	0,68	73,6	10,3	470	83,6	26,3	5,67	1 666	800	190	93	11,0	4,5		
WESTFALIA																				
Fuerte	37	1,52	0,15	1,4	0,57	0,265	27	14	65	86	34	5,4	1 600	550	180	158	2,0	9,0		
Edranol	31	2,08	0,16	1,38	0,84	0,37	32	11	195	85	33	5,5	1 400	900	188	180	15,0	9,9		
Hass	37	1,90	0,15	1,32	0,68	0,26	38	12	72	76	28	5,4	1 600	550	180	158	2,0	9,0		
Average		1,83	0,15	1,36	0,70	0,30	35,6	12,3	107	82,3	31,6	5,43	1 533	666	182	162	6,3	9,3		

RESULTS

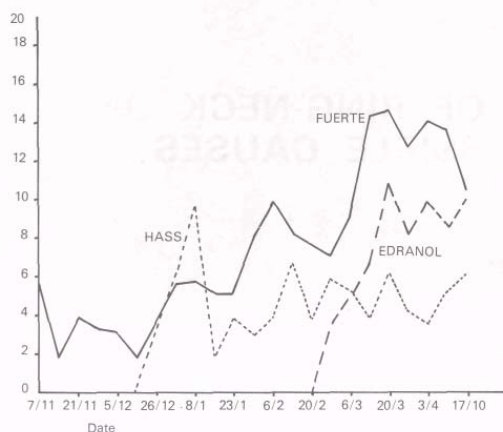


FIG. 1: The seasonal incidence of ring-neck on Fuerte, Hass and Edranol

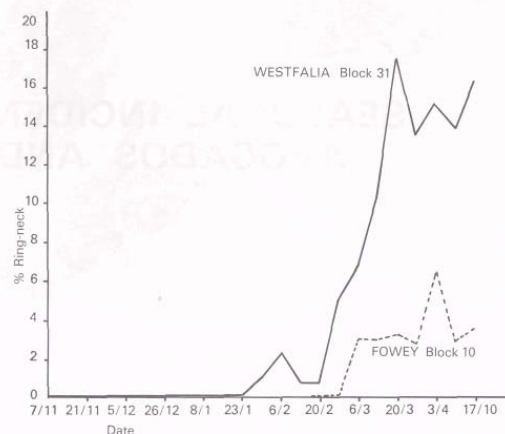


FIG. 3: The incidence of ring-neck on Edranol fruit on two different localities



FIG. 2: The incidence of ring-neck on Fuerte on two different localities

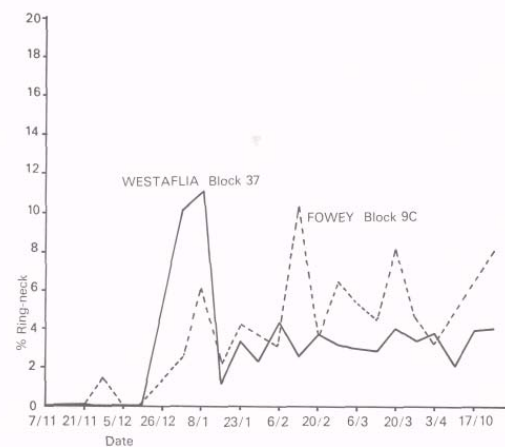


FIG. 4: The incidence of ring-neck on Hass fruit on two different localities

REFERENCES

1. COIT, DR JE. Calif. 1927. Avocado Association Yearbook.
2. COIT, DR J.E. 1928. Pests and diseases of the Avocado. Cal. Assoc. Yearbook.
3. DEEDS, PC. 1940. A Letter from Africa. Cal. Avo Assoc. Yearbook.
4. DARVAS, JM. 1979. Personal communication.