

APPLICATION OF METALOSATE[®] ZINC AND METALOSATE[®] BORON ON NORDMANN FIR

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**The trial was a joint effort between:
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Introduction

The purpose of this trial was to repeat and fine tune the results of a previous trial ran in 2004 with boron and zinc. We wanted to see if the number of buds could be increased with more than one treatment in July. We also wanted to see if there was a difference in the number of buds when the trees were treated at the beginning as opposed to the end of July.



Figure 1. Nordmann Fir in Denmark

Materials & Methods

One hectare (2.5 acres) was sprayed at different times with 1 litre/Ha (14 fl. oz./acre) Metalosate[®] Boron and 2 litres/Ha (27 fl. oz./acre) Metalosate[®] Zinc as follows:

- Treatment 1: July 1
- Treatment 2: July 1 and July 14
- Treatment 3: July 1, July 14, and August 2
- Treatment 4: July 14
- Treatment 5: July 14 and August 2
- Treatment 6: Control untreated

The quantity of water used was 200 litres/Ha (21 gal./acre).

The assessment was made on September 14, 2005. One plot had a surface area of approximately 900 m² or 0.09 ha (9,687 ft.² or 0.22 acres). The number of internodes and garland buds were counted. The number of buds was counted on 55 trees per treatment.

Results

Number of internode buds.

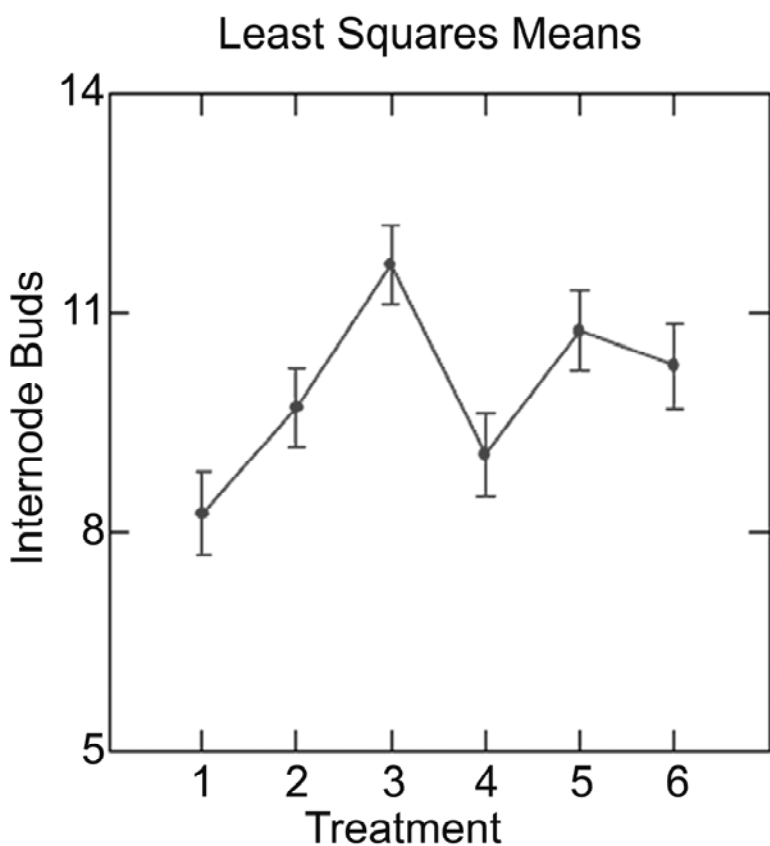


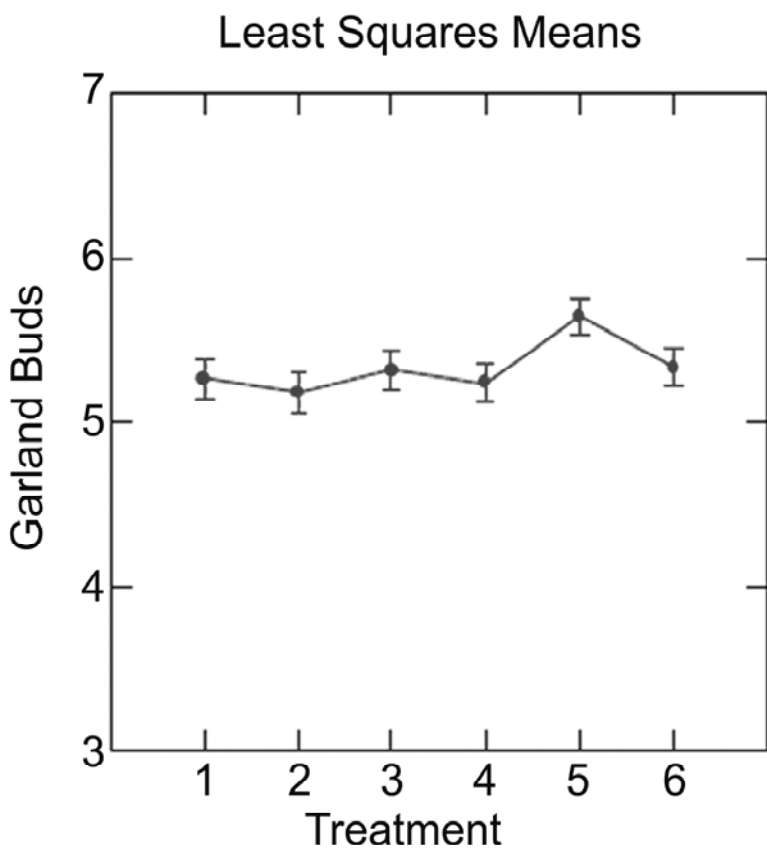
Figure 2. Number of Internode Buds in 2005.

There was no significant difference in the treatments at $p < 0.05$.

The highest number of internode buds was obtained with Treatments 3 and 5. These treatments gave an average of 12 and 11 buds. It seems as if the best results were achieved with August treatments instead of early July.

There was no effect due to increasing the number of treatments. Three or two treatments with boron and zinc were no better than one treatment.

The trial from 2004 showed that the highest number of buds (12 buds) was achieved when the trees were treated early July which is the opposite of what we obtained this year.

Number of garland buds.**Figure 3:** The Number of Garland Buds 2005.

There was no significant difference in the treatments at $p < 0.05$.

Treatment 5 (application early August) gave a slightly better result than the other treatments.

In 2004 the highest number of garland buds was achieved with the treatment in early July but in this trial the highest number of buds was with achieved with an August application.

Table 1 shows that Treatments 3 and 5 yielded more than 56% of trees with more than 10 internode bud. Early July treatments yielded a negative percentage of trees with more than 10 buds.

Table 1
Percentage of Trees with More than 10 Internode Buds

Treatment	% Trees with > 10 Internode Buds	% Increase of Trees with > 10 Internode Buds
1 July 1	20.37	-46.65
2 July 1 and 14	33.93	-11.14
3 July 1, 14, and August 2	56.36	47.62
4 July 14	40.00	4.76
5 July 14 and August 2	56.36	47.62
6 Untreated	38.18	-

Treating Nordmann Fir with Metalosate® Zinc and Metalosate® Boron increased the number of internode buds on the top leader, but unfortunately we were not able to determine whether it is best to treat the trees early July or early August.

We saw no added effect due to an increased number of treatments. The number of buds increased with one treatment and we did not get more buds with more treatments.

The question is, Why do we have a shift in the optimal time of application with Metalosate® micronutrients? The time shift is almost a month from early July to early August.

Figure 4 below shows that we experienced a “drought period” in May 2004 and this “drought period” was shifted to June in 2005. The dry climate may influence the buds reaction to the Metalosate products.

It could be interesting to test this theory and treat the trees in 2006 according to the amount of rain in the previous month. If we have a dry month of May, the trees should be treated early July and if June is dry, then the trees will be treated early August.

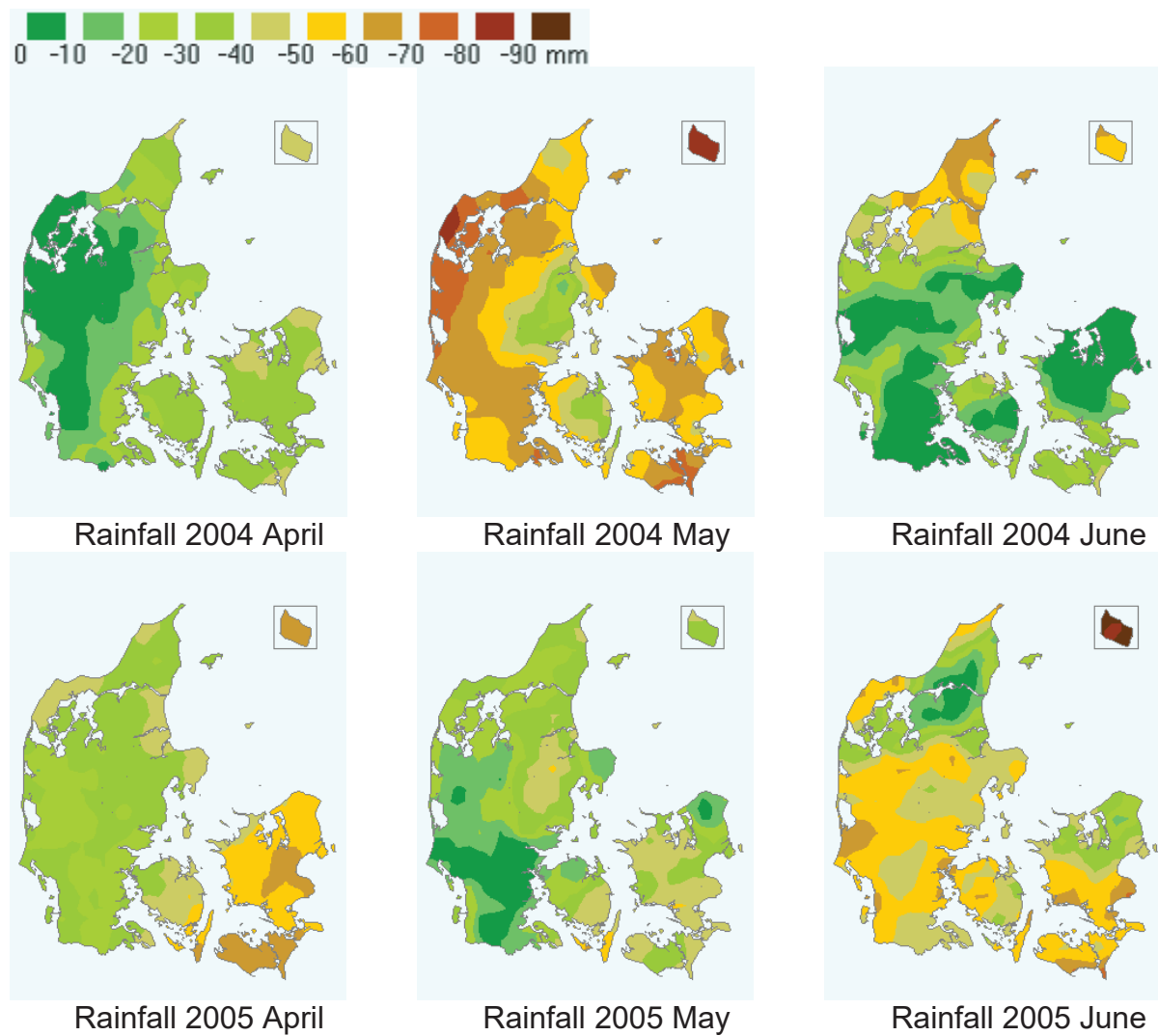


Figure 4. Amount of Rainfall in Denmark in 2004 and 2005