

# Effects of Fertilizers, Mulches and Land Contours on the Growth of Sea Buckthorn Cultivars in Organic Farming

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## INTRODUCTION

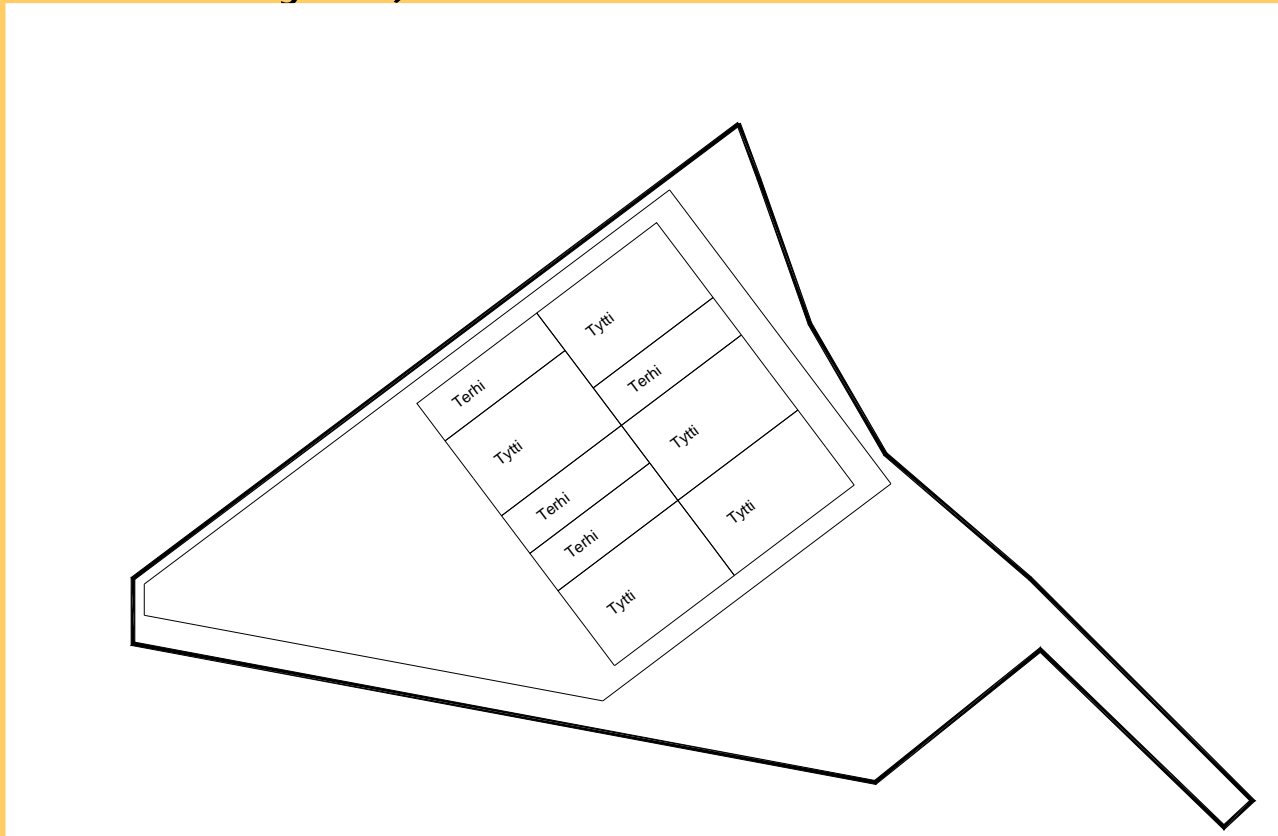
- The importance of sea buckthorn has increased in Finnish farms.
- In particular, there is interest in organically cultivated sea buckthorn.
- Organic farming has benefits in soil structure formation and is suggested to improve food quality factors and safety compared to conventional farming methods.

- This study aims to examine the effects of different organic farming methods on the shoot length, shoot number and stem diameter in two Finnish sea buckthorn cultivars "Terhi" and "Tytti".

## **MATERIALS AND METHODS**

- The Finnish sea buckthorn cultivar females "Terhi", "Tytti" and male "Tarmo" used in this study descend from the wild sea buckthorn strains originated from the Baltic Sea region in Finland.
- The cultivars were grown at the study field in a coastal area in Merikarvia, western Finland (61°52'N, 21°30'E).
- The study field comprised 560 seedlings.

- Nine blocks were formed into the study area.
- Seedlings were arranged in rows of five individuals such that the first seedling in each row was a male (cultivar "Tarmo") and the four remaining ones were females ("Terhi" or "Tytti").





- Two experiments were conducted:
  - 1) Fertilization experiment** with both female cultivars and two land contours (flat surface and low hill surface)

Fertilizers: control, apatite, bioapatite, test fertilizer
  - 2) Mulch experiment** with cultivar Tytti and two land contours (flat surface and low hill surface)

Mulches: Control, straw, dry grass, conifer chips and plastic mulch

- Growth measurements were done in the end the October in 2004 and 2005.



# RESULTS

## 1) Fertilization experiment:

- In the first growing season "Terhi" grew better than "Tytti".

- The shoot length was significantly greater on the low hills compared to flat surface.

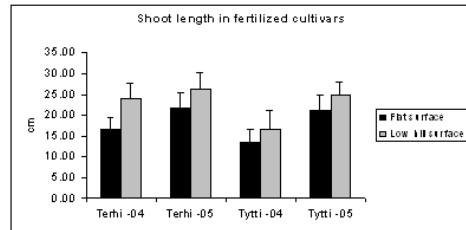
- The shoot length was also significantly greater in the second growing season compared to first growing season.

- The stems grew significantly thicker on the low hill than on the flat surface.

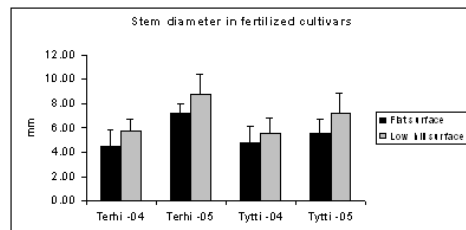
- They grew also significantly thicker in the second growing season compared to first growing season.

- The shoot number was significantly higher on the low hill compared to the flat surface in the second growing season.

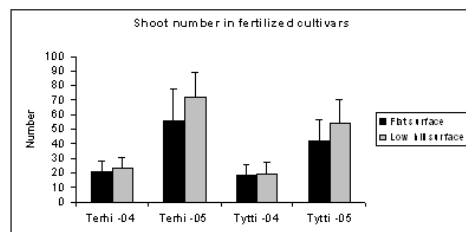
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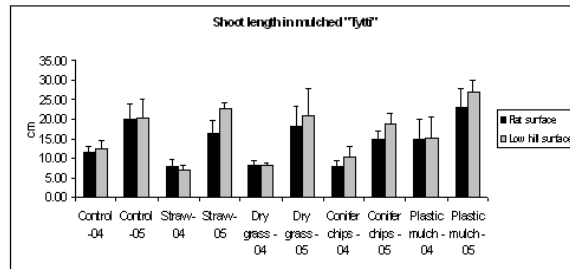
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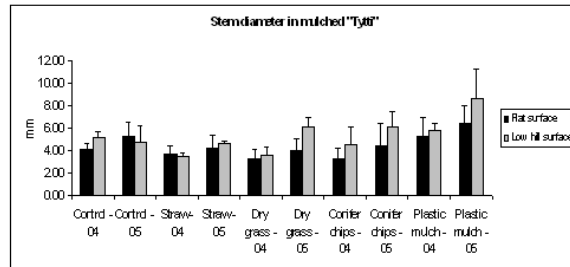
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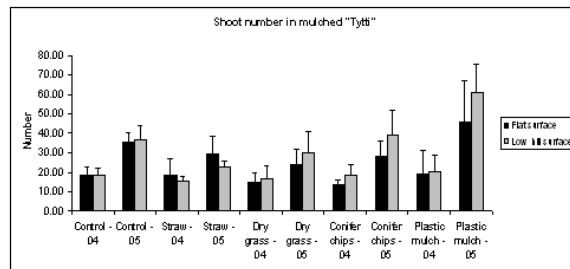
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## 2) Mulch experiment:

- The growth was significantly better in seedlings grown with plastic mulch compared to the other mulches.
- Conifer chips decreased the shoot growth compared to control.
- The shoot length and stem diameter were greater on the low hills compared to flat surface.

## CONCLUSION

- Our results showed that contours and mulches but not fertilization significantly influenced the growth of both studied cultivars.
- The effect of fertilization is likely associated with ability of sea buckthorn to receive nitrogen from its symbiont organisms susceptible to excess nitrogen in their environment.
- Low hills and plastic mulch had the most favourable effects on bush biomass growth. When used together they formed a particularly productive growth substratum.

## **ACKNOWLEDGEMENTS**

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**THANK YOU !**

