

Seed Quality

Seed is a living product that must be grown, harvested and processed correctly to maximize its viability and subsequent crop productivity. For the yield potential of any crop variety to be realized, good quality seed must be sown. Good quality seed can increase yields by 5-20%. The extent of this increase is directly proportional to the quality of seed that is being sown. Seed quality can be considered as the summation of all factors that contribute to seed performance.

High quality seed enables farmers to attain crops, which have:

- the most economical planting rate
- a higher percentage of seeds emerging in the field
- a minimum of re-planting
- a vigorous seedling establishment
- a more uniform plant stand
- faster growth rate, and greater resistance to stress and diseases
- uniformity in ripening.

Factors affecting seed quality

Seed quality is determined by a number of genetic and physiological characteristics. The genetic component involves differences between two or more genetic lines, while differences between seed lots of a single genetic line comprise the physiological component.

The genetic factors that can influence quality include:

- genetic make-up
- seed size
- bulk density.

The physical or environmental characteristics include:

- injury during planting and establishment
- growing conditions during seed development
- nutrition of the mother plant
- physical damage during production or storage by machine or pest
- moisture and temperature during storage
- age or maturity of seed.

High quality seeds are the result of good production practices, which include:

- proper maintenance of genetic purity
- good growing conditions
- proper timing and methods of harvesting
- appropriate processing during threshing, cleaning and drying
- appropriate seed storage and seed distribution systems.

Effects of Seed Vigor on Seedling Development and Field Emergence

If two lots of seed have the same germination percentage but one is of high vigor and the other is of low vigor, a difference in the germination speed, seedling growth, Or emergence can be seen. For example, germination test results on two peanut seed lots were 99 percent (lot A) and 98 percent (lot B). In the field, seed lot A had a 98 percent emergence, whereas seed lot B had an emergence of only 60 percent. Under favorable germination conditions, the two lots have only a small difference in speed of germination (Fig.1)

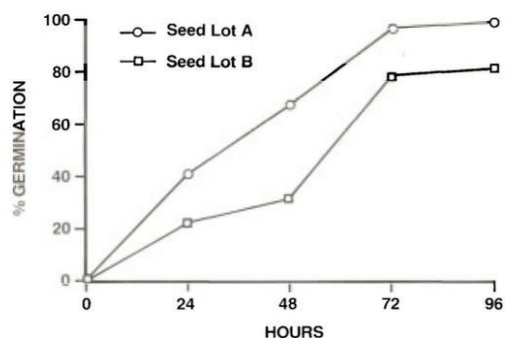


Fig.1. Speed of germination in laboratory vigor testing of two comparable peanut seed lots under favorable conditions.

Under unfavorable (cool) conditions, the two lots have a great difference in the speed of germination, a result of their difference in seed vigor. (Fig.2)

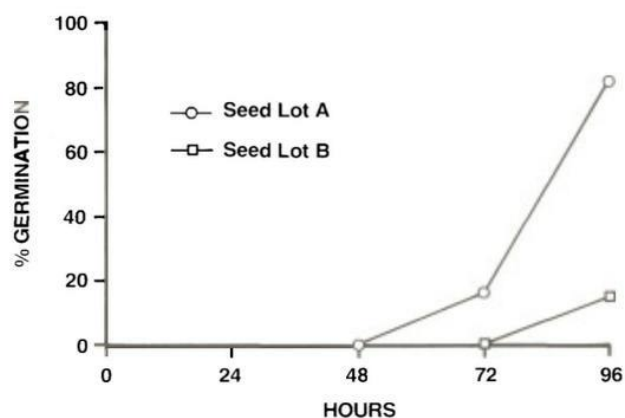


Fig.2. Speed of germination in laboratory vigor testing of two comparable peanut seed lots under unfavorable (low temperature) conditions showing the difference due to seed vigor.