

METALOSATE[®] TRIAL TO CONTROL TIPBURN IN 'HUZARO' & 'FUEGO' RED CABBAGE

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Abstract

Internal and external tipburn is a big problem in red cabbage in Denmark. Internal tipburn is worse than external because the growers have to open the heads to be sure the heads are without tipburn. If 6 out of 10 heads have tipburn at control the whole truckload is discarded.

There was a tendency for applications of Metalosate[®] Calcium to reduce the number of red cabbage with internal tipburn.

Unfortunately, the trend was not statistically significant in either of the trials. This was probably due to the small number of heads per plot. In the variety 'Huzaro' the number of heads with external tipburn was significantly reduced. Calcium seemed to delay the time of harvest and the variance in the size of the heads was reduced. This has been observed in other vegetable crops. The growers will accept smaller heads if they are without tipburn. A trial in 2002 showed that T.E.A.M.[®] treatment of red cabbage increased the weight of the heads by approximately 1 kg (2.2 lbs.) compared to untreated heads.



Figure 1. External Tipburn in 'Huzaro'

Purpose

Tipburn is a big problem in certain varieties. Red cabbage can either have internal tipburn, external tipburn or both. The red cabbage is culled when 6 out of 10 heads have internal tipburn. The threshold for culling is one leaf with tipburn.

Trial Plan 'Huzaro' Red Cabbage

Four plots per treatment and 10 heads per plot. Distance between plots: 8-10 metres. The heads were cut over three rows.

Dosage: 1.5 litres/hectare (20 fluid ounces/acre) Metalosate Calcium

Treatments: July 15, 2003
 July 21, 2003
 August 7, 2003

Harvest: September 16, 2003

Results

Table 1					
Variety 'Huzaro.' The Number of Red Cabbage per Plot with Internal and External Tipburn (See Photos).					
External Tipburn					
Treatment	Plot 1	Plot 2	Plot 3	Plot 4	Number
Untreated	2	4	3	2	11
3 x Calcium	1	1	1	1	4*
Internal Tipburn					
Treatment	Plot 1	Plot 2	Plot 3	Plot 4	Number
Untreated	3	3	3	2	11 ns
3 x Calcium	3	1	2	1	7 ns

Statistic: ANOVA

*There were significantly fewer calcium treated red cabbage with external tipburn on a 5% level ($p=0.046$). There was no significant difference on the number of red cabbage with internal tipburn.

Table 2			
Percentage Red Cabbage with Internal or External Tipburn.			
Treatment	Percentage With Internal Tipburn	Percentage With External Tipburn	Percentage Red Cabbage with Both Internal and External Tipburn
Untreated	27.5	27.5	10.0
3 x Calcium	17.5	10.0	7.5

We observed a trend that cabbage with external tipburn treated with calcium had a bigger chance of also having internal tipburn.

Table 3	
Variety 'Fuego'. The Number of Heads with External and Internal Tipburn. 20 Heads per Treatment.	
Treatment	Tipburn
Untreated	0
3 x Calcium	0

The variety 'Fuego' had no external or internal tipburn.

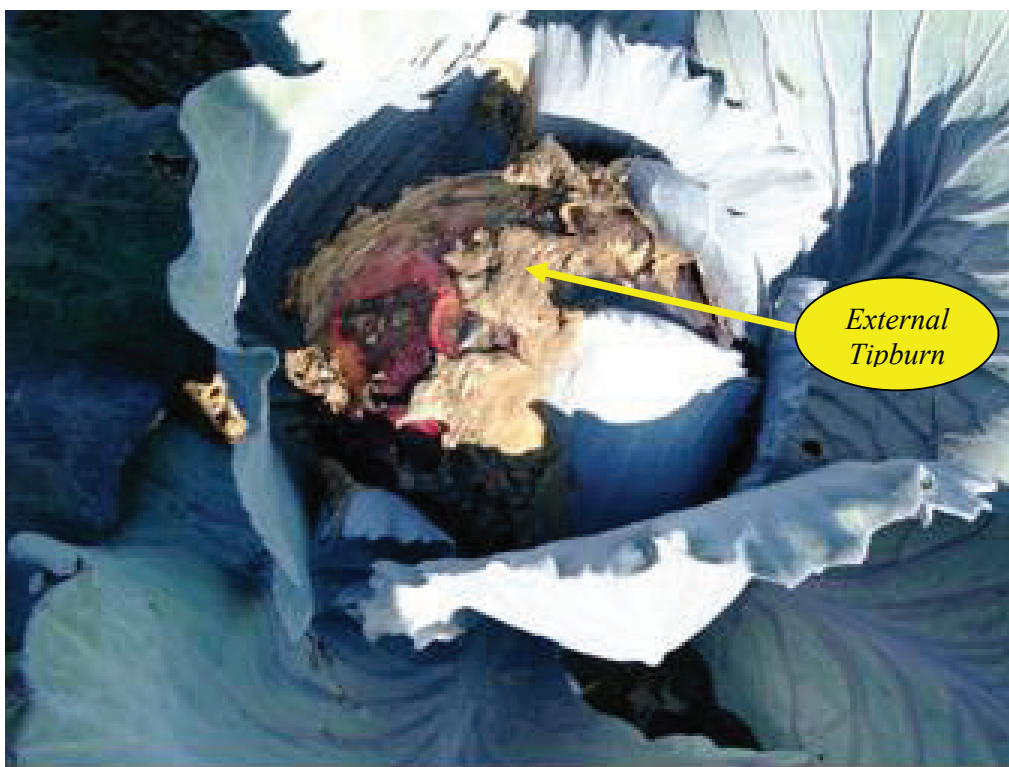


Figure 2. 'Huzaro' Red Cabbage with External Tipburn.



Figure 3. 'Huzaro' Red Cabbage with Internal Tipburn.

Discussion & Conclusion

Unfortunately, we did not conduct any leaf analyses because the plant material was lost during transport.

There was a significant effect of the calcium sprays on external tipburn in the variety 'Huzaro.' There was a reduction of 17.5% in tipburn with the calcium sprays. The dose rate of 1.5 litres/hectare (20 fluid ounces/acre) appeared to be too low for red cabbage.

There were no significant difference between untreated and calcium treated cabbage with internal tipburn. However we did observe a reduction of 10% in tipburn with the calcium sprays. The number of plants per plot should have been increased to get a significant difference and the rate should have been 3.0 litres/hectare (40 fluid ounces/acre) instead of 1.5 litres/hectare (20 fluid ounces/acre). There is also the question as to whether the first treatments were too early.

In the untreated cabbage there was no correlation between external and internal tipburn. However, we did observe the trend that a greater number of heads treated with calcium that had external tipburn also developed internal tipburn. This would be an advantage to the growers because it would not be necessary to cut open the heads to know if the head had internal tipburn.

The trial should be repeated next year with higher dosage rates and a minimum 15 heads per plot.



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