

# Screening and cultivation optimization of safflower (*Carthamus tinctorius* L.) for the production of food colorants

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## Status

Completed

## Duration

05.2015-10.2015

## Description

As the demand for naturally derived food colorings increased in recent years a randomized block designed pot experiment with three replications was conducted in order to study the effect of 61 selected *Carthamus tinctorius* L. accessions and one *Carthamus palaestinus* L. accession in regard to the potential amount of yellow pigments (carthamus yellow), more precisely hydroxysafflor yellow A, in the petals. Parameters examined during the study included the content of relevant flower pigments (2.25 % to 5.18 %) and the color tone according to CIE L\* (12.31 to 15.66) a\* (-2.46 to -1.11) b\* (10.58 to 13.46). Additionally, relevant yield parameters such as numbers of buds produced per plant (0.33 to 1.5), dry floret weight per single bud (0.0213 to 0.0891 g) and hectare (158.62-663.48 kg) were examined in order to calculate the potential color yield per hectare (5.28 to 23.17 kg). The results of the analysis of variance showed that there were significant differences between the accessions. Additionally, a randomized complete block designed field trial with three replications and two safflower accessions (SF5'12, Thornless Safflower) which were also tested in the climatic chamber experiment, was conducted to evaluate the cultivation suitability and yield performance per hectare for a possible cultivation under the given climatic conditions in Germany from an agronomic point of view. The Parameters examined during the study also included the content of relevant flower pigments (2.51 to 3.77 %) and the color tone according to CIE L\* (15.00 to 15.38) a\* (-1.83 to -1.55) b\* (10.40 to 11.46). Additionally, relevant yield parameters such as number of bud per plant (7.89 to 14.67), dry floret weight per plant (0.89 to 1.50 g) and hectare (568.89 to 1121.06 kg) were examined in order to calculate the potential color yield per hectare (14.08 to 42.45 kg). The results of this thesis showed that safflower holds great potential being cultivated for it's petals.



## Involved persons

Studentin: Samantha Jo Grimes

First examiner: Prof. Dr. agr. Simone Graeff-Hönninger

Second examiner: Dr. agr. Sabine Zikeli

Supervision: Prof. Dr. agr. Simone Graeff-Hönninger