



E-ISSN: 2278-4136  
P-ISSN: 2349-8234  
JPP 2019; 8(1): 385-387  
Received: 11-11-2018  
Accepted: 15-12-2018

**Satish Kumar**  
Department of Vegetable  
Science, N.D. University of  
Agriculture & Technology,  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**GC Yadav**  
Department of Vegetable  
Science, N.D. University of  
Agriculture & Technology,  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Nishakant Maurya**  
Department of Vegetable  
Science, N.D. University of  
Agriculture & Technology,  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Atul Yadav**  
Department of Vegetable  
Science, N.D. University of  
Agriculture & Technology,  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Dheeraj Yadav**  
Department of Vegetable  
Science, N.D. University of  
Agriculture & Technology,  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

**Correspondence**  
**Satish Kumar**  
Department of Vegetable  
Science, N.D. University of  
Agriculture & Technology,  
Kumarganj, Ayodhya, Uttar  
Pradesh, India

## Studies on sprouting behaviour of different varieties/hybrids of potato (*Solanum tuberosum* L.)

**Satish Kumar, GC Yadav, Nishakant Maurya, Atul Yadav and Dheeraj Yadav**

### Abstract

The experiment was conducted with thirty six varieties/hybrids replicated thrice in Completely Randomized Design (CRD) during the summer of 2007 at the Laboratory of Department of Vegetable Science, Narendra Deva University of Agriculture and Technology, Narendra Nagar (Kumarganj), Ayodhya (U.P.). The small gunny bags of 5kg capacity were kept for 120 days at ambient storage condition. The minimum sprouting was observed by numbers and sprout weight (g per kg tubers) in varieties/ hybrids B-420 (2), J/95-229, Kufri Pushkar, Kufri Ashoka and Kufri Lalima after 120 days of storage at ambient conditions. However, maximum sprouting was recorded in hybrids DSP-19, MS/92-1090, and MS/99-1871 after 120 days of storage in ambient conditions.

**Keywords:** Variety/hybrids, sprouting, potato, ambient condition

### Introduction

The potato (*Solanum tuberosum* L.) is one of the most efficient horticultural food crop. It belongs to family solanaceae, which constitutes around 85 genera with 2200 species and Solanum is the largest genus with 1700 species. Among major potato growing countries, India ranks third after China and Russian Federation. The present area under potato in India is about 2.117 million hectares with production and productivity of 43.417 million tones and 20.50 t/ha (Anonymous, 2016)<sup>[1]</sup> respectively.

The potato is an easily grown plant that produces more food on less land. One hectare of potatoes can yield food value of 2-4 hectares of grain. The dry matter production in potato is 47.6 kg/ha/day, whereas in wheat and rice it is 18.1 and 12.4 kg/ha/day, respectively. Storage studies in potatoes stored at higher temperatures have been conducted by different workers but information are insufficient. In the present status of information on identification of varieties/hybrids with good shelf-life for a few months are desired.

### Method and Materials

The present investigation was carried out at the laboratory of Department of Vegetable Science, Narendra Deva University of Agriculture & Technology, Narendra Nagar (Kumarganj) Ayodhya (U.P.) during March to June, 2007. The experimental material comprised of thirty six varieties/hybrids of potato and were evaluated in Completely Randomized Design with three replications.

The recorded data in Completely Randomized Design (CRD) were analyzed statistically by the method suggested by Cochran and Cox (1963)<sup>[3]</sup>.

### Result and Discussion

Studies on changes during ambient storage of different varieties/hybrids of potato revealed that the minimum sprouting was observed by numbers and sprout weight (g per kg tubers) in varieties/ hybrids B-420 (2), J/95-229, Kufri Pushkar, Kufri Ashoka and Kufri Lalima after 120 days of storage at ambient conditions. The result of sprouting behavior and sprout weight (g per kg tubers) of all the varieties/hybrids from 30<sup>th</sup> to 120<sup>th</sup> days of storage period has been presented in Table- 1 and Table- 2, respectively.

**Table 1:** Sprouting (%) by number in different varieties/ hybrids of potato under ambient storage

Variety/ Hybrid	Storage period (days)			
	30	60	90	120
Kufri Pukhraj	0.0 (0.71)	0.0 (0.71)	19.5 (4.46)	42.5 (6.55)
Kufri Pushkar	0.0 (0.71)	0.0 (0.71)	20.6 (4.59)	27.3 (5.27)
Kufri Ashoka	0.0 (0.71)	0.0 (0.71)	21.5 (4.68)	28.4 (5.37)
Kufri Anand	0.0 (0.71)	0.0 (0.71)	25.7 (5.11)	38.0 (6.20)
Kufri Sutlej	0.0 (0.71)	7.9 (2.90)	33.2 (5.79)	51.3 (7.20)
Kufri Chipsona-2	0.0 (0.71)	0.0 (0.71)	16.8 (4.16)	31.2 (5.63)
Kufri Chipsona-3	0.0 (0.71)	0.0 (0.71)	20.2 (4.55)	37.2 (6.13)
Kufri Surya	0.0 (0.71)	0.0 (0.71)	20.4 (4.57)	40.4 (6.39)
Atlantic	0.0 (0.71)	0.0 (0.71)	19.1 (4.43)	32.0 (5.70)
Kufri Lalima	0.0 (0.71)	0.0 (0.71)	25.1 (5.06)	50.0 (7.11)
J/95-144	0.0 (0.71)	5.3 (2.4)	21.8 (4.72)	40.2 (6.38)
J/95-221	0.0 (0.71)	0.0 (0.71)	20.3 (4.56)	40.8 (6.43)
J/95-227	0.0 (0.71)	0.0 (0.71)	19.8 (4.50)	40.4 (6.39)
J/95-229	0.0 (0.71)	0.0 (0.71)	17.7 (4.26)	26.3 (5.17)
J/95-242	0.0 (0.71)	0.0 (0.71)	22.4 (4.79)	45.4 (6.77)
J/95-378	0.0 (0.71)	0.0 (0.71)	22.8 (4.81)	29.4 (5.47)
J/96-84	0.0 (0.71)	0.0 (0.71)	16.2 (4.04)	37.8 (6.18)
J/96-149	0.0 (0.71)	0.0 (0.71)	17.5 (4.24)	30.2 (5.54)
J/ 96 - 171	0.0 (0.71)	0.0 (0.71)	33.8 (5.86)	44.0 (6.67)
J/ 96 - 238	0.0 (0.71)	0.0 (0.71)	13.9 (3.78)	42.8 (6.57)
DSP - 7	0.0 (0.71)	0.0 (0.71)	18.0 (4.30)	37.2 (6.12)
DSP - 19	0.0 (0.71)	0.0 (0.71)	21.1 (4.64)	74.9 (8.62)
MS/ 92 - 1090	0.0 (0.71)	0.0 (0.71)	29.5 (5.48)	70.8 (8.43)
MS/ 94 - 899	0.0 (0.71)	6.2 (2.59)	14.5 (3.87)	35.2 (5.97)
MS/ 95 - 1309	0.0 (0.71)	7.1 (2.76)	17.9 (4.26)	49.3 (7.06)
MS/ 99 - 1871	0.0 (0.71)	6.2 (2.59)	21.1 (4.65)	60.3 (7.80)
B - 420 (2)	0.0 (0.71)	0.0 (0.71)	22.7 (4.80)	24.5 (4.97)
PS/ 96 - 14	0.0 (0.71)	0.0 (0.71)	27.4 (5.20)	57.6 (7.61)
MP/ 99 - 637	0.0 (0.71)	0.0 (0.71)	35.0 (5.95)	38.6 (6.24)
MP/ 97 - 644	0.0 (0.71)	0.0 (0.71)	24.1 (4.95)	44.1 (6.68)
MP/ 97 - 699	0.0 (0.71)	0.0 (0.71)	24.1 (4.95)	39.4 (6.32)
MP/ 97 - 921	0.0 (0.71)	0.0 (0.71)	22.7 (4.80)	35.3 (5.97)
MP/ 98 - 172	0.0 (0.71)	0.0 (0.71)	27.6 (5.29)	29.6 (5.49)
MP/ 99 - 322	0.0 (0.71)	0.0 (0.71)	34.9 (5.92)	46.0 (6.81)
MP/ 99 - 406	0.0 (0.71)	0.0 (0.71)	31.7 (5.67)	49.6 (7.08)
JX - 576	0.0 (0.71)	0.0 (0.71)	20.9 (4.62)	35.0 (5.95)
SEm ±		0.009	0.198	0.184
CD at 5 %	NS	0.02	0.55	0.52
CV %	-	1.54	7.15	4.95

Figures in parenthesis are angular transformed values

**Table 2:** Sprout weight (g/kg tubers) in different varieties/hybrids of potato under ambient storage

Variety/ Hybrid	Storage period (days)			
	30	60	90	120
Kufri Pukhraj	00	00	23.7	61.4
Kufri Pushkar	00	00	27.3	56.5
Kufri Ashoka	00	00	30.5	59.8
Kufri Anand	00	00	30.2	48.9
Kufri Sutlej	00	13.6	41.2	60.3
Kufri Chipsona-2	00	00	32.9	30.2
Kufri Chipsona-3	00	00	26.4	48.3
Kufri Surya	00	00	26.6	50.0
Atlantic	00	00	29.2	51.0
Kufri Lalima	00	00	20.1	28.7
J/95 - 144	00	10.1	28.1	54.7
J/95 - 221	00	00	27.8	52.5
J/95 - 227	00	00	22.7	40.5
J/95 - 229	00	00	25.8	24.5
J/95 - 242	00	00	26.7	47.2
J/95 - 378	00	00	33.8	59.3
J/96 - 84	00	00	29.4	52.0
J/96 - 149	00	00	27.7	28.3
J/96-171	00	00	26.6	51.8
J/96- 238	00	00	25.3	45.3
DSP-7	00	00	29.8	53.6

DSP-19	00	00	41.2	84.1
MS/92-1090	00	00	27.3	68.6
MS/94-899	00	8.9	24.6	46.3
MS/95-1309	00	8.1	26.1	53.7
MS/99-1871	00	11.7	33.9	63.7
B-420 (2)	00	00	6.8	19.3
PS/96-14	00	00	25.3	50.8
MP/99-637	00	00	29.5	59.0
MP/97-644	00	00	30.6	58.6
MP/97-699	00	00	23.8	49.1
MP/97-921	00	00	23.7	58.1
MP/98-172	00	00	17.6	26.5
MP/99-322	00	00	32.8	60.5
MP/99-406	00	00	26.7	51.9
JX-576	00	00	22.3	54.3
SEm ±	00	0.561	1.620	4.962
CD at 5 %	00	1.80	4.54	13.90
CV %	00	10.71	10.41	16.44

However, maximum sprouting was recorded in hybrids DSP-19, MS/92-1090, and MS/99-1871 after 120 days of storage in ambient conditions.

The sprouting behaviour in different potato varieties/Hybrids during storage period has also been reported by Perumal *et al.* (1980) <sup>[6]</sup>, Musa and Abdulla (1977) <sup>[7]</sup>, Arora and Malik (2008) <sup>[2]</sup>, Kaul and Mehta (1994) and Kang *et al.* (2001) <sup>[4]</sup>.

Thus, it could be concluded that there exist ample variation in sprouting behaviour among all varieties/hybrids under study which reflects the more scope of storage techniques of potato for long period storage with minimum sprouting and quality deterioration.

#### References

1. Anonymous. Indian Horticulture Database, National Horticulture Board (NHB), Ministry of Agriculture, Government of India, Gurgaon, Haryana, 2016.
2. Arora SK, Malik TP. Shelf-life of potato as observed under room temperature conditions. Global Potato Conference 2008 Opportunities and Challenges in the New Millennium 9-12 Dec. New Delhi, 2008, 249.
3. Cochran WG, Cox GN. Experiment Design. John Willey and Sons, New York, 1963.
4. Kang GS, Kumar R, Pandey SK, Khurana SMP. Keeping quality of some advanced potato hybrids at room temperature storage. J Indian Potato Assoc. 2001; 28(1):137-138.
5. Kaul HN, Mehta A. Storage of potatoes in India. Tech Bul, No. 47, Central Potato Research Institute, Shimla, 1999.
6. Perumal NK, Dhiman KR, Sahota TS. Dormancy and sprouting behaviour of some Indian cultivars of potato. Bangladesh Hort. 1980; 8(2):1-7.
7. Musa SK, Abdulla AA. Potato storage in Suddan. Suddan J Food Sci. 1997; 9:1-5.