Applied Biological Research 21(1): 65-73; (2019)
DOI: 10.5958/0974-4517.2019.00011.9

RELIABILITY ON YIELD CONTRIBUTING CHARACTERS FOR IMPROVING YIELD POTENTIAL IN PAPRIKA (*Capsicum annuum* L.)

T. Lakshmi Tirupathamma[1], C. Venkata Ramana[2], L. Naram Naidu[2] and K. Sasikala[3]

[1]*Department of Vegetable Science,* [3]*Department of Agronomy, College of Horticulture, Dr. Y.S.R. Horticultural University, Venkataramannagudem - 534 101, West Godavari, Andhra Pradesh (India)*
[2]*Horticulture Research Station, Dr. Y.S.R. Horticultural University, Lam Farm, Guntur - 522 034, Andhra Pradesh (India)*
*e mail: *cvr.venkat@gmail.com*

(Received 29 June, 2018; accepted 24 December, 2018)

ABSTRACT

Forty four genotypes of paprika (*Capsicum annuum* L.) were evaluated at Horticultural Research Station, Lam farm, Guntur (India) in the year 2017 to assess variability, character association and path analysis among the yield and yield attributing characters. High magnitude of PCV and GCV were observed for characters *viz.*, number of fruits plant^{-1}, fruit diameter and dry fruit yield plant^{-1}. Predominance of additive gene action was observed for days to maturity, number of fruits plant^{-1}, fruit length, fruit diameter, number of seeds fruit^{-1} and dry fruit yield plant^{-1} which may be exploited through simple selection. Dry fruit yield plant^{-1} showed positive significant correlation with the number of fruits plant^{-1}. The path analysis revealed that the number of fruits plant^{-1}, fruit length and fruit diameter had positive direct effect on yield plant^{-1} indicating that direct selection based on these traits may be helpful in evolving high yielding varieties of paprika.

Keywords: *Capsicum annuum*, genetic advance, genetic variability, heritability, paprika, path analysis

INTRODUCTION

Paprika (*Capsicum annuum* L.) 2n = 24 is one of the important commercial vegetable as well as spice crops grown all over the world. Paprika, a form of chilli, is valued mainly for its high colour, mild pungency and oleoresins. In chilli, three major products *viz.*, paprika, oleoresins and dried chilli (both in whole and powder form) are traded in the world market. The pungent principle of paprika is capsaicin, an acid amide of Vanillylamine. Chilli is a good source of vitamin C (ascorbic acid) used in food and beverage industries (Bosland and Votava, 2000). It has also acquired a great importance because of the presence of oleoresin, which permits better distribution of colour and flavour in foods. The demand for paprika oleoresin as a colouring agent has increased in international market especially in Europe and USA due to the ban on artificial colouring substances (Joshi *et al.*, 1995). Globally, chilli and paprika (dry) are grown on a total area of 1.94 million ha with global production of 3.35 million tonnes in 2017. The global productivity of chilli and paprika (dry) was 1.73 metric tonnes ha^{-1}. The value of total chilli and paprika was US $ 3.42 million. India is the world's leading producer occupying an area of 0.86 million ha with a production of 1.7 million tonnes and productivity of 1.87 metric tonnes ha^{-1} (NHB, 2017). The important chilli growing states in India are Andhra Pradesh, Karnataka, Maharashtra, Orissa, Tamil Nadu and Madhya Pradesh. The productivity of crop is low and there is need for development of new varieties and hybrids with high productivity.

The assessment of nature and magnitude of variability in the available germplasm is prerequisite for formulating effective breeding methods as the genetic improvement of any crop depending on magnitude of genetic variability and extent of heritability of economically important characters, though the part played by environment in the expression of such characters also needs to be taken into account. The effectiveness of selection and development of improved varieties depends on the nature of variability expressed for yield and its contributing characters in the gene pool. On the other hand, heritability studies are of foremost importance to judge whether the observed variation for a particular character is due to genotype or due to environment. Heritability estimates may not provide clear predictability of the breeding value. Thus, estimation of heritability accompanied with genetic advance is generally more useful than heritability alone in the prediction of resultant effect for selecting the best individuals (Johnson *et al.*,1955). High yield and yield contributing characters with improved quality parameters have been the major objective of chilli breeding programme. Before going to breeding program through selection it is essential to know the importance and inter-association of various components along with their association with yield. The correlation coefficient analysis measures the mutual relationship between various characters and it determines the component traits on which selection can be relied upon for effective improvement.

The assessment of direct and indirect effects of each component towards yield through path coefficient analysis would help in the identification of reliable characters contributing towards yield. Most research has been focused on chilli and a few studies are available in paprika regarding genetic studies like phenotypic coefficient of variation (PCV), genotypic coefficient of variation (GCV), heritability related to yield (Kumari *et al*., 2009; Kumari *et al*., 2010; Shiva *et al*., 2015). Variability studies of paprika are not sufficient to identify accountable characters contributing towards yield. Also, the combined analysis of correlation and path coefficient is very less reported to determine the nature and degree of association and their direct and indirect effects on paprika yield (Ahmed *et al*., 2006; Kumari *et al*., 2011). So, there is a need to study genetics of yield attributes in paprika. The present study was undertaken on 44 paprika genotypes for thirteen quantitative traits to observe the performance of genotypes, genetic variability, heritability, genetic advance and to determine the nature and degree of association among the thirteen characters and their direct and indirect effects on paprika yield.

MATERIALS AND METHODS

Forty four diverse genotypes of paprika including two check varieties [‘LCA 424’ and ‘LCA 436’] were studied. The 38 paprika germplasm lines and breeding material {maintained at Horticulture Research Station, Dr YSR Horticultural University, Lam Farm, Guntur, Andhra Pradesh} taken in study were LCA 445, LCA 447, LCA 439, LCA 442, LCA 430, LCA 457, LCA 443, LCA 437, LCA 453, LCA 450, LCA 441, LCA 425, LCA 440, LCA 446, LCA 470, LCA 436-1, LCA 466, LCA 472, LCA 476, LCA 480, LCA 482, LCA 498, LCA 465, LCA 475, LCA 488, LCA 499, LCA 506, LCA 503, LCA 490, LCA 501, LCA 504, LCA 510, LCA 510, LCA 511, LCA 512, LCA 513, LCA 424 and LCA 436. Two local paprika land races collected from Warangal, Telangana (‘Warangal Chapata Single Patti’ and ‘Warangal Chapata Double Patti’), two local paprika land races of Haveri collected from Horticulture Research Station, Devihosur, University of Horticultural Sciences, Bagalkot, Karnataka, one released variety of paprika (Kt-1) collected from IARI Regional Station, Katrain, Himachal Pradesh and one local paprika land race (Jangareddygudem local) collected from Jangareddygudem, West Godavari, Andhra Pradesh were also included in the present study.

The experiment was conducted at Horticultural Research Station, Lam, Guntur, Andhra Pradesh (India) in 2017. The experimental site is situated on 16.28° North latitude and 80.44° East longitude at an altitude of 31.5 m masl which falls under humid tropical climate. The soil of the site is rich black cotton type. The experiment was conducted in a randomized block design with 44 treatments and each treatment replicated two times. The nursery was raised in the 1st week of August and seedlings transplanted at plant spacing of 75 cm × 30 cm in a row of 4 m length in the 1st fortnight of September. Each row consisted of 12 plants, of which five competitive plants were selected at random for recording the observations on days to 50% flowering, plant height, plant spread, number of primary branches plant^{-1}, days to maturity, number of fruits plant^{-1}, fruit length, fruit diameter, fruit pedicel length, number of seeds fruit^{-1}, weight of seeds fruit^{-1}, 1000 seed weight and dry fruit yield plant^{-1}. The crop was raised as per the recommended package of practices. Analysis of variance was carried out as per the procedure given by Panse and Sukhatme (1985).

Genotypic and phenotypic correlation coefficients of variability were estimated as per Burton and Devane (1953). Path coefficient analysis was utilized to partition the phenotypic and genotypic correction coefficient into the direct and indirect effects along with the residual effects. The analysis was carried out as per the equation suggested by Dewey and Lu (1959) originally proposed by Wright (1921) and described by Singh and Choudhary (1985).

RESULTS AND DISCUSSION

The analysis of variance revealed significant differences among the genotypes for all the thirteen characters studied (Table 1) indicating the presence of genetic variability in the genotypes and revealing considerable scope for improvement and mean performances of genotypes (Table 2). High range of variability was recorded for days to 50% flowering (41.5-65.5), plant height (54.8-119.0 cm), plant spread (57.4-176.0 cm), days to maturity (87.0-163.5), number of fruits plant^{-1} (90.5-214.2), number of seeds fruit^{-1} (37.3-154.0) and dry fruit yield plant^{-1} (82.0-220.0 g). Relatively low range of variability was observed for the number of primary branches plant^{-1} (2.3-4.2), fruit pedicel length (2.2-4.6 cm), fruit length (5.7-16.8 cm), fruit diameter (2.6-9.7 cm), weight of seeds fruit^{-1} (0.2-1.4 g) and 1000 seed weight (2.2-18.1 g).

The phenotypic coefficient of variation (PCV) was higher than genotypic coefficient of variation (GCV) for all the characters studied (Table 1). The difference between PCV and GCV was narrow indicating a little influence of environment on the expression of these characters. Further, a considerable amount of variation was observed for all the characters studied. The estimates of PCV and GCV were high for the number of fruits plant^{-1} (21.8 and 20.9%), fruit diameter (26.6 and 25.5%), number of seeds fruit^{-1} (36.5 and 34.0%), weight of seeds fruit^{-1} (46.0 and 44.1%), 1000 seed weight (50.1 and 48%) and dry fruit yield plant^{-1} (27.5 and 25.4%), respectively, showing the existence of a wide range genetic variability in germplasm for these traits. This also indicates broad genetic base and less environmental influence, thereby these traits seem to be under the control of additive gene effects. Hence, there is good scope for more

Table 1: Analysis of variance for various characters in paprika

Characters	Mean sum of squares		
	Replications	Error	Genotypes
Plant height (cm)	0.16	257.12**	122.36
Plant spread (cm)	12.45	698.12**	187.36
Number of primary branches plant^{-1}	0.02	0.17**	0.05
Days to 50 % flowering	0.41	52.46**	12.60
Days to maturity	405.92	840.98**	121.34
Number of fruits plant^{-1}	78.11	2217.28**	97.27
Fruit length (cm)	2.10	10.32**	0.79
Fruit diameter (cm)	0.14	2.92**	0.12
Fruit pedicel length (cm)	0.20	0.68**	0.13
Number of seeds fruit^{-1}	192.64	1204.13**	85.29
Weight of seeds fruit^{-1} (g)	0.00	0.01**	0.00
1000 seed weight (g)	1.74	16.86**	0.74
Dry fruit yield plant^{-1} (g)	0.10	2316.47**	178.92

Table 2: Estimates of mean, range, components of variance, heritability and genetic advance for yield and it's component characters in paprika

Characters	Mean	Range	V_g	V_p	GCV (%)	PCV (%)	h^2(b) (%)	GA @ 5%	GAM @ 5%
PH	88.95	54.8-119.0	67.38	189.74	9.23	15.48	35.51	10.08	11.33
PS	128.89	57.4-176.0	255.35	442.70	12.40	16.32	57.68	25.00	19.40
NPBP	3.57	2.3-4.2	0.06	0.11	6.92	9.30	55.31	0.38	10.60
DFF	59.97	41.5-65.5	19.93	32.53	7.44	9.51	61.28	7.20	12.00
DM	132.87	87.0-163.5	359.82	481.16	14.28	16.51	74.78	33.79	25.43
NFP	155.75	90.5-214.2	1060.00	1157.27	20.90	21.84	91.59	64.19	41.21
FL	11.67	5.7-16.8	4.77	5.56	18.71	20.20	85.79	4.17	35.69
FD	4.63	2.5-9.7	1.40	1.52	25.55	26.58	92.39	2.35	50.60
FPL	3.55	2.1-4.5	0.28	0.41	14.79	17.93	68.07	0.89	25.14
NSF	69.66	37.3-154.0	559.42	644.71	33.95	36.45	86.77	45.39	65.15
WSF	0.49	0.2-1.3	0.05	0.05	44.14	46.00	92.06	0.43	87.24
1000 SW	5.91	2.2-18.1	8.06	8.80	48.00	50.14	91.64	5.60	94.65
DFYP	128.55	82.0-220.0	1068.8	1247.69	25.43	27.48	85.66	62.33	48.48

PH - Plant height (cm), PS - Plant spread (cm), NPBP - Number of primary branches plant^{-1}, DFF - Days to 50% flowering, DM - Days to maturity, NFP - Number of fruits plant^{-1}, FL - Fruit length (cm), FD - Fruit diameter (cm), FPL - Fruit pedicel length (cm), NSF - Number of seeds fruit^{-1}, WSP - Weight of seeds fruit^{-1} (g), 1000 SW - 1000 Seed weight (g), DFYP - Dry fruit yield plant^{-1} (g)

improvement of these characters through simple selection. Our findings are in agreement with those of Janaki *et al*. (2015) and Satish *et al.* (2015) for the number of fruits plant^{-1}, fruit diameter and number of seeds fruit^{-1} and dry fruit yield plant^{-1}, Singh *et al.* (2009) and Ashish *et al.* (2015) for weight of seeds fruit^{-1} and Amit *et al*. (2014) and Ajith and Manju (2014) for 1000 seed weight.

The estimates of PCV and GCV were moderate for plant spread (16.3 and12.4%), days to maturity (16.5 and 14.3%) and fruit pedicel length (17.9 and 14.8%). Similar findings have earlier been reported by Kranthi *et al*. (2016) for plant spread and Sandeep *et al.* (2008) and Priyanka and Naidu (2016) for fruit pedicel length. The estimates of PCV and GCV were high and moderate for fruit length (20.2 and 18.7%, respectively). These results are in conformity with those of Janaki *et al*. (2015) and Meena *et al*. (2016).

High heritability coupled with high genetic advance, as per cent of mean, was observed for the days to maturity, number of fruits plant^{-1}, fruit length, fruit diameter, fruit pedicel length, number of seeds fruit^{-1}, weight of seeds fruit^{-1}, 1000 seed weight and dry fruit yield plant^{-1} (Table 2) indicating the predominance of additive gene action, thereby revealing that direct phenotypic selection is useful with respect to these traits. The results are in line with Sandeep *et al.* (2008) for days to maturity, Janaki *et al*. (2015), Satish *et al*. (2015) and Kranthi *et al*. (2016) for the number of fruits plant^{-1} and dry fruit yield plant^{-1} and Amit *et al*. (2014), Vijaya *et al*. (2014) and Ashish *et al*. (2015) for fruit length, fruit diameter, number of fruits plant^{-1}, for weight of seeds fruit^{-1} and 1000 seed weight.

High heritability coupled with moderate genetic advance, as per cent of mean, was observed for days to 50% flowering, plant height, plant spread and number of primary branches plant^{-1} (Table 2), indicating the role of both additive and non-additive gene action. Further improvement in these characters would be easier through mass selection, progeny selection or any other modified selection procedure aiming at to exploit additive gene effects rather than simple selection. These results are in conformity with those of Tembhurne *et al.* (2008) for plant height and Sandeep *et al*. (2008) and Kranthi *et al*. (2016) for the number of primary branches plant^{-1} and for days to 50% flowering.

The estimates of phenotypic and genotypic correlation coefficient depicted that the genotypic correlations were higher than the corresponding phenotypic correlations (Table 3) thereby indicating high heritability of the traits under study. Moreover, it may be due to masking effect of environment causing differential genotypic and phenotypic expression of these traits. The results are in conformity

Table 3: Phenotypic (above diagonal) and genotypic (below diagonal) correlation coefficients among quantitative characters in paprika

Character	PH	PS	NPBP	DFF	DM	NFP	FL	FD	FPL	NSF	WSF	1000SW	DFYP
PH	1.00	0.59**	0.55**	-0.01	0.14	-0.03	0.00	0.23*	0.15	0.33**	0.31**	-0.03	-0.15
PS	0.48**	1.00	0.66**	-0.17	-0.05	0.16	0.15	0.02	0.25*	0.14	0.05	-0.22*	0.12
NPBP	0.62**	0.77**	1.00	-0.05	0.14	0.16	0.18	0.01	0.17	0.03	-0.01	-0.24*	0.10
DFF	0.01	-0.22*	-0.11	1.00	0.37**	-0.11	0.05	0.06	0.05	-0.05	-0.00	-0.03	-0.03
DM	0.15	-0.07	0.13	0.66*	1.00	0.33**	0.04	0.12	0.18	-0.09	-0.04	-0.35**	0.19
NFP	0.02	0.27*	0.26*	-0.12	0.39**	1.00	0.47**	-0.17	0.39**	-0.38**	-0.36**	-0.49**	0.61**
FL	0.05	0.31*	0.24*	0.02	0.10	0.54**	1.00	-0.20	0.70**	-0.27*	-0.27*	-0.39**	0.47**
FD	0.42**	0.00	-0.02	0.11	0.16	-0.19	-0.25*	1.00	-0.00	0.63**	0.62**	0.34**	0.05
FPL	0.27**	0.51**	0.34**	0.01	0.36**	0.44**	0.74**	-0.04	1.00	-0.05	-0.19	-0.52**	0.43**
NSF	0.55**	0.25*	-0.00	-0.04	-0.10	-0.44**	-0.34**	0.71**	-0.10	1.00	0.88*	0.39**	-0.12
WSF	0.45**	0.07	-0.07	0.06	-0.11	-0.39**	-0.31**	0.68**	-0.23*	0.96**	1.00	0.50**	-0.18
1000 SW	-0.13	-0.36**	-0.43**	0.00	-0.45**	-0.53**	-0.41**	0.39**	-0.63**	0.43**	0.53**	1.00	-0.44**
DFYP	-0.04	0.29**	0.23*	-0.10	0.28**	0.69**	0.53**	0.08	0.59**	-0.12	-0.20	-0.48**	1.00

PH - Plant height (cm), PS - Plant spread (cm), NPBP - Number of primary branches plant^{-1}, DFF - Days to 50% flowering , DM - Days to maturity, NFP - Number of fruits Plant^{-1}, FL - Fruit length (cm), FD - Fruit diameter (cm), FPL - Fruit pedicel length (cm), NSF - Number of seeds fruit^{-1}, WSF - Weight of seeds fruit^{-1} (g), 1000 SW - 1000 Seed weight (g), and DFYP- Dry fruit yield plant^{-1} (g)

*: Significant at 5% level; **: Significant at 1% level

with earlier reports of Janaki *et al.* (2015) and Priyanka and Mishra (2016) in chilli.

The dry fruit yield plant^{-1} exhibited a significant positive association with the number of fruits plant^{-1}, fruit length and fruit pedicel length (Table 3). Hence, dry fruit yield plant^{-1} can be improved by selecting the lines with more number of fruits plant^{-1}, maximum fruit length and maximum fruit pedicel length. These results are in accordance with those of Rohini and Lakshmanan (2015), Priyanka and Mishra (2016) and Janaki *et al*. (2016).

The genotypic association of dry fruit yield plant^{-1} was significant, positive with plant spread, number of primary branches plant^{-1} and days to maturity indicating strong association between these characters with yield plant^{-1}. While phenotypic value is lessened by significant interaction of environment. The inter-relationship among plant height, plant spread and primary branches plant^{-1} were significant and positive indicating that simultaneous selection of these traits is possible. These results are in line with those of Singh and Singh (2011). The inter-relationship among days to 50% flowering and days to maturity was significant positive indicating that simultaneous selection of these traits is possible. These results are in line with Kumar *et al*. (2014) and Vikram *et al*. (2014).

The number of fruits plant^{-1} showed significant and negative association with the number of seeds fruit^{-1}, weight of seeds fruit^{-1} and 1000 seed weight at both phenotypic and genotypic levels and *vice versa* which indicated that increase in the number of fruits plant^{-1} resulted in associated decrease in the number of seeds fruit^{-1}, weight of seeds fruit^{-1} and 1000 seed weight. The results are in line with those of Kumari *et al*. (2011). Fruit diameter showed significant and positive association with plant height, number of seeds fruit^{-1}, weight of seeds fruit^{-1} and 1000 seed weight at both phenotypic and genotypic levels indicating that simultaneous selection of these traits is possible. These results are in line with earlier reports of Begum (2002) and Ajjappalavara *et al*. (2005). The inter-relationship among number of seeds fruit^{-1}, weight of seeds fruit^{-1} and 1000 seed weight were significant and positive indicating that simultaneous selection of these traits is possible. These findings are supported by Kumar *et al.* (2014) and Rohini and Lakshmanan (2015).

The path analysis studies revealed that plant spread, number of fruits plant^{-1}, fruit length and fruit diameter had positive direct effect on yield plant^{-1} (Table 4) indicating that direct selection based on these traits may be helpful in evolving high yielding varieties of paprika; whereas days to maturity, fruit pedicel length and weight of seeds fruit^{-1} had high positive direct effect at genotypic level only. These results are in agreement with earlier reports of Patel *et al*. (2015), Rinchan *et al*.

Table 4: Phenotypic and genotypic path analysis showing direct (diagonal) and indirect effects of quantitative characters on yield plant^{-1} in paprika

Characters	PH	PS	NPBP	DFF	DM	NFP	FL	FD	FPL	NSF	WSF	1000SW
PH	-0.31	-0.18	-0.17	0.00	-0.04	0.01	-0.00	-0.07	-0.05	-0.10	-0.09	0.01
	-0.15	0.07	-0.09	-0.00	-0.02	-0.00	-0.01	-0.06	-0.04	-0.08	-0.07	0.02
PS	0.05	0.09	0.06	-0.01	-0.00	0.01	0.01	0.00	0.02	0.01	0.00	-0.02
	0.41	0.85	0.66	-0.19	-0.06	0.23	0.27	0.00	0.44	-0.08	0.06	-0.30
NPB	0.02	0.02	0.04	-0.00	0.01	0.01	0.01	0.00	0.01	0.00	-0.01	-0.01
	-0.33	-0.42	-0.54	0.06	-0.07	-0.14	-0.13	0.01	-0.19	0.00	0.04	0.23
DFF	-0.00	-0.00	-0.00	0.03	0.01	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.01
	-0.00	0.078	0.04	-0.35	-0.21	0.04	-0.01	-0.04	-0.00	0.01	-0.02	-0.01
DM	-0.01	0.00	-0.01	-0.01	-0.04	-0.01	-0.00	-0.01	-0.01	0.00	0.00	0.02
	0.04	-0.02	0.03	0.16	0.26	0.10	0.03	0.04	0.09	-0.02	-0.03	-0.12
NFP	-0.01	0.07	0.07	-0.05	0.15	0.47	0.22	-0.08	0.18	-0.18	-0.17	-0.23
	0.01	0.01	0.01	-0.00	0.01	0.03	0.01	-0.00	0.01	-0.01	-0.01	-0.01
FL	0.00	0.04	0.04	0.01	0.01	0.11	0.24	-0.05	0.17	-0.06	-0.06	-0.09
	0.00	0.03	0.02	0.00	0.01	0.04	0.09	-0.02	0.06	-0.03	-0.03	-0.03
FD	0.06	0.01	0.00	0.01	0.03	-0.04	-0.05	0.25	-0.01	0.16	0.15	0.08
	0.28	0.00	-0.01	0.07	0.10	-0.13	-0.17	0.66	-0.02	0.47	0.45	0.26
FPL	-0.01	-0.01	-0.01	-0.00	-0.01	-0.01	-0.02	0.00	-0.03	0.00	0.01	0.02
	0.03	0.06	0.04	0.00	0.04	0.05	0.08	-0.00	0.12	-0.01	-0.03	-0.07
NSF	0.07	0.03	0.01	-0.01	-0.02	-0.08	-0.05	0.13	-0.01	0.20	0.17	0.08
	-0.99	-0.45	0.00	0.07	0.19	0.76	0.62	-1.28	0.19	-1.80	-1.73	-0.77
WSF	-0.02	-0.00	0.01	0.00	0.00	0.02	0.01	-0.03	0.01	-0.04	-0.05	-0.02
	0.62	0.01	-0.09	0.08	-0.14	-0.53	-0.42	0.93	-0.31	1.31	1.37	0.73
1000 SW	0.00	0.06	0.06	0.01	0.10	0.13	0.11	-0.09	0.14	-0.10	-0.13	-0.27
	0.05	0.14	0.17	-0.01	0.18	0.21	0.16	-0.15	0.25	-0.17	-0.21	-0.39
'r' with DFYP	-0.15	0.12	0.01	-0.03	0.19	0.61**	0.47**	0.05	0.43**	-0.12	-0.18	-0.44**
	-0.04	0.29**	0.23*	-0.10	0.28**	0.70**	0.53**	0.08	0.59**	-0.12	-0.20	-0.47**

Note : PH - Plant height (cm), PS - Plant spread (cm), NPBP - Number of primary branches Plant^{-1}, DFF - Days to 50% flowering , DM - Days to maturity, NFP - Number of fruits Plant^{-1}, FL - Fruit length (cm), FD - Fruit diameter (cm), FPL - Fruit pedicel length (cm), NSF - Number of seeds fruit^{-1}, WSF - Weight of seeds fruit^{-1} (g), 1000 SW - 1000 Seed weight (g), DFYP - Dry fruit yield plant^{-1} (g); 'r' - Correlation coefficient, *: Significant at 5% level; **: Significant at 1% level, R square = 0.5597, Penotypic residual effect = 0.223; and Genotypic residual effect = 0.663

(2015), Rohini and Lakshmanan (2015) and Hasan *et al*. (2016). The plant height and 1000 seed weight had negative direct effect on yield plant^{-1}. Similar observations have been made by Rohini and Lakshmanan (2015), Rinchan *et al*. (2015) and Satish *et al.* (2015). However, in present study the residual for phenotypic level of path analysis was 0.223 which implies that 77.7% of total yield contributing characters were taken into consideration in this study and at genotypic level the residual was 0.663 which showed that only of 33.7% of yield attributing traits were considered (Table 3).

Conclusion: Simple selection will help to improve the traits like days to maturity, number of fruits plant^{-1}, fruit length, fruit diameter and dry fruit yield plant^{-1} which have high additive gene action. The number of fruits plant^{-1} and fruit length have direct correlation with yield which may be helpful in evolving high yielding varieties of paprika.

Acknowledgements: The authors are grateful to the Associate Dean, College of Horticultural and Research Institute, Dr. YSRHU, Venkataramannagudem, Andhra Pradesh (India) for encouragement to undertake this study.

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