



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(5): 3618-3620
© 2023 TPI

www.thepharmajournal.com

Received: 15-02-2023

Accepted: 18-03-2023

MR Deshmukh

AICRP- Potato, ZARS,
Ganeshkhind, Pune,
Maharashtra, India

GM Bansode

AICRP- Potato, ZARS,
Ganeshkhind, Pune,
Maharashtra, India

MB Khamkar

AICRP- Potato, ZARS,
Ganeshkhind, Pune,
Maharashtra, India

Pallavi Mahajan

AICRP- Potato, ZARS,
Ganeshkhind, Pune,
Maharashtra, India

RD Bansod

AICRP- Potato, ZARS,
Ganeshkhind, Pune,
Maharashtra, India

Corresponding Author:

MR Deshmukh

AICRP- Potato, ZARS,
Ganeshkhind, Pune,
Maharashtra, India

Performance of red skinned potato varieties in kharif season under Western Maharashtra

MR Deshmukh, GM Bansode, MB Khamkar, Pallavi Mahajan and RD Bansod

Abstract

Kufri Sindhuri a cross between Kufri Kundan and Kufri Red is a late maturing variety. Its tubers are attractive having light red skin, round tubers with medium deep eyes and creamy flesh and a dry matter content of (19.5 %). It also possesses good keeping quality, medium tuber dormancy period (> 6 weeks) and field resistance to late blight. It also produced higher average tuber yield as compared to the other red skinned varieties. In a three year trial at Pune the maximum total tuber yield at 90 days stage was recorded by Kufri Jyoti (20.60 t/ha) which was taken for comparison with red varieties as Kufri Jyoti is the dominant variety cultivated in Western Maharashtra. However among the red varieties the maximum total tuber yield was recorded by Kufri Sindhuri (19.72 t/ha). This variety aptly prove to be a good source of income to the farmers as red varieties fetch a more price than the normal potato varieties.

Keywords: Kufri Sindhuri, potato, red skin variety

Introduction

Potato (*Solanum tuberosum* L) occupies a prominent place in the agricultural economy of India. Red skin varieties are grown predominantly in the entire potato growing belt especially in eastern plains (Pandey 2000) [3]. Farmers in Maharashtra are showing their inclination towards cultivating red varieties as they fetch 2-3 rupees per kg more price than the white skin potatoes. Also red potatoes can be exported to Bangladesh, Bhutan, Nepal, Philippines. Keeping in view the preferences of the consumers, sellers sometimes use colours and other products like arrow root flour for staining/ colouring white potato tubers that fetch premium prices. Hence realizing the upcoming demand of red skin potatoes in local markets and much more in International markets, Kufri Sindhuri is recommended for cultivation in potato growing regions of western Maharashtra.

Material and Methods

The present investigation was carried out at Kodit village in Purandar tahshil of Pune district for three years (2017, 2018 and 2019) during Kharif season. In all five treatments or varieties namely, V1: Kufri Lalit, V2: Kufri Sindhuri, V3: Kufri Kesar, V4: Kufri Kanchan and V5: Kufri Jyoti were planted and replicated for four times in Randomised Block Design (RBD) (Panse and Sukhatme, 1985) [6]. The plant spacing was 60 x 20 cm with a plot size of 3 x 3 m, uniform fertilizers application was undertaken for all the treatments. Necessary cultural practices were also carried out uniformly for all the treatments. The manure and fertilizer were applied at the rate 20 MT/ha FYM and 150: 60: 120 Kg/ha N: P₂O₅: K₂O.

The observations like percent plant emergence, plant vigour by using 1 to 5 scale at 60 days after planting, mean canopy cover as per Burstall and Harris method, percent foliage senescence, tuber yield per ha at 90 days after planting, dry matter of potato tuber in percent and incidence of pest and diseases were recorded. The data collected have been analyzed and presented in tables 1 to 6.

Results

The data presented in Table 1 revealed that the per cent plant emergence was found to be maximum in Kufri Jyoti which was significantly superior over the other red skinned varieties. Plant vigor was found to be maximum in Kufri Sindhuri (3.89) however it was found to be at par with Kufri Jyoti (3.54). The mean canopy cover was recorded to be the maximum in Kufri Jyoti (34.59) which was significantly superior over the remaining red skinned cultivars.

Ata depicted in Table 2 revealed that the maximum tuber dry matter (%) was found in K. Sindhuri (19.47%) which was significantly superior over the remaining red skinned varieties as well as K. Jyoti.

The maximum total tuber yield at 90 days stage was recorded in Kufri Jyoti (20.58 t/ha) However it was found to be at par with that recorded by K. Sindhuri (19.72 t/ha).

Least incidence of early blight (18.08 %) as well as Late blight (8.06 %) was recorded in K. Sindhuri which was found to be at par with K. Jyoti.

Among red skinned cultivars highest sustainability yield index (0.86), Net Income per ha (Rs. 159107/-) and B: C ratio (2.25) was recorded by K. Sindhuri.

Table 1: Plant emergence, vigor and foliage senescence of red potato varieties

Sr. no	Treatment	Per cent plant emergence				Plant vigor (1-5 scale) at 60 DAP				Mean canopy cover (No. of squares)			
		2017	2018	2019	Pooled mean	2017	2018	2019	Pooled mean	2017	2018	2019	Pooled mean
1.	K. Lalit	91.225 (72.76)	91.000 (72.54)	92.000 (73.57)	91.410 (72.95)	2.800	2.650	2.750	2.733	32.000	32.150	32.350	32.167
2.	K. Sindhuri	93.325 (75.02)	92.450 (74.05)	93.250 (74.94)	93.010 (74.66)	3.900	3.850	3.920	3.890	33.331	33.350	33.370	33.350
3.	K. Kesar	90.375 (71.92)	90.498 (72.03)	91.330 (72.87)	90.677 (72.21)	2.930	2.950	2.900	2.927	32.330	32.550	33.350	32.410
4.	K. Kanchan	90.000 (71.56)	90.370 (71.92)	90.250 (71.80)	90.207 (71.75)	2.875	3.150	3.200	3.117	26.330	26.350	26.330	26.327
5.	K. Jyoti	94.450 (76.37)	94.250 (76.12)	94.330 (76.22)	94.343 (76.23)	3.500	3.550	3.580	3.543	34.670	34.500	34.603	34.590
	SE±	0.418	0.526	0.441	0.206	0.108	0.059	0.177	0.038	0.183	0.429	0.407	0.063
	CD at 5%	1.303	1.639	1.373	0.681	0.336	0.184	0.551	0.126	0.570	1.336	1.268	0.208
	CV %	0.910	1.147	0.956	0.387	6.745	8.3649	10.810	9.028	8.320	9.405	9.122	8.382

Table 2: Foliage senescence and tuber dry matter of red potato varieties

Sr. no	Treatment	Foliage senescence (%)				Tuber dry matter (%)			
		2017	2018	2019	Pooled mean	2017	2018	2019	Pooled mean
1.	K. Lalit	81.660 (64.64)	81.600 (64.59)	81.560 (64.56)	81.607 (64.59)	17.310 (24.58)	17.250 (24.54)	17.220 (24.51)	17.260 (24.54)
2.	K. Sindhuri	77.350 (61.58)	77.550 (61.71)	77.150 (61.44)	77.350 (61.58)	19.510 (26.21)	19.505 (26.20)	19.480 (26.19)	19.473 (26.18)
3.	K. Kesar	81.330 (64.39)	81.250 (64.34)	81.300 (64.37)	81.293 (64.37)	17.390 (24.64)	17.350 (24.61)	17.420 (24.66)	17.387 (24.63)
4.	K. Kanchan	81.820 (64.76)	81.800 (64.74)	81.900 (64.82)	81.840 (64.77)	17.500 (24.72)	17.450 (24.69)	17.400 (24.65)	17.450 (24.69)
5.	K. Jyoti	77.500 (61.68)	79.250 (61.58)	80.450 (61.64)	79.066 (61.63)	18.590 (25.54)	18.500 (25.47)	18.550 (25.51)	18.547 (25.50)
	SE±	0.523	0.491	0.385	0.395	0.645	0.150	0.265	0.018
	CD at 5%	1.630	1.529	1.198	1.307	NS	0.468	0.825	0.059
	CV %	8.309	9.223	8.956	8.852	7.145	7.667	6.941	7.172

Table 3: Total tuber yield at 90 days after planting of different red potato varieties

Sr. no	Treatment	Total tuber yield at 90 DAP (t/ha)				SYI
		2017	2018	2019	Pooled mean	
1.	K. Lalit	17.630	17.550	17.400	17.527	0.75
2.	K. Sindhuri	19.450	19.720	19.990	19.720	0.86
3.	K. Kesar	16.230	16.380	16.420	16.343	0.70
4.	K. Kanchan	16.540	16.650	16.560	16.643	0.70
5.	K. Jyoti	20.670	20.595	20.553	20.580	0.90
	SE±	0.403	0.518	0.269	0.094	-
	CD at 5%	1.257	1.613	0.839	0.313	-
	CV %	7.456	8.696	9.962	9.901	-

SYI: Sustainable Yield Index

Table 4: Per cent disease incidence at 60 days after planting of red potato varieties

Sr. no	Treatment	Late blight (%)				Early blight (%)				Virus (%)			
		2017	2018	2019	Pooled mean	2017	2018	2019	Pooled mean	2017	2018	2019	Pooled mean
1.	K. Lalit	13.355 (21.43)	11.045 (19.40)	10.440 (19.76)	11.603 (19.91)	21.330 (27.50)	22.098 (28.03)	21.988 (27.95)	21.800 (27.83)	6.670 (14.96)	8.293 (16.73)	6.600 (14.88)	7.207 (15.56)
2.	K. Sindhuri	9.330 (17.78)	8.278 (16.71)	6.588 (14.86)	8.060 (16.49)	20.670 (27.04)	17.663 (24.84)	15.938 (23.52)	18.087 (25.16)	4.560 (12.32)	6.080 (14.27)	4.380 (12.08)	5.007 (12.92)
3.	K. Kesar	9.340 (17.79)	12.713 (20.88)	13.195 (21.29)	11.743 (20.03)	22.000 (27.97)	20.420 (26.86)	22.013 (27.97)	21.113 (27.35)	5.330 (13.34)	11.045 (19.40)	9.885 (18.32)	8.750 (17.20)
4.	K. Kanchan	9.250 (17.70)	9.860 (18.30)	8.800 (17.25)	9.303 (17.75)	23.330 (28.88)	20.998 (27.26)	21.433 (27.57)	21.917 (27.90)	2.670 (9.40)	8.835 (17.28)	8.293 (16.73)	6.597 (14.87)
5.	K. Jyoti	8.330 (14.90)	6.625 (14.90)	5.490 (13.55)	7.067 (15.40)	19.330 (26.08)	15.455 (23.14)	15.393 (23.09)	15.723 (23.35)	5.330 (13.34)	5.525 (13.58)	3.293 (10.45)	4.713 (12.53)
	SE±	0.559	0.761	0.856	0.879	1.013	1.181	1.045	0.723	0.437	1.113	1.181	1.019
	CD at 5%	1.740	2.369	2.667	2.912	NS	3.680	3.257	2.395	1.361	3.467	3.650	NS
	CV %	11.261	15.675	19.233	15.938	9.495	12.223	10.804	6.350	17.783	27.975	12.223	17.351

Table 5: Economics (Mean of 2017 to 2019)

Sr. No.	Variety	Yield (t/ha)	Total cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C Ratio
1.	K. Lalit	17.52	120985	254040	133055	2.10
2.	K. Sindhuri	19.72	126833	285940	159107	2.25
3.	K. Kesar	16.34	117848	236930	119082	2.01
4.	K. Kanchan	16.64	118645	241280	122635	2.03
5.	K. Jyoti	20.58	129119	298410	169291	2.31
	Max.	20.58	129119	298410	169291	2.31
	Min.	16.34	117848	236930	119082	2.01
	Avg.	18.16	122686	263320	140634	2.14
	SD	1.89	5030.17	27437.59	22407.42	0.13

Table 6: Organoleptic test for red potato varieties-observation recorded by 20 people

Sr. no.	Variety	Taste			Appearance		
		Excellent	Fair	Poor	Excellent	Fair	Poor
1.	K. Lalit	-	14	6	05	12	03
2.	K. Sindhuri	12	08	-	15	05	-
3.	K. Kesar	-	15	05	09	11	-
4.	K. Kanchan	05	10	05	02	18	-
5.	K. Jyoti	13	05	02	15	05	-

Conclusion

It can be concluded from three years pooled data (2017-19) that out of the five red skinned varieties of potato evaluated at AICRP (Potato), Ganeshkhind, Pune. Kufri Sindhuri can be recommended as a promising potato variety for kharif season in plain zone of Maharashtra.

References

- Kumar S. Breeding red potato cultivars for eastern Indo Gangetic Plains. *Annals Agri-Bio Res.* 2011;16(2):153-155.
- Luthra SK, Pande PC, Singh SV, Pandey SK, Khurana SMP, Khan IA, *et al.* Kufri Arun: A new red skin potato variety. *Potato J.* 2006;33(1-2):20-25.
- Pandey SK, Shekhawat GS, Sarkar D. Quality attributes of Indian potatoes for export priorities and possibilities. *J Indian Potato Assoc.* 2000;27:103-11.
- Pandey SK, Singh SV, Pande PC, Khurana SMP. A promising red skin potato hybrid for west-central Gangetic plains. *J Indian Potato Assoc.* 2003;27:103-11.
- Shambhu Kumar, Eradasappa E, Vinod Kumar, Prasad B. Kufri Lalit: A light red skinned potato variety for Eastern plains. *Potato J.* 2017;44(2):95-100.
- Panase VG, Sukhatme PV. Statistical methods for agricultural research. ICAR, New Delhi. 1985;8:308-318.