

## Non-chemical methods of seed treatment for control of seed-borne pathogens on vegetables



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### Introduction

The EU-project "Seed Treatments for Organic Vegetable Production" (QLK5-2002-02239; STOVE) was initiated in March 2003. The project aim is to evaluate non-chemical methods for control of seed-borne pathogens in organic vegetable production. Both physical and biological methods are being investigated. The former include hot air, hot water and electron treatment, while the latter comprise formulated commercialised microbial preparations, resistance inducers, non-commercialised antagonistic micro-organisms and plant extracts / compounds of natural origin. Trials are being carried out with different patho-systems such as cabbage / *Alternaria* spp and parsley / *Septoria petroselini*.

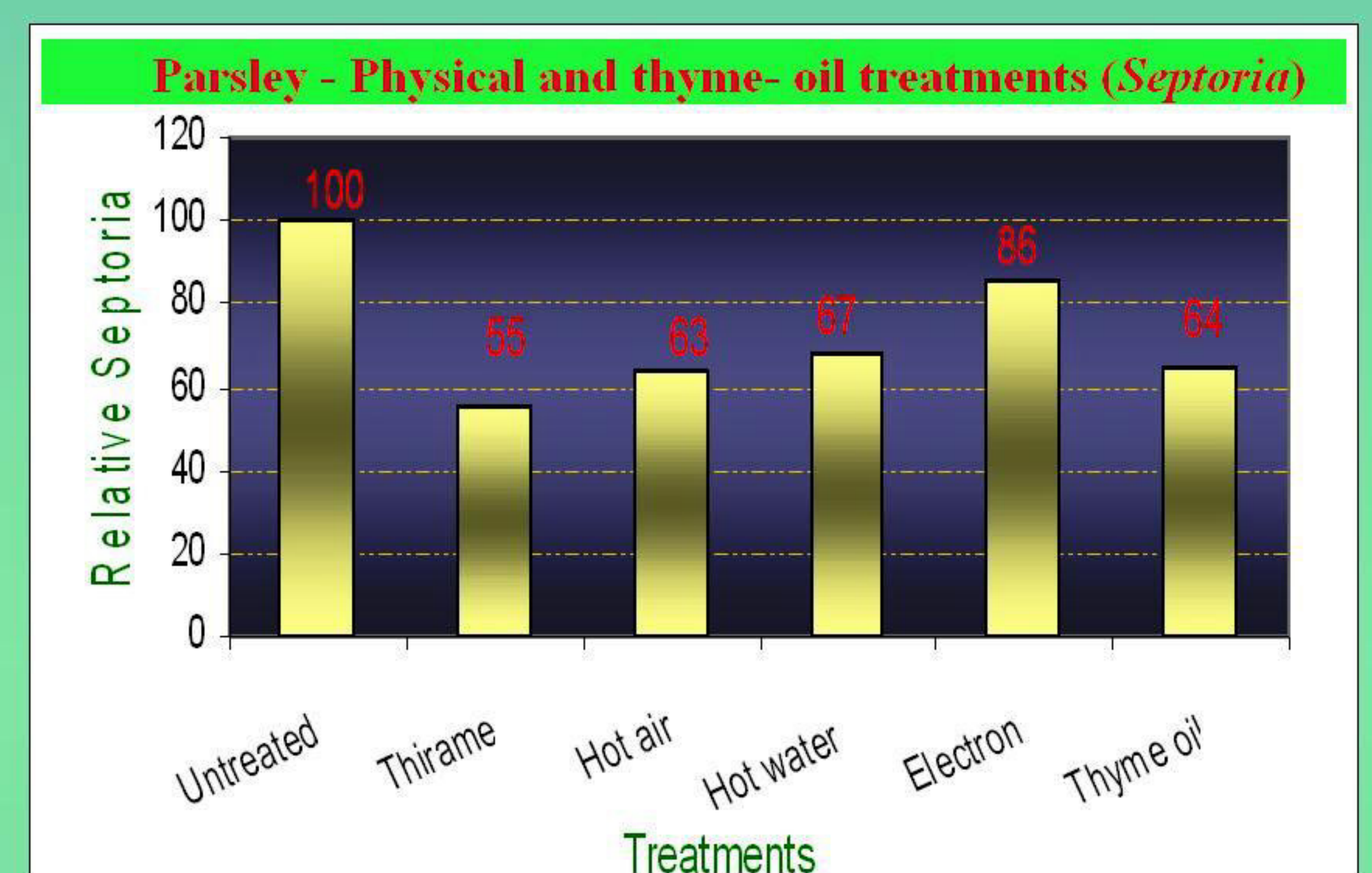
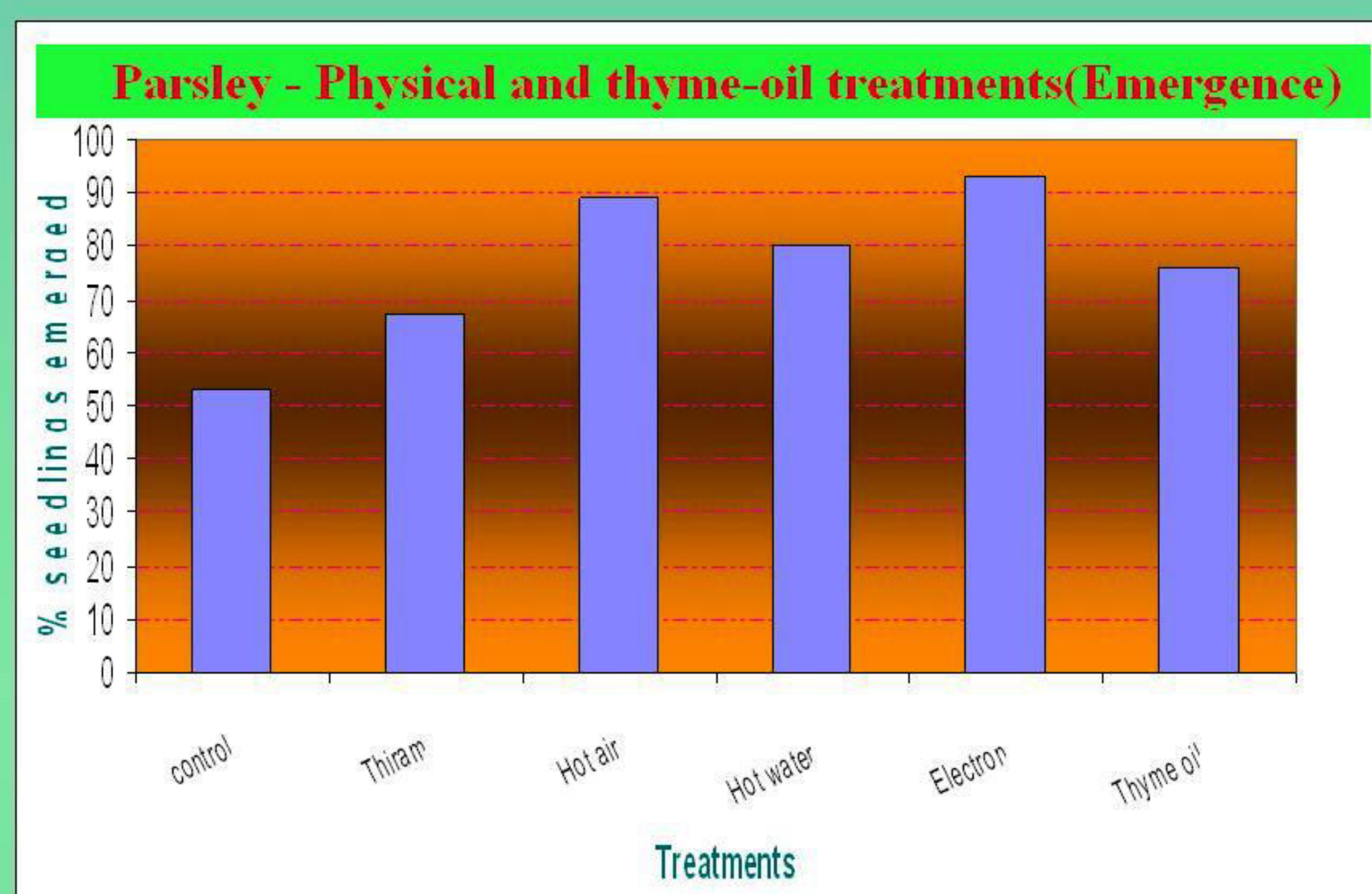
#### Parsley /*Septoria petroselini*/ Physical and plant extract /germination

All three physical treatments (hot air, hot water and electron) and the plant extract, thyme oil had very good effect and caused quick increase of the number of seed germination. These numbers were increased from 53 % in untreated control to 86 % (HA), 80 % (HW) and 93 % (electron) respectively and 75 % in thyme oil treatment.

### Results

#### Parsley /*Septoria petroselini*/ disease incidence

Of the three physical treatments (hot air, hot water and electron) hot air had the best effect of reducing the disease. The relative reduction by this treatment was 37 %. Also the plant extract, thyme oil had good effect and reduced the disease incidence by 36 %.

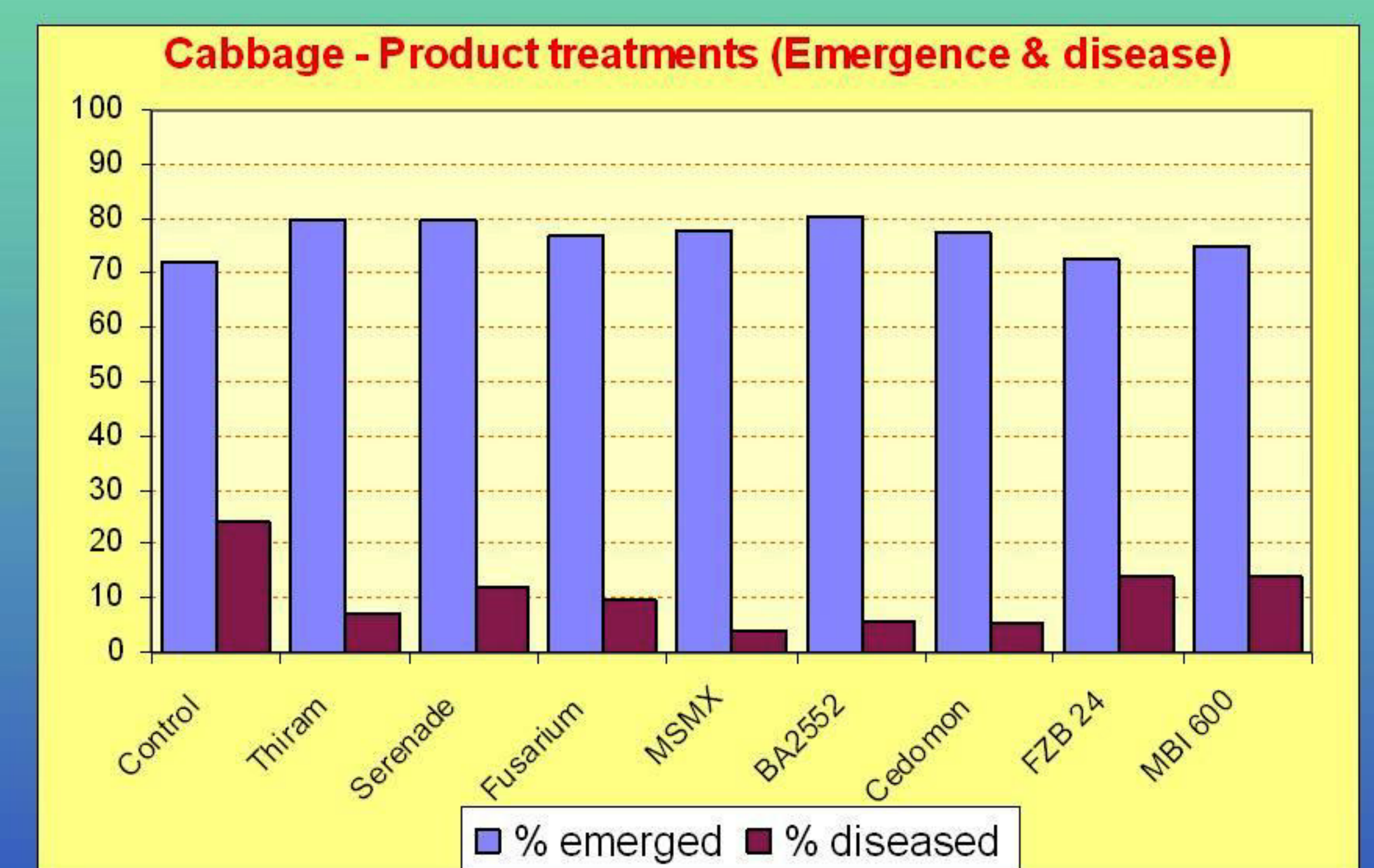
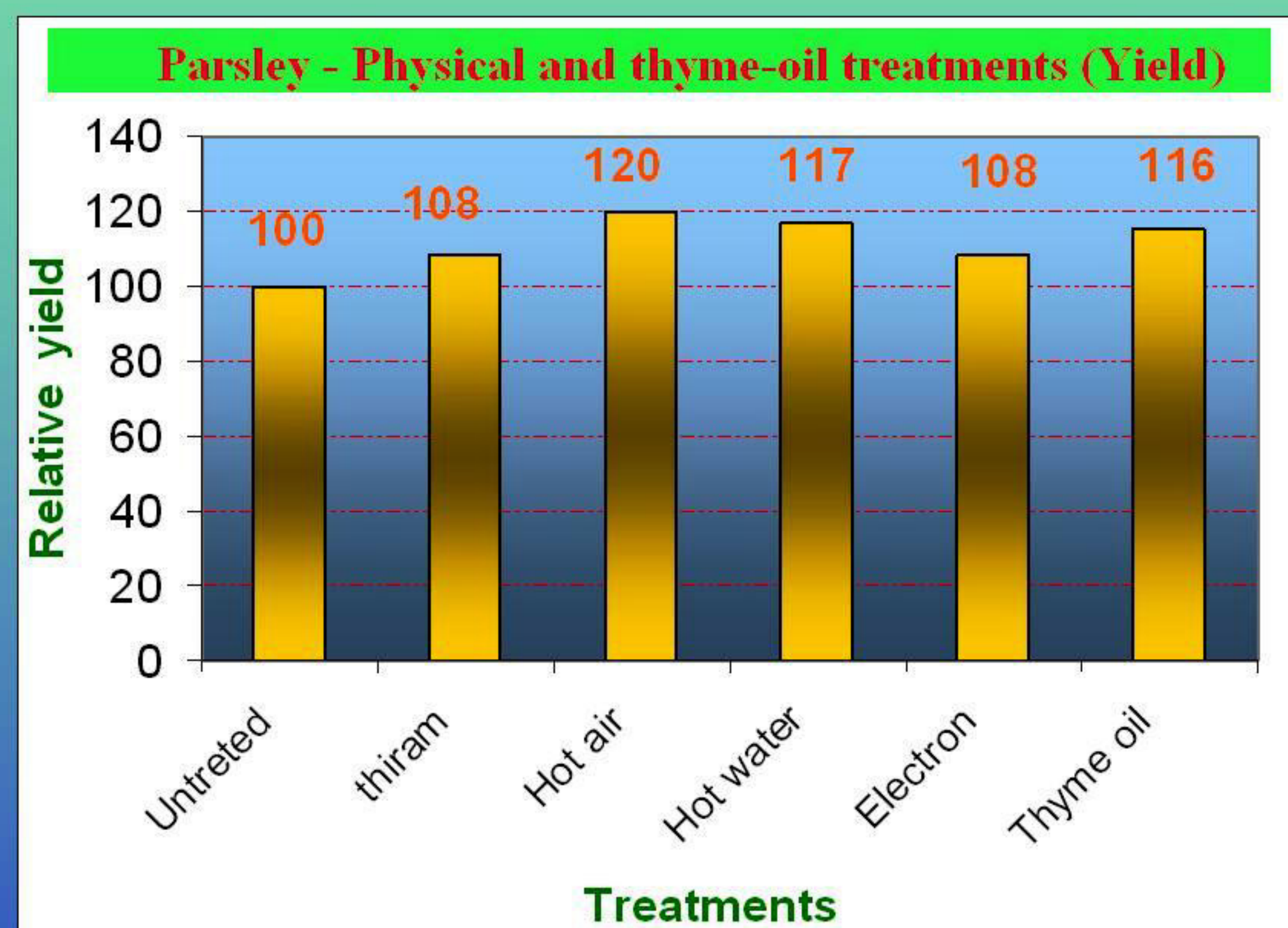


#### Parsley /*Septoria petroselini*/ Physical and plant extract /Yield

All three physical treatments (hot air, hot water and electron) and the plant extract, thyme oil had good effect and increased the yield. Hot air had the best effect and the relative yield was increased by 20 % with this treatment.

#### Head cabbage / *Alternaria* sp. / Commercial Microbial Products

All treatments reduced the infection of brassica with *Alternaria* sp. Seed Treatment with MSMX (based on *Streptomyces* sp.) and BA2552 (based on *Pseudomonas chlororaphis*) reduced the infection in emerged plants from 24 % (control) to below 6 %, the same level achieved after chemical treatment.



### Conclusions

All three physical treatment methods "hot air, hot water and electron" and the plant extract thyme oil showed:

A clear increase of germination of parsley seeds. Increase of parsley yield. Reduction of *Septoria* disease.

And all the commercial products decreased the cabbage infection with *Alternaria* sp.

