AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 02, Issue: 11 (November, 2025)
Available online at http://www.agrimagazine.in

The Hidden Cause of Cracked Potatoes and How Farmers Can Prevent Them

*Sayani Das
Department of Agronomy, Faculty of Agriculture, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur-741252, Nadia, West Bengal, India
*Corresponding Author's email: sayani9916@gmail.com

The cracking of potato tubers is a recurring and costly difficulty for farmers at harvest, as cracked potatoes are often downgraded or turned down, which represents loss of income. This article discusses the physiological and agronomic causes of tuber cracking and highlights producers' options for management of this problem. Cracking occurs mainly due to uneven tuber growth, which is exacerbated when the condition of rapid swelling follows a period of inactivity. Some contributors to tuber cracking include irregular irrigation, excessive soil nitrogen, boron deficiency, low potassium, varietal susceptibility, insect pests and disease damage and any number of inadequate soil conditions. This article also emphasizes that maintaining uniform moisture level in the soil profile, producing a balanced fertilizer program and selecting varietal planting stocks that have good tolerance of cracking are crucial management options; in addition, that good field hygiene practices and harvesting at the proper physiological stage are also important. Proper implementation of the provided procedures could lead to lower levels of cracking, improved tuber quality, increased/higher storage life of tubers and higher market returns. These recommendations are simple, scientifically validated and able to be adopted by producers in their farming operation way to improve profits and sustain potato production.

Introduction

The potato crop is one of the most important cash crops for farmers. Every grower hopes to harvest clean, uniform and good quality tubers so they can fetch a good market price. For many growers, they encounter a common problem during harvest - cracked or split potato tubers. The average loss for cracked tuber is 15.69 % in the field and 0.98 % during short term farm storage (Sandhya et al., 2020). The market price for cracked potatoes is very low and they often are rejected by traders, which can lead to severe economic losses.

Table 1: Cracked vs healthy tuber

Parameter	Healthy Tubers	Cracked Tubers
Market grade	A+ premium	Rejected or low grade
Storage shelf life	High	Very low
Susceptibility to rot	Low	Very high
Consumer acceptance	High	Very low

Why potato tubers crack?

Potato cracks are mostly cause by sudden fluctuations in growing conditions. When tubers stop growing for some period of time and then resume rapid growth, the skin does not stretch and the skin eventually breaks. This results in radial cracking or star shaped cracking. The main causes include:

1. Too much water (or uneven irrigation):

- A long dry period followed by heavy irrigation or rain causes sudden swelling of tubers.
- The skin cannot stretch/regulate in time, cracks will form.

2. Excess nitrogen fertilizer (Growth crack):

- High nitrogen promotes rapid vegetative growth which leads to tuber enlargement really quickly.
- The skin cannot keep up with the rate of expansion.

Fig 1: Potato tuber cracks (Source: Ephytia)

3. Boron deficiency

- Deficiency makes the tuber skin weak, causing cracks even under normal swelling.
- Sandy and low organic matter soils are more prone to boron deficiency.

4. Unbalanced potassium supply

- Lack of potassium weakens tuber skin.
- Even normal swelling can lead to cracking.

5. Varietal susceptibility

- Some varieties crack easily because of genetic issues.

6. Insect or disease injury

- Damage to the skin during development creates weak points that burst as they swell.

7. Environmental and soil factors

- **High soil temperature (>28-30°C)** during tuber swelling stresses the tuber skin.
- **High salinity or heavy clay soil** reduce water infiltration and lead to uneven moisture.
- **Soil compaction** limits root and tuber expansion - higher cracking risk.

How farmers can reduce cracking

With good management, the amount of cracking in potatoes can be greatly reduced.

1. Maintain even soil moisture

- Do not experience long dry periods followed by heavy irrigation.
- Irrigate at regular intervals especially during the tuber bulking stage (45-75 days after planting).
- Drip irrigation or furrow irrigation are good options for even soil moisture.

Table 2: Irrigation schedule recommendation

Crop stage	Days after planting	Irrigation recommendation
Early growth	0-30 DAP	Light but regular irrigation
Tuber initiation	30-45 DAP	Do not allow dryness
Tuber bulking	45-75 DAP	Most critical - maintain uniform moisture
Before harvest	90-110 DAP	Light irrigation if soil becomes too dry

DAP: Days After Planting

2. Balanced fertilizer applications

- Apply balanced a recommended fertilizer always.
- Apply Nitrogen fertilizer in two to three splits, not all at once.
- Ensure proper potassium (K) application; it strengthens the skin elasticity, cell wall strength and sugar to starch conversion of the tuber and is important to the tuber's quality and reducing cracking. If possible, give split application of K also.

- Apply boron as deficiency causes rough and corky skin patches, hollow heart, brown internal flecking, small deformed tubers and cracking even under mild stress. Boron strengthens the cell wall and helps proper skin formation.

3. **Use recommended varieties**
   - If cracking has occurred previously in that field, utilize varieties that are known to crack less.
4. **Maintain good field hygiene**
   - Carefully manage soil-borne insect pests and diseases.
   - Avoid any physical injury of tubers during intercultural operations.
5. **Avoid delayed harvest**
   - Over-matured tubers tend to crack if the soil is too wet or too dry prior to the harvest.
   - Harvest at the optimum time for tuber skin quality.

Economic benefit for crack free potatoes

Using the preceding advice offers many benefits, including:

- A higher market price for visually appealing potatoes.
- A lower percentage of market/cold storage rejections.
- A greater storage life.
- More repeat buyers or stable traders.

In fact, an improvement of even ten to fifteen percent in the number of cracked tubers which would have previously been labelled as culls could make a significant financial difference for farmers.

Table 3: Key problem and solution

Problem	Solution
Tuber cracking due to sudden swelling	Maintain uniform irrigation
Thin skin (cracking)	Provide adequate potassium fertilizer
Rapid growth	Don't use excessive nitrogen
Disease or insect damage	Practice field hygiene
Varietal susceptibility	Choose a suitable variety with cracking resistance

Conclusion

Cracked potatoes are not a matter of "luck", but rather the result of uneven growth. With smart irrigation, balanced nutrients and timely harvesting, every farmer can grow smooth, healthy and high-value tubers. Some care in the field today can turn into larger market profits for all tomorrow. The article highlights the hidden reasons of potato cracking and provides practical, scientifically-supported field solutions so that farmers can understand the problem clearly and adopt preventive measures for better yield and income.

Reference

1. Sandhya, G. C., Prasad, P. S., Amarananjundeswara, H., Shetty, S., Vishnuvardhana and Basavaraj, N. (2020). Survey on post-harvest losses in potato under southern dry zone of Karnataka. *International Journal of Chemical Studies, 8*(5), 114-117. https://doi.org/10.22271/chemi.2020.v8.i5b.10286