Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 06, Issue: 03 (MAY-JUNE, 2026)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Maturity of Different Vegetable Seed

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I think about India and how it uses its land. 1.2 Percent of the area where people grow things is used for growing vegetables. Most of the time when vegetables are grown the way they can produce a lot more than other crops like cereal. Vegetables are really good for us because they have proteins, carbohydrates and other important things like mineral salts and vitamins. These things are necessary for a diet especially when we eat them with cereal and other foods. People in countries eat a lot of vegetables and fruits every day about 362 grams but in India people only eat about 80 grams. We need to eat vegetables every day to be healthy and strong.

The problem is that India does not produce vegetables. To grow vegetables successfully we need seeds, better ways of taking care of the plants and ways to protect them from harm. Good seeds are the important thing for growing vegetables. In the rest of this book we will talk about how to produce seeds for common vegetables. The methods we discuss are, for producing seeds but people can use them to produce regular seeds that are still good quality (Jena, Ankita, et al.).

Seeds go through something called seed maturation. This is the time between when the seeds, at their heaviest and when they are fully ready to grow. At this point seeds have everything they need to grow like the ability to sprout easily be strong and last a long time. Some seeds even go dormant during this time. During seed maturation seeds finish storing away the food they need they dry out a bit. They turn on systems that help them survive without water and be stored for a while. These systems also help seeds grow into plants when they are planted in the field. Seed maturation is very important for seeds to be able to grow. Seeds complete all the things they need to do during seed maturation. Seeds are ready to be picked when they are fully grown and mature. This usually happens after the seeds have reached a stage of development and are ready to be harvested. Seeds are ready, for harvest after the seeds have completed their maturation. The seeds are now ready to be collected when the seeds have finished growing and the seeds are mature (Leprince, O., et al.).

Maturity: Maturity is when a vegetable is at its best. This is the stage of development where the vegetable has reached its peak quality. The specific state of maturity is what is required for the vegetable to be used as intended such as for eating, storing or producing seeds. The vegetable is mature when it is ready, for consumption or when it is ready to be stored or when it is ready to be used for seed production. Maturity of a vegetable is very important. The maturity of vegetables is something that people consider when they are using vegetables for things like eating them or storing them or using them to produce seeds. Maturity of the vegetable is the thing that determines how the vegetable will be used (Ellis, R., et al.).

Physiological Maturation: It is the stage when seeds gather most of their matter. At this point the moisture in the seeds starts to decrease 25-30%. This stage is also when seeds show their dry weight and their ability to germinate and grow strong is at its highest. Each seed reaches this state at a different time because flowers do not bloom at the same time. This

means that while some seeds are fully mature others may not be, due to the times they were pollinated. The seeds are at their best when it comes to germination and growth potential. Seeds at this stage have dry weight. The moisture content in seeds decreases during this stage. Seeds have flowering times so they mature at different times. The maturation stage is different, for each seed. The population of seeds does not mature at the time. Maximum dry matter accumulation happens in seeds at this stage. Seeds show germination and vigor at this stage (De Souza Silva, Lorena, et al.).

Harvestable maturation: Harvestable maturity is conventionally defined as the point at which 80 percent of a given seed population has reached physiological maturity. At this juncture, the moisture content of the seed is typically lower than that observed during the physiological maturation stage, which commonly ranges between 18% and 20%. To optimize seed quality, it is standard practice to harvest the seed crop once this harvestable maturity has been attained (Jena, Ankita, et al.).

Harvesting: Optimal harvest timing, aligned with physiological maturity, generally leads to maximal seed yield. Nevertheless, within a crop population, seed maturation is seldom uniform, frequently exhibiting a heterogeneous distribution of mature, immature, and over-matured seeds due to variations in anthesis and fertilization. Therefore, identifying the precise optimal harvest window for a particular seed crop is essential, as post-optimal harvesting can result in losses exceeding the potential yield. Additionally, hot, dry atmospheric conditions markedly accelerate the natural in-situ drying process of seeds. Seed moisture can form the most important indication for crops fitness for harvesting (Pozhilarasi, S., et al.).

Vegetable seed crops are categorized into three distinct groups, differentiated by the physiological state of the seed at the time of harvest.

A). dry seed: The seed is usually dried on the plant before we pick it. This is what we do with okra brassicas, lettuce, peas, beans, beet and onion. We let the seed dry right, on the plant.

B). fleshy seeds: The ripened fruits are picked from the plants. They are dried first. The dried fruits are then opened to remove the seeds. For example chillies, ribbed gourds and bottle gourd are. Their seeds are removed.

c). wet fleshy fruit: In fruits that're really juicy the seed has a jelly-like or sticky coating on it. This coating needs to be taken off after the seed is extracted. It can be removed by letting it ferment or by using an acid solution. Fruits, like these are picked when they are fully grown and ripe. For example, we have tomato, brinjal, cucumbers and pumpkins (Quamruzzaman, A., et al.).

Harvestable maturity of different vegetable seeds

Dried seeds

crops	Maturity indices	remarks
Amaranthus	yellowish browning of inflorescence.	Prone to shattering.
Onion	Seeds become black on ripening in silver Prone to shattering colored capsules.10% heads exposed black seeds.	Prone to shattering.
carrot	Second and 3rd order head turn brown.	Shattering on delayed harvest.
Radish	Pods become brown and parchment like.	Do not shatter easily.
Turnip	Plants turn to brown parchment colour.	Prone to shattering.
Coriander	Plants turn to light yellow or brown in colour.	Prone to shattering.
Peas	Pods become parchment like.	Do not shatter easily.
Beans	Earliest pods dry & parchment like and remaining have turned yellow.	Over maturity leads to shattering and cotyledon cracking.

Wet fleshy fruits

brinjal	Fruit turn to straw yellow colour.	Wet seed extraction (fermentation, acid, alkali).
tomato	Skin colour turn to red and the fruits are softened.	
cucumber	Fruit become yellowish brown in colour, and stalk adjacent to the fruit withers for confirming actual seed maturity.	Seed extraction-scooping (acid,alkali).
True potato seed	Berries of potato becomes green to straw coloured and soft.	
watermelon	Tendrils wither on fruit bearing shoot. Skin colour of the fruit resting on the soil is pale yellow and gives dull sound on thumping.	
Squash, pumpkin	Rind becomes hard & its colour changes from green to yellow/ orange or golden yellow to straw colour.	

Fruit dried before extraction

chillies	Green colour changes to red or yellow.	Dry method of seed extraction.
Bottle and sponge gourd	Rind becomes hard and colour changes to light brown or yellow.	

Conclusion

Seed maturity in vegetables is best defined by maximum dry weight coupled with peak germination, vigor and longevity. Reliable indicators include days after flowering, falling moisture content, pod/fruit and seed color changes, and vigor tests, all of which are crop-specific. Harvesting too early yields immature, low-vigor seeds, while harvesting at or just after physiological maturity produces high-quality seed, provided field weather and pests are managed.

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