

How to get the best quality seeds in the world?



Syngenta Seeds

The Syngenta seed businesses are part of Syngenta AG. Syngenta has a long history of developing and marketing seeds for farmers and growers around the world. They play a pivotal role in developing high-performance crops that are increasingly productive and resilient, as population growth outpaces the availability of new farmland. In the contemporary high efficient agriculture high quality seeds and the highly optimized crops, as bred by Syngenta, are important factors in obtaining in the high yields of the present day. Also seed companies will play an important role in managing the future demand for food for the growing world population.

Research

The project is whether the light and temperature influence the *Brassica oleracea* seed germination. A commercial seed company wants high quality seeds which can germinate well under a wide range of circumstances. For seed germination, the basic requirements are water, oxygen and suitable temperature. Light requirements vary between species, while some require light; some require darkness and some are indifferent towards light. In this research, we focus on cauliflower, an agronomical variety of *Brassica oleracea* which is also an important seed product of Syngenta Seed B.V.. A preliminary study revealed to our surprise that cauliflower can germinate at low temperatures (10°C). However, under this condition darkness was beneficial,

while at higher temperatures darkness can be inhibitory. After a thorough literature study the idea developed that germination at low temperatures (cold germination) could be used to test the stress-tolerance of germination of different seed-batches, or, in other words, the ability of seed batches to germinate under less than ideal conditions. I investigated the influence of low temperatures and light conditions on germination, not only for the selection of seed batches, but also to test the potential of this protocol as a tool for breeding for stress tolerance. We used different varieties and seed batches to which extend in this tolerance genetically determined. Clear differences were found between different varieties and seed batches. The experiments were not enough yet that we could draw a final conclusion. More research has to be done.

I hope this research has contributed a bit to the development of a method for the more stress tolerant seeds within Syngenta.

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