



Multivariable interaction analysis for enhanced baby potato (*Solanum tuberosum*) production in India

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ABSTRACT

Worldwide, potato is consumed in different forms from cooked to fry, and accordingly the standard cultivars and its production are met. In recent times, the demand for smaller or baby potatoes (*Solanum tuberosum* L.) with a target size of 20-40 mm in diameter is increasing to meet the culinary market. The production method of baby potato is markedly different from ware potatoes, as are harvested prematurely that led to greater yield reduction per unit area. Hence, a holistic approach is imperative to minimise the yield loss as no single dependent factor operates independently. Therefore, the commercially leading potato cultivars (K. Khyati, K. Himsona, K. Pukhraj and K. Pushkar) were evaluated in AICRP (Potato) under contrasting growing environments for two years to understand the interaction effect of location, cultivars and harvesting time together on yield components. The results revealed a highly significant difference for all three main effects for the entire tuber size production indicated an existence of heterogeneity among growing environments and cultivars. The interaction effects location*cultivar and cultivar*harvesting time exhibited a highly significant difference for small (<20 mm), medium (20-40 mm) and large size tuber yield (>40 mm), total yield and tuber dry matter content indicated their strong influence on these traits. The growing location Chinndwara registered substantially greater efficiency by accounting 145, 115, 61 and 97% for small, medium, large size tubers and total tuber yield, respectively. The delay in harvesting time (>75DAP) reduced the per cent of small and medium size tubers and their yield. Although, cv. K. Himsona had the greatest per cent of small and medium size tubers suitable for baby potatoes, the yield of this group was found greatest in cv. K. Khyati and at par with K. Pukhraj across locations, hence can be recommended for baby potato production under tropical conditions.

Key words: Baby potatoes, Cultivars, Multi environments

Potato (*Solanum tuberosum* L.) is considered the third most important food crop in the world due to its high productivity and nutritional value. It is being grown in several ecosystems comprising >125 countries and consumed almost daily by more than a billion people. However, potato consumption rate had wider variation among the growing countries, which ranged between 9.0 kg (developing countries) to 86.0 kg/year (Europe). The reason being the fresh potato demand is influenced by several premarket (price, income, price of other goods) and post market factors (convenience to wash, peel, and cook) and also its changing preferences from mealiness (Rinear 1931)

to appearance, moisture content, flavour and skin quality etc (Jemison *et al.* 2008). In addition, there are several other convenience-related variables, viz. women involved in the labour force, meals eaten away from home, and microwave oven ownership (Guenther *et al.* 1991), complementary relationship between meat and potatoes (Davis *et al.* 2008), conventionally grown fresh, fresh organic, frozen processed, and dehydrated processed potatoes (Hsieg *et al.* 2007), consumer age and tuber size (Cowan 1985) has also influenced on fresh potato demand model.

In recent times, the demand for small or baby potatoes with target size of 20-40 mm in diameter is catching the culinary market under fresh potato segment. However, baby potato production is markedly different from ware potato, as it has a unique set of demands for suitable cultivars and agronomic practices etc. The premature harvesting leads to greater yield reduction per unit area than ware potatoes, however achieving the earliest possible marketable yield is of vital importance for baby potato production (Harasim *et al.* 2004) as the lower yield is usually offset by higher selling price (Sawicka 1998). However, narrowing of yield loss gap between baby and ware potato necessitates a

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holistic approach as not a single dependent factor operates independently. Hence, an ideal cultivar yielding greater per cent and yield of baby potatoes under suitable growing environments could increase their commercial sustainability. The identification of suitable varieties for baby potato will not only be beneficial for India, but also in other countries, as presently Indian varieties are grown in several African, North American and European countries (Luthra *et al.* 2004).

A cultivar's high yielding potential can either be achieved through a greater number of small tubers (or) fewer number of very large size tubers per plant (Abbasi *et al.* 2004), in which the former approach is imperative for baby potato production. So far, no cultivar has been specially recommended for commercial production of baby potatoes, however few elite lines have been identified for small tubers with high yields (Luthra *et al.* 2005, Tariq *et al.* 2008). In addition to cultivar, there are several other factors such as nitrogen, seed piece spacing, climatic conditions and geographic location (Barry *et al.* 1990, Arsenault *et al.* 2001, Abbasi *et al.* 2006) which also had greater influence on yield. The interaction effect of growing environments and harvesting time also reported to have a greater influence on tuber size and shape of cultivar by attributing differences in the rate of nutrient absorption led growth of tubers (Lisinska and Leszczynski 1989, Sood *et al.* 2008). However, there are contradictory reports on growing environments with low (Bodlaender 1958) or high temperature (Lafta and Lorenzen 1995) favours production of smaller tuber speculates selecting the ideal growing environments for greater baby potatoes production. Hence, the present investigation was attempted with four high yielding commercial cultivars under two contrasting growing environments to understand the main as well as interaction effects of location, cultivars and harvesting time together for greater baby potato yield under tropical conditions.

MATERIALS AND METHODS

Field experiment was conducted at two contrasting locations such as Bhubaneswar (L_1) and Chinndwara (L_2) under All India Coordinated Research Project (Potato) during 2014-15 to 2015-16. Four high yielding commercial cultivars, viz. Kufri Khyati, Kufri Himsona, Kufri Phukraj and Kufri Pushkar having different origins and tuber shape characteristics, were tested under completely randomized block design with three replication (Table 1). The edaphoclimatic conditions of the experimental locations were dissimilar in respect of temperature, p -days, cumulative GDD, photo and heat thermal unit etc (Table 2).

Potato cultivars were planted at optimum crop season (October-January) of the respective location during winter season under short day conditions to realise the maximum total yield in corresponding different groups of tuber sizes such as small (<20 mm), medium (20-40 mm) and large size tuber yield (>40 mm). The row to row spacing was 60 cm and plant to plant spacing was 20 cm. As per recommended fertiliser, whole of the P (60 kg P_2O_5 /ha) and K (100 kg K_2O /ha), and half of the N were applied at planting and

Table 1 Characteristic of potato cultivars tested during the study

Cultivar	Colour		Tuber shape	Natural depression
	Skin	Flesh		
K. Khyati	Brown	Cream	Round	Absent
K. Himsona	Brown	Cream	Round-Oval	Absent
K. Phukraj	Brown	Cream	Oval	Absent
K. Pushkar	Brown	Yellowish Cream	Oval	Absent

Table 2 Summary of climatic variable of potato growing environments

Factor	Growing environments	
	Bhubaneswar (L_1)	Chinndwara (L_2)
Latitude	20° 15'	21° 13'
Longitude	85° 51'	81° 25'
Altitude	26	292
Mean (Maximum temperature)	30.46°C	26.88°C
Seasonal temperature range	25.3-41.9°C	20.3-33.1°C
Seasonal mean minimal temperature	16.39°C	12.99°C
Seasonal mean temperature	23.43°C	19.94°C
Mean daily p -days	7.44	8.18
p -days range	3.71-9.70	4.98-9.90
Cumulative p -days	669.44	735.76
Cumulative GDD	1712.4	1398.2
Mean ratio of P/GDD	40.64	54.42
Mean daily photo thermal unit	212.25	174.26
Mean daily heat thermal unit	390.05	311.06

the remaining half N was applied 25 days after planting. The other plant protection measures were followed as per recommendation. Harvesting was done at 60 DAP (H_1), 75 DAP (H_2) and 90 DAP (H_3), and the tubers were collected from each plot and grouped into small (<20 mm), medium (20-40 mm), large sizes (>40 mm). The tuber dry matter content was estimated and expressed in per cent.

The effect of cultivars, location and harvesting time and their interactions were evaluated with MANOVA test complemented with individual ANOVAs. The data were subjected to statistical analysis using OPSTAT developed by CCS Haryana Agricultural University, Hisar (Haryana), India (Sheoran *et al.* 1998).

RESULTS AND DISCUSSION

Potato is originated from the high-altitude tropics in the Andes the tuber bulking is best promoted by short photoperiods, high light intensity and cool climates, with mean daily temperatures between 15-18°C. However, sensitivity to environmental conditions varies markedly between cultivars (Brown 2007) facilitate difference in tuber size, shape and quality. Although, heat and water stress are the most limiting factors of potato production, the former led to a higher number of smaller tubers/plant,

low tuber specific gravity and reduced dry matter content (Haverkort 1990). Tuber size is determined by the bulking rate of cultivar and the suitable bulking duration, where tuber bulking duration is reported to be of greater importance determining the final yield (Mihovilovich *et al.* 2014). The existence of variation on bulking rate among cultivars, the prevailing of greater bulking duration among the growing region is reported a deciding factor of final yield (Periera and Nova 2008) reasoned by the longer a canopy is able to produce photosynthate at a relatively high rate, and the longer tubers are bulking at their maximum rate, the higher the yield will be in such a way as to express the productive potentiality of potato crop at a given site. Accordingly, the Northern and Central Plains have longer growing period as compared to the Eastern plains of India.

The growing environments of the present study in Eastern plains itself showed a wider variation for several climatic variables (Table 2). As that of mean minimal temperature, the progression pattern of maximum temperature at monthly interval basis from planting to harvesting showed negatively linear trend in Chinndwaraas against a positive polynomial pattern in Bhubaneswar (Fig

1A and B). On daily basis, the mean p-days accumulated at both locations were polynomial pattern, however greater value observed at Bhubaneswar (Fig 1C). The progression pater of mean GDD accumulated from planting to harvesting at Bhubaneswar was negative linear as against Chinndwara which followed a positive polynomial trend (Fig 1D). In totality, the environmental condition of Bhubaneswar was progressively warmer from planting to harvesting as compared to Chinndwara clearly indicating contrasting growing situation despite both the locations fall in Eastern plains and had a short growing period of ~ 4 months. However, the seasonal mean temperature of Bhubaneswar (23.43°C) was warmer as compared to Chinndwara (19.94°C) which strongly reflects on the bulking rate of cultivars (Table 2). The cultivar with greater bulking rate and longer bulking duration favours production of larger size tubers. Whereas the cultivar with greater bulking rate under short bulking duration yields small size tubers. Hence, the assessment of main as well as interaction effect of location, cultivars and harvesting time on yield of different size of tuber revealed that the F test value extremely large (Table 3) for the main effects of location (F-test range 243.1-1343.3;

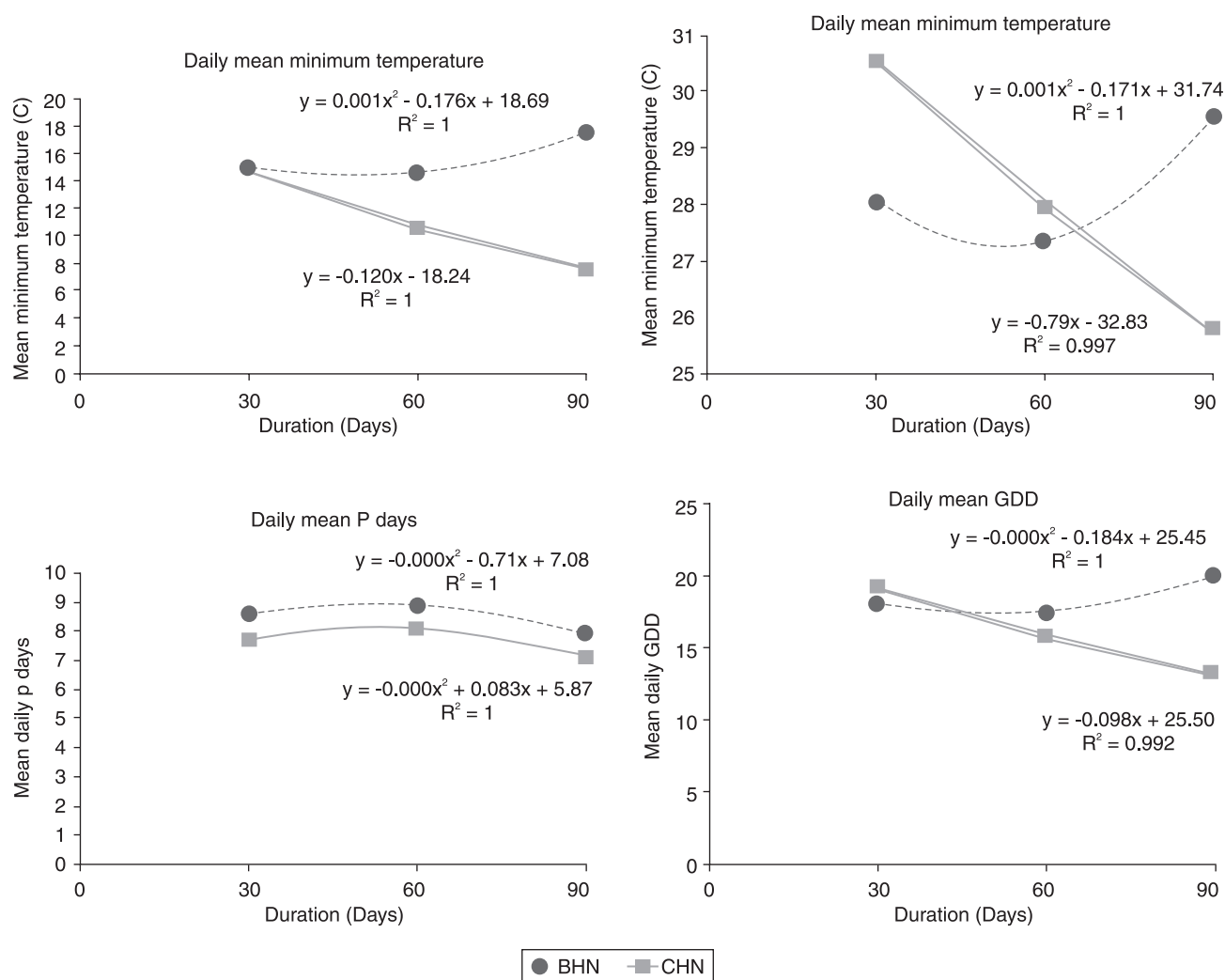


Fig 1

Table 3 Mean sum of square value of ANOVA for emergence per cent, tuber size specific yield, total tuber yield and tuber dry matter content of potato under tropical condition

Source of variation	DF	Mean sum of square values					
		Emergence percent at 30 DAP	Tuber yield (t/ha)			Total tuber yield (t/ha)	Tuber dry matter content (%)
			Small (<20 mm)	Medium (20-40 mm)	Large (>40 mm)		
Location	1	8.60*	193.881**	466.041**	184.865**	2411.42**	47.981**
Cultivars	3	210.976**	2.431**	10.985**	82.286**	148.496**	4.283**
Location * Cultivars	3	46.668**	3.203**	2.609**	25.997**	25.262**	2.468**
Harvesting time	2	2.779 ^{NS}	1.149*	9.167**	138.119**	200.866**	14.955**
Location * Harvesting time	2	7.553*	0.694 ^{NS}	10.276**	58.745**	84.532**	0.182*
Cultivars * Harvesting time	6	2.539	0.811**	1.762**	3.953**	7.815*	0.432**
Location * Cultivars * Harvesting time	6	0.897 ^{NS}	0.404 ^{NS}	2.427**	2.052*	5.816 ^{NS}	0.152**
Error	46	1.908	0.233	0.524	0.76	3.172	0.036
CV value	1.54	12.39	10.45	12.73	10.08	1.13	
LSD value (5%)	2.79	0.97	1.46	1.76	3.58	0.38	

*and ** Significant difference at 0.05, and 0.01, P levels, respectively. NS = non significant.

mean 678.9) followed by cultivar (6.33-76.29; 37.71), and harvesting time (1.75-31.92; 16.0). The first order interaction of location*cultivar (5.84-50.26; 23.0), location*harvesting time (1.80-19.83; 6.21) were comparatively moderate as against cultivar*harvesting time (4.09-169.55; 56.91). The second order interactions of location*cultivar*harvesting time were significant (F-test range 0.97-28.33; mean 12.21) for yield of medium, large size tubers and tuber dry matter content.

The four leading commercial cultivars (K. Khyati, K. Himsona, K. Pukhraj and K. Pushkar) evaluated at eastern plains revealed the significant effect of location on emergence per cent ($P < 0.05$) and yield of all size tuber, total yield and dry matter content ($P < 0.01$). The impact of cultivar on all the traits under study was highly significant ($P < 0.01$). Except emergence per cent, all other traits significantly influenced by harvesting time ($P < 0.05$ or $P < 0.01$). The significance of main effects (location, cultivars and harvesting time) on majority of the traits clearly indicated the existence of heterogeneity of growing environments, genetic variation among the cultivars tested and harvesting time and their strong influence on these traits (Rex 1991, Mehta *et al.* 2011).

Plant emergence per cent

Plant emergence per cent is an indicator of total plant population which decides total yield per unit area. Among the main effect, harvesting time had no influence on emergence per cent at 30 DAP (Table 3) is justified that potato tuber germination or emergence is the phenomenon controlled by external (temperature, moisture) as well as internal factors (dormancy, physiological maturity) within the seed tuber (Bugarcic *et al.* 1997). The external factors differed among the locations ($P < 0.05$), and internal factor differed by cultivar ($P < 0.01$) and their interaction ($P < 0.01$) is strongly influenced this trait. Accordingly, the greater emergence

was noticed at Chinndwara (90.26%) as compared to Bhubaneswar (Table 4) and the cv. K. Khyati showed its superiority (92.14%) followed by K. Pushkar (91.80%). It is justified that although the minimal temperature prevailed at Bhubaneswar was similar as that of Chinndwara during the crop emergence period, the slightly greater maximum temperatures prevailed at the later resulted comparatively greater emergence among cultivars (Fig 1A and B) and also due to internal factors attributed to the tuber dormancy controlling factor presumably dominant in K. Himsona (84.84%) caused poor emergence as compared to the rest (Bugarcic *et al.* 1997).

Yield of small, medium and large size tubers

The smaller size tubers are getting better market price during the initial phase of harvest season, hence farmers prefers to early harvest of any cultivar grown. A different grade standard for potato is being followed by Agmark and Codex in the country, where Codex defined tuber size of 18.1 mm-28.0 mm as baby potatoes. In the present study, except yield of small size tuber, the yield of medium to larger size tubers were strongly influenced by the main as well as interaction effects. The non significant interaction effects of location* harvesting time and location*cultivar*harvesting time for yield of small size tuber strongly revealed that although the three main factors were strongly influencing individually on small size tuber yield ($P < 0.01$), the cultivar ($P < 0.01$), and its interaction with location ($P < 0.01$) effect pronounced more. Further, it reflected the lack of difference between cultivars in tuber mass gain at earlier harvest (60 DAP), and its highly significant difference for medium and large size tubers indicating the late harvest had significant influence on tuber mass gain (Sogut and Ozturk 2011). Hence, developing ideal cultivars for small size tuber production should be prioritised and manipulation of harvesting time or

Table 4 Location, cultivars and harvesting and its interaction on emergence per cent, tuber size distribution yield and tuber dry matter content of potato under tropical conditions

Factor	Crop emergence per cent (%)	Small size tuber yield (t/ha)	Medi-um size tuber yield (t/ha)	Large size tuber yield (t/ha)	Total tuber yield (t/ha)	Tuber dry matter content (%)
<i>Cultivars</i>						
K. Khyati	92.14	4.24	7.22	7.76	19.21	16.70
K. Himsona	84.84	3.90	5.82	3.65	13.36	16.87
K. Phukraj	90.88	4.01	7.01	7.99	19.08	16.16
K. Pushkar	91.80	3.39	7.65	7.99	19.02	17.34
Mean	89.92	3.95	6.92	6.85	17.67	16.77
CD	0.927	0.324	0.486	0.585	1.195	0.127
<i>Harvesting time</i>						
60 DAP	90.31	3.76	6.23	4.54	14.53	15.96
75 DAP	89.75	4.15	7.41	6.67	17.91	16.80
90 DAP	89.70	3.78	7.13	9.33	20.31	17.54
Mean	89.92	3.90	6.92	6.85	17.58	16.77
CD	NS	0.280	0.421	0.507	1.035	0.118
<i>Location</i>						
Bhubaneswar	89.57	2.25	4.38	5.25	11.88	15.95
Chinndwara	90.26	5.54	9.47	8.45	23.29	17.58
Mean	89.92	3.90	6.93	6.85	17.59	16.77
CD	0.656	0.229	0.344	0.414	0.845	0.090
<i>Interaction of cultivar, harvesting time and locations</i>						
L*C	1.311	0.458	0.687	0.828	1.691	0.180
L*HT	1.135	NS	0.595	0.717	1.464	0.156
C*HT	NS	0.561	0.841	1.014	2.071	0.220
L*C*HT	NS	NS	1.190	1.433	NS	0.311

L= Location, C=Cultivars, HT= Harvesting time, L*C=Location * Cultivars, L*HT=Location*Harvesting time, C*HT= Cultivars*Harvesting time, L*C*HT= Location*Cultivars*Harvesting time. * and ** indicate significant different at 0.05, and 0.01, P levels, respectively. NS = non significant

location would substitute substantially. The non-significant interaction effect of location*cultivars*harvesting time for small size tuber yield (<20 mm) and significance differences for medium and large size tuber yield (t/ha) clearly revealed that earlier harvest (60 DAP) coupling comparatively at par yield of smaller size tuber with other size tubers in the present study. The similar non-significant differences for the interaction effect of year*harvesting time*cultivar for marketable yield of potato was reported earlier by Sogut and Ozturk (2011) under Turkey condition.

The cultivar with greater tuber bulking rate at short duration under unfavourable environments (or) low bulking rate at favourable environments would be ideal for baby potatoes, as tuber bulking rate is the slope of the linear

curve described by the increase in tuber weight with time (Mihovilovich *et al.* 2014). Although, tuber bulking duration is of greater importance in determining final yield of ware potato, bulking rate has greater impact for baby potatoes. The tuber bulking is governed by tuber initiation and tuber growth, which vary among geographic location, environmental factors, and cultivars (Mihovilovich *et al.* 2014). Accordingly, the location Chinndwara recorded with greater yield of smaller and medium size tubers (5.53 t/ha and 9.46 t/ha, respectively), which was almost 145% and 115% more efficient as compared to Bhubaneswar (2.25 t/ha and 4.38 t/ha, respectively) in the present study. The *cv.* K. Khyati (4.23 t/ha) followed by K. Pukhraj (4.06 t/ha) were more efficient for small size tuber production and *cv.* K. Pushkar (10.47 t/ha) followed by K. Khyati (9.48 t/ha) were more efficient for producing medium size tubers at their favourable location Chinndwara. The per cent of small and medium size tubers decreased as days to harvest is delayed from 60 DAP (25.29% and 41.59%, respectively) to 90 DAP (18.58% and 34.30% respectively) at across cultivars and locations (Fig 1A-D). The location Chinndwara had the greatest per cent of small and medium size tuber (24.73 and 40.78 %, respectively) at across cultivars.

While considering the large size tuber, after the tuber initiation phase (20 to 30 DAP) and reaching the number of developing tubers to a maximum (15.0-20.0) the tuber growth phase extending from 60 to 90 DAP resulting in to large size tubers. However, the tuber growth phase varies between cultivars and growing environments. The time from emergence to tuber initiation is shortened by short day conditions and temperatures (<20.0°C) (Midmore 1990), however heat stress leads to a higher number of smaller tubers per plant and lower tuber specific gravity (Haverkort 1990). Accordingly, the greater yield of large size tuber was recorded at Chinndwara (8.45 t/ha), accounting by 61% more efficient than Bhubaneswar (5.45 t/ha). The *cv.* K. Pukhraj (7.99 t/ha) followed by K. Pushkar (7.98 t/ha) were more efficient in producing large size tubers. On contrary to small and medium size tuber production, the per cent of large size tuber increased as days to harvest is delayed from 60 DAP (31.27%) to 90 DAP (45.03%) at across cultivars and locations (Fig 1A-D). The greatest per cent of large size tubers were recorded at Bhubaneswar (42.84 %) at across cultivars. The *cv.* K. Pukhraj (42.59%) registered the highest share of larger size tuber, followed by K. Pushkar (40.69%) at par with K. Khyati (40.39%). Late harvesting (90 DAP) evidenced with greater yield of larger size tubers (9.33 t/ha) invariably as compared to harvesting at 60 DAP (4.54 t/ha), accounting by 105% increment. The result justified that the location Bhubaneswar had wider variation for minimal, maximal and greater mean seasonal temperature proves it as unfavourable environment in the present study as compared to Chinndwara. The greater per cent of large size tuber evidenced in K. Pukhraj and K. Pushkar irrespective of harvesting time strongly proved them as cultivar with greater bulking rate. However, the greater share of small and medium size tuber recorded by

K. Himsona and K. Khyati at 60 and 75 DAP, and reflecting at par per cent of large size tuber at 90 DAP in K. Khyati (40.31%) strongly supports the finding of Mihovilovich *et al.* (2014) that an early variety with a yield advantage over a later variety during the linear phase of bulking would show a final yield lower than the later one because of earlier senescence, however it won't apply for early harvesting. The reason being that different combination of tuber size contributes on total yield and a slight change in weather pattern affect greatly the total number of tubers produced per plant as compared to the total yield (Table 3 and 4) such as fewer larger size tubers at favourable environments (or) greater number of smaller size tubers at unfavourable environments result the same total yield (Went 1959).

Total tuber yield

Total tuber yield is a combination of small, medium and large size tubers and the share of each group is determined by the growing environments. The entire main as well as interaction effect strongly influenced on total tuber yield, except the second order interaction effect. This might be due to non-significant contribution of yield of small size tuber attributed by lack of genetic difference among cultivars over harvesting time (Table 3). The greatest total tuber yield was realised at Chinndwara location (23.45 t/ha), which accounts 97% more efficient than Bhubaneswar (11.88 t/ha). Although, K. Pushkar had the greatest total tuber yield (26.11 t/ha) at Chinndwara, *cv.* K. Khyati (19.21 t/ha) registered the greatest yield at across locations. Total tuber yield increased as the harvesting is delayed and harvesting at 90 DAP registered the greatest yield (20.23 t/ha) by accounting 39% increment in yield as compared to harvesting at 60 DAP. Among the *cvs.*, K. Khyati recorded the highest yield (19.21 t/ha) followed by K. Pukhraj (19.07 t/ha) at across harvesting time, however K. Pukhraj attained its maximum yield at 75 DAP and proven early bulking unlike K. Khyati which required to attain maximum yield up to 90 DAP. This finding proved that the *cv.* K. Khyati adopted a phenomenon of shortest tuber initiation time (favourable temperature) with lower bulking rate (favourable temperature) at Chinndwara that resulted in to greater smaller size tuber at earliest harvesting of 60 DAP (Midmore 1990, Haverkort 1990). However, the greatest yield of K. Phukraj (4.673 t/ha) at par with K. Khyati (4.67 t/ha) for 75 DAP and K. Himsona (4.27 t/ha) and superior than K. Khyati for 90 DAP clearly revealed its bulking rate moderate and slow respectively. The similar trend has been observed for tuber yield of medium size tuber (20-40 mm) also with an exception that K. Pushkar having the greatest yield (8.14 t/ha) at harvesting of 75 DAP. It further clarifies that the lesser yield of all these cultivars for harvesting at 90 DAP as compared to its 75 DAP indicates the interference of unfavourable temperature, and its influence on slow bulking rate of tubers (Haverkort 1990).

Tuber dry matter content

Tuber dry matter is strongly influenced by the growing

environments (Mehta *et al.* 2011) is proven from the result of highly significant differences observed for main as well as interaction effects (location, cultivars and harvesting time) in the present study. Potatoes harvested prematurely possess greater level of reducing sugar (60 DAP), decrease its concentration further up to 90 days, thereafter increase after 100 DAP invariably in all cultivars except few (Mehta *et al.* 2011) clearly showed a differential patterns on sugar accumulation among cultivars. The tuber dry matter content had a strong negative relation with reducing sugars ($r=-0.78$) (Kaur and Aggarwal 2014). Hence, the cultivar having adequately higher level of dry matter content at earlier harvest would be ideal for baby potatoes industry. As that of yield, the tuber dry matter content was also found greater at Chinndwara (17.58%), accounting 10% efficient over Bhubaneswar (15.95%). The *cv.* K. Pushkar' registered greater value at across locations (17.34%) followed by 'K. Himsona' (16.86%). Delay in harvesting had positive response on dry matter accumulation as evidenced harvesting at 90 DAP invariably recorded with greater tuber dry matter content at across cultivars (17.54%), which is 9% superior over harvesting at 60 DAP.

It is concluded that the location Chinndwara is more efficient for producing small (145%) and medium (115%) size tubers at across cultivars and harvesting time. Delay in harvesting up to 75 DAP favours greater per cent of small and medium size tubers. Although, K. Himsona recorded with the greatest per cent of small and medium size tubers suitable for baby potatoes, the yield was found greatest in K. Khyati and at par with K. Pukhraj at across locations and harvesting time can be recommended for baby potato production under tropical conditions.

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