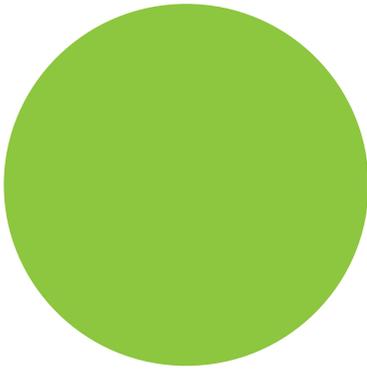


Storage & Germination

Lettuce Seed



Seed Storage

When storing pelleted seed the longevity can be increased by maintaining stock in a conventional refrigerator. Do not freeze.

If refrigerated storage is not available, short shelf-life lines should be stored at temperatures of less than 15 degrees.

Thermodormancy

High temperature dormancy of lettuce seed, also known as thermodormancy can be described as the inability of seed that has an otherwise normal germination rate to emerge when germinated at high temperatures.

The “thermogradient” germination of a seed lot (i.e. its ability to germinate across a range of various temperatures) can be influenced by various factors. The major factors that can influence this are listed below:

- Varietal sensitivity
- Origin and age of the seed lot
- Day/night temperature differential
- Duration of the high temperature period
- Light (in some varieties only)
- Production history
- Priming.

The main one is the genetic variety sensitivity to thermodormancy.

If temperatures are extreme a pre-sowing treatment may be necessary to achieve uniform seedling production. For most varieties this means a night temperature in excess of 24°C.

Thermo Easy® Treatment

In Australia Rijk Zwaan supplies lettuce seed which has received the Thermo Easy® treatment.

This treatment improves the germination under high temperature conditions; in most cases it overcomes high temperature thermo-dormancy.

This has resulted in virtually no reported problems in regard to lettuce seed germination.

The down side is that this treatment reduces the shelf-life of the seed. Given that most seed lines will germinate well up to 6 months after the expiry date, it is reasonable not to anticipate many problems.

However if seeds are expected to be sown over an extended period it is worthwhile advising your Rijk Zwaan representative when the order is placed so that they are able to check the use by date and ensure best results.

Germination Temperatures

Optimum temperatures for lettuce germination are approx. 16 – 20 c. Even at very low temperatures (down to 1c) lettuce seed still germinates, although emergence will be much slower than in the optimum range. From temperatures higher than 20c (minimum temperature) usually the germination rate will be reduced, especially if the night time as well as the day time temperatures are higher than the optimum.

Variation exists between varieties and even between seed lots within a nominated variety in regard to germination requirements. An approximation of an optimum germination temperature is 18 degrees

DOCUMENT CREATED: MRT, 2016

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for Thermo Easy seed. Even at a temperature of 21 degrees, some problems may be encountered. There may be a degree of compensation by a large variation in day and night temperatures. Other factors, such as the water – air ratio of the media, can also play a role.

It is generally acknowledged that high temperatures will inhibit germination only once the seed has been more or less fully imbibed (saturated with water). Temperatures during the first few days after sowing are therefore critical. How long this sensitive period is depends on temperatures during water uptake by the seeds.

At high temperatures water uptake is quick and the seeds will be prone to high temperature dormancy from only a few hours after sowing. Once the radicle has emerged high temperatures will no longer cause dormancy.

A few simple precautions will reduce the risk of thermo-dormancy:

- Sow early in the morning while the seedling mix is still cool.
- Alternatively sow late afternoon to obtain benefit of imbibition at lower night time temperatures
- Use cool water to soak the trays
- Cover the trays with polystyrene sheets (20mm thick) and place them in a cool area.
- Remove the sheets as soon as the first seedlings start to emerge! (2-3 days)
- keep the trays moist during the whole germination process.

Steps Leading to Germination:

1: Sowing

Sow in conventional media, such as peat moss and vermiculite, water tray and allow to remain at ambient temperature for at least 2 hours to permit imbibition. The germination process has just commenced.

It is important that the seed is fully imbibed before transfer to the cold room, otherwise problems with uneven emergence or even poor germination may be experienced.

2: Cool Room

Many nurseries employ dark cold rooms, primarily to break dormancy in normal seed (i.e. non – thermocure treated seed).

Trays should be retrieved from the darkened room in the afternoon after the day of sowing ie nearly 2 days.

Temperature in the cold room is normally maintained at

5 – 6 degrees celsius.

If seed is kept too long in a dark cold room, emergence and etiolation of the hypocotyl (shoot) can occur. This whole step can be avoided by using Thermo Easy seed or by sowing in cool weather.

3: Germination

In an ideal situation, sown trays are placed in a germination room after steps 1 or 2.

They are held at 18 to 20 degrees celsius for 48 hours. They are then moved to the greenhouse.

RZ highly recommends the use of a germination room as this lessens the likelihood of poor germination, blindness & double heading issues that may arise during hot summer months

If going directly from step 1 to the greenhouse, sowing should be conducted in the cool of the early morning and insulated well as described above. Sowing in the late afternoon permits imbibition during the cool of the evening. Emergence of the shoot and radicle can then proceed under warmer daytime temperatures the following day.

Conclusion

The above comments are intended as approximate guidelines. Experimentation with consideration of the other variables that come into play is required before optimum, consistent results are obtained.

It is suggested that consideration be given to engaging the services of a professional seedling nursery.

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The pictures in this catalogue show the types to which the varieties as mentioned belong and not all varieties as such. These pictures do not constitute any warranty, express or implied, of crop performance.