

VARIABILITY IN POINTED GOURD (*TRICHOSANTHES DIOICA* ROXB.) GERMPLASM COLLECTED FROM EASTERN UTTAR PRADESH

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India is considered to be the centre of origin for pointed gourd (*Trichosanthes dioica* Roxb.). It is extensively cultivated in 'diara lands' in Assam, Bengal, Orissa, North Bihar and eastern Uttar Pradesh. Due to its higher consumer preference and medicinal properties, the cultivation of pointed gourd was also brought to the plains of India. The performance of genotypes vary considerably with the change of environment. The environmental influence on the phenotypic expression is identified by growing the breeding material under different environments and studying the changes brought out by it.

The assessment of variability present in the crop helps in successful utilization of plant characters develop to suitable varieties for yield and stability as suggested by Singh *et al.* (1985). Pointed gourd bears different staminate flowers in long pedicel, born singly (solitary) and pistillate flowers (also solitary) in short peduncles, 1-5 carpels, usually three; thick short style terminated by three bilobed or divided papillate stigma (Seshadri, 1986).

Fifty seven genotypes of pointed gourd were collected and observations were recorded from farmer's field in eastern U.P. during August, 1994. Randomly 5 plants were taken into consideration for observation. The collections were made from Varanasi, Jaunpur, Sultanpur, Faizabad, Gonda, Siddarth Nagar, Gorakhpur, Azamgarh, Mau and Ghazipur districts (Fig. 1). It includes areas both river belts (diara land) and plains.

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Table 1. Pointedgourd germplasm characterisation

Accessions	No. of bran- ches/ plant	No. of see bran- ches/ vine	Inter- node length (cm)	Petiole length (cm)	Mid rib length (cm)	Total No. of node/ vine	Fru- ting node (No.)	Flower length (cm)	Fruit length (cm)	Fruit volu- me (cc)	Dia- meter of fruit (cm)	Fruit weight (g)	vine length (m)	No. of angu- lar ribs	Yield/ plant (kg)
U32/DR/03	14	5	14.40	1.50	4.60	28	6	4.40	6.70	31	2.60	21.00	3.30	5	0.950
U32/DR/04	9	3	10.50	4.50	5.80	58	12	3.60	5.40	26	3.10	20.00	5.50	5	0.670
U32/DR/05	12	7	10.10	3.30	5.60	57	12	2.20	4.30	42	2.40	34.00	6.20	5	0.825
U32/DR/07	10	4	12.35	4.10	5.60	52	3	4.90	3.70	34	1.80	24.00	5.40	6	0.770
U32/DR/08	8	2	13.35	3.50	6.20	35	18	4.90	6.00	20	2.20	15.00	4.20	5	0.960
U32/DR/09	16	8	14.35	3.30	4.90	34	12	3.80	5.00	21	2.10	19.00	3.55	5	0.700
U32/DR/10	13	3	15.75	4.70	5.40	52	10	3.20	4.40	30	2.00	20.00	5.80	5	0.540
U32/DR/11	11	2	12.30	4.00	5.50	38	8	5.00	6.60	24	2.70	17.00	4.70	5	0.660
U32/DR/12	7	2	12.45	3.50	7.70	34	9	4.00	6.80	28	2.80	14.00	5.30	5	0.800
U32/DR/13	14	4	14.00	3.60	6.00	45	21	3.00	6.30	25	2.80	19.00	6.10	5	0.890
U32/DR/14	5	1	6.85	1.50	3.70	18	5	3.80	7.00	20	1.90	22.00	1.20	4	0.960
U32/DR/15	8	2	13.10	3.60	6.40	30	7	4.60	5.00	22	1.60	14.00	3.50	5	1.100
U32/DR/16	6	3	14.75	4.60	5.6	29	9	4.00	6.30	26	2.30	26.00	3.15	6	0.830
U32/DR/17	11	5	12.40	2.00	6.00	36	8	5.20	7.50	30	2.20	27.00	6.55	5	0.550
U32/DR/18	23	9	6.95	2.60	4.50	41	9	4.50	6.20	20	1.20	17.00	1.90	5	0.737
U32/DR/19	20	7	12.40	3.50	5.60	25	13	2.30	5.80	16	3.90	10.00	3.15	5	0.812
U32/DR/20	12	6	7.00	1.60	5.80	15	7	5.80	4.80	30	2.40	26.00	7.75	5	0.480

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Accessions	No. of bran- ches/ plant	No. of see bran- ches/ vine	Inter- node length (cm)	Petiole length (cm)	Mid rib length (cm)	Total No. of node/ vine	Fru- ting node (No.)	Flower length (cm)	Fruit length (cm)	Fruit volu- me (cc)	Dia- meter of fruit (cm)	Fruit weight (g)	vine length (m)	No. of angu- lar ribs	Yield/ plant (kg)
U32/DR/21	21	8	7.00	1.10	5.00	68	7	5.10	3.20	15	2.70	12.00	3.25	5	0.375
U32/DR/22	10	2	5.40	2.00	6.00	24	9	2.10	5.60	23	2.50	11.00	6.60	5	0.590
U32/DR/23	11	4	14.60	3.40	6.50	31	29	4.70	4.40	28	2.70	14.00	6.10	5	0.730
U32/DR/24	8	3	15.10	2.50	4.60	64	42	3.80	5.40	35	2.90	21.00	6.20	5	0.080
U32/DR/25	11	5	5.80	3.00	6.20	25	10	4.40	5.40	26	2.50	20.00	5.35	5	0.900
U32/DR/26	10	4	13.90	3.60	7.60	42	26	5.60	7.30	41	3.00	37.00	10.20	5	2.640
U32/DR/27	17	6	15.60	3.2	8.4	40	19	3.10	6.50	24	2.90	14.00	10.65	5	0.501
U32/DR/28	13	4	14.65	3.60	6.80	17	14	5.10	4.80	33	2.50	14.00	4.80	5	0.640
U32/DR/29	12	3	12.20	2.20	5.60	49	8	4.60	5.10	40	3.40	37.00	6.20	5	1.150
U32/DR/30	11	5	8.20	1.70	5.50	29	21	2.60	5.70	23	2.30	12.00	3.85	5	0.768
U32/DR/31	20	8	12.48	4.10	6.60	45	17	4.80	5.95	31	3.00	21.00	4.30	5	0.580
U32/DR/32	11	2	15.30	3.20	6.40	55	7	5.10	6.60	38	2.70	25.00	8.10	5	0.930
U32/DR/33	19	5	14.75	4.70	5.30	74	14	5.60	6.80	37	3.00	26.00	4.60	5	0.800
U32/DR/34	6	1	8.10	1.5	4.90	23	10	5.20	5.00	34	3.10	24.00	3.50	5	1.050
U32/DR/35	16	6	20.60	3.60	5.33	55	11	5.40	6.90	25		14.00	11.10	6	0.930
U32/DR/36	6	1	4.75	1.70	5.10	47	40	3.40	4.10	38	2.50	19.00	3.00	5	0.500
U32/DR/37	8	4	13.40	5.40	7.10	68	26	2.80	3.80	27	2.70	17.00	4.80	5	0.430
U32/DR/38	13	5	13.70	4.00	6.80	62	23	6.60	6.10	23	2.80	20.00	8.45	5	0.521

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Accessions	No. of bran- ches/ plant	No. of see bran- ches/ vine	Inter- node length (cm)	Petiole length (cm)	Mid rib length (cm)	Total No. of node/ vine	Fru- ting node (No.)	Flower length (cm)	Fruit length (cm)	Fruit volu- me (cc)	Dia-me- ter of fruit (cm)	Fruit weight (g)	vine length (m)	No. of angu- lar ribs	Yield/ plant (kg)
U32/DR/39	8	2	9.50	3.20	5.50	27	16	5.50	5.50	16	2.60	12.00	5.55	5	0.477
U32/DR/40	23	9	15.30	4.10	5.40	89	24	6.20	4.90	22	2.50	14.00	5.30	5	0.659
U32/DR/41	10	2	12.70	2.90	10.50	52	31	7.80	6.70	28	3.20	18.00	7.50	5	2.639
U32/DR/42	18	5	10.20	1.60	7.70	98	41	6.70	6.20	31	2.20	22.00	8.20	5	2.832
U32/DR/43	27	11	10.30	3.50	10.70	46	19	6.70	6.70	28	3.60	27.00	2.80	5	2.440
U32/DR/44	14	C	10.30	2.40	9.60	49	18	7.80	3.50	30	2.60	21.00	3.15	5	0.650
U32/DR/45	27	13	7.90	2.70	7.80	76	13	8.60	5.90	39	3.15	32.00	3.60	5	2.573
U32/DR/46	11	4	13.70	2.20	7.90	59	18	5.80	5.20	25	2.60	20.00	5.35	5	0.348
U32/DR/47	18	8	15.0	4.40	6.60	49	11	5.20	6.00	30	2.70	22.50	3.75	5	0.906
U32/DR/48	21	3	13.20	3.30	5.70	79	6	4.80	6.75	32	3.40	27.00	10.30	5	2.800
U32/DR/49	7	2	7.30	1.60	5.33	56	11	5.80	4.60	24	2.9	22.00	13.10	5	0.940
U32/DR/50	12	4	10.30	2.40	5.50	63	23	6.20	5.30	38	2.6	26.00	11.05	5	0.565
U32/DR/51	17	5	15.30	2.10	4.90	93	17	5.60	7.6	40	2.70	30.00	14.40	5	0.776
U32/DR/52	24	10	10.20	3.60	5.70	47	9	5.30	5.80	35	3.20	24.00	7.25	5	0.835
U32/DR/53	16	6	11.70	2.50	8.00	89	3	6.00	3.90	26	3.30	22.00	4.45	5	0.845
U32/DR/54	11	4	11.35	3.90	5.60	90	30	5.60	7.30	28	3.00	23.00	7.75	5	0.390
U32/DR/55	27	11	13.40	4.30	5.80	46	14	3.90	5.10	35	3.10	23.00	6.20	5	0.467
U32/DR/56	23	9	10.30	3.70	5.10	110	17	4.80	6.90	36	2.90	25.00	12.00	5	0.907
U32/DR/57	13	5	7.50	3.20	3.70	58	11	4.40	5.20	23	2.80	13.00	3.20	5	0.746

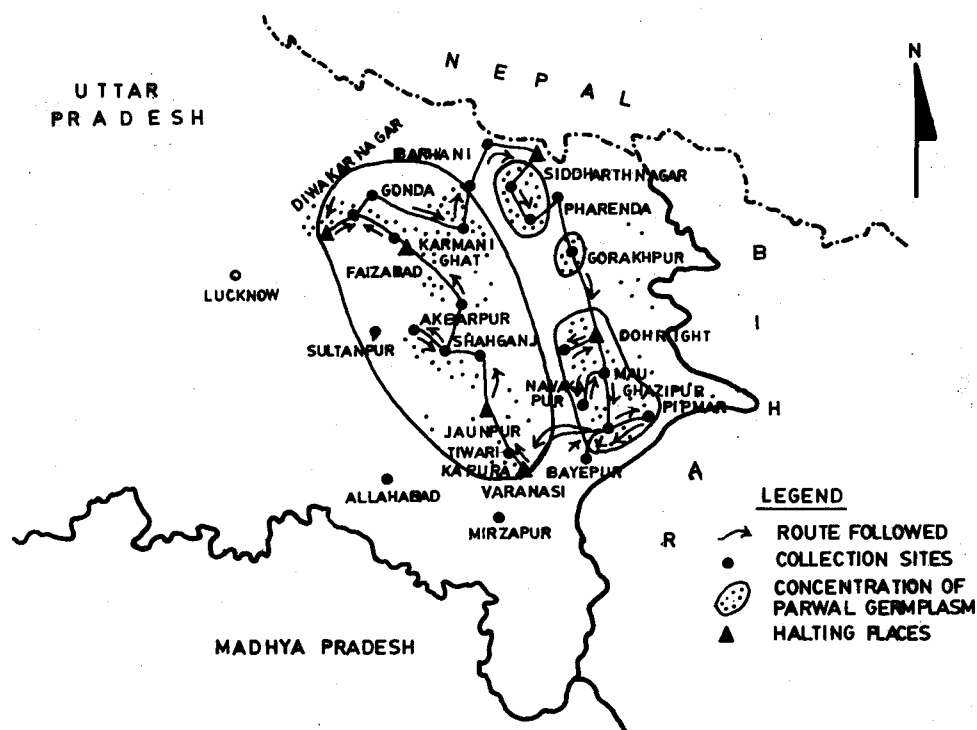


Fig. 1. Exploration route map showing parwal collection from eastern Uttar Pradesh

The mean performance of different cultivars and their vegetative and fruiting attributes are presented in Table 1. General observation of data indicated significant differences among the cultivars for the characters viz., number of branches per plant, number of secondary branches per vine, fruiting node (number) flower length (female), fruit length, fruit volume, diameter of fruit, individual fruit weight, vine length, number of angular leaves and yield per plant. The germplasm varied for number of branches per plant (5-27), number of secondary branches per vine (1-3), internodal length (5.40-15.70 cm.) petiole length (1.2-5.4 cm.), midrib length (3.70-10.70 cm.), fruit length (3.20-7.50 cm.), fruit volume (15.00-42.00 ml), diameter of fruit (1.20-3.60 cm.), individual fruit weight (10.00-37.00 g), vine length (1.20-14.40 m.), angular ribs (4-6), yield (0.375-2.832 kg) per plant.

Promising genotypes:

1. *Deshi patar* (U32/DR/09) : Collected from Pradhanpur/Jalalpur, District Jaunpur; fruits oval, tapering from both ends, average weight 19.0g, diameter 2.10 cm, yield/plant 0.7 kg, fruits whitish green, good material.
2. *Parora* (U32/DR/15) : Collected from upland areas of Hauz, Zafrabad District Jaunpur; fruits medium sized, green with white stripes, stem-end tapering but beak blunt, fruit weight 14.0g, diameter 1.60 cm, yield/plant 1.100 kg; good fruiting potential.
3. *Deshi parvar* (U32/DR/17) : Collected from upland of Kadaila (Malhani), Khetarsrai, District Jaunpur; fruits whitish green, skin comparatively hard, stem-end blunt, blossom-end tapering, vigorous vine growth, fruit weight 27.0 g, diameter 2.20 cm, yield/plant 0.550 kg, suitable for long distance transportation.
4. *Patar* (U32/DR/26) : Collected from upland areas of village Moradabad, District Sultanpur; fruits green without stripes, soft, sometimes light whitish green, fruiting in cluster, 3 fruits/cluster, fruit weight 37.05, diameter 3.0 cm, yield/plant 2.64 kg, fruiting span 5 months, September end transplanted vines yield fruits from third week of April and during August/September bumper fruiting; excellent material.
5. *Patal* (U32/DR/29): Collected from *diara* of Saryu river in Ghaghupur, District Faizabad; fruits whitish green, stem-end tapering, blossom-end slightly blunt, stripes (10) prominent at blossom-end, fruits very attractive, fruit weight 37.0g, diameter 3.40 cm, yield/plant 1.150 hg, prolific bearing.
6. *Deshi parval* (U32/DR/34): Collected from upland area from Diwakar nagar (Poore Tiwari), District Gonda; fruits green, symmetrical, slightly tapering of blossom-end, mild stripes, very attractive, fruit weight 24.0g, diameter 3.10 cm, yield/plant 1.050 kg, prolific yielder.
7. *Ghiyahawa* (U32/DR/40) : Collected from Bilar river *diara*, Mahua, Kakrahi ghat, District Siddharthnagar; fruits whitish green, very attractive, slender, soft, light weight (14 g), diameter 2.50 cm, yield/plant 0.659 kg, long span of fruiting period.
8. *Dharidarwa* (U32/DR/41): Collected from Bilar river *diara*, Kakrahi ghat, District Siddharthnagar; greenish fruits with prominent stripes, fruits tapering from both ends, spindle shaped, fruit weight 18.0g, diameter 3.20 cm, yield/plant 2.639 kg, bumper harvest.
9. *Bhaddahawa* (U32/DR.42): Collected from Bilar river *diara* area in mahua, Kakrahi ghat, Siddharthnagar; fruits spindle shaped, prominent self stripes, stripes prominent at stem-end and stretches upto blossom-end, high bulge in the middle, fruit weight 22.0g, diameter 2.20 cm yield/plant 2.832 kg, better than *Dharidarwa* and *Ghiyahawa*, bumper harvest.

10. *Krantia* (U32/DR/43): Collected from Bilar river *diara* at Kakrahi ghat, Siddharthnagar; fruits green, self-striped, stout, good, both ends tapering, spindle shaped, fruit weight 27.0g, diameter 3.60 cm, yield/plant 2.440 kg prolific yielder
11. *Parvariya* (U32/DR/44): Collected from Bilar river beds in Kakrahi ghat, Siddharthnagar; fruits green, small sized, spindle shaped, both ends tapering, high bulge in middle, fruit weight 21.0g, diameter 2.60 cm, yield/plant 0.650 kg, long span fruiting, good taste, fetches more market.
12. *Bampharawa* (U32/DR/45): Collected from Bilar river *diara*, Kakrahi ghat, Siddharthnagar; fruits dark green 5.90 cm long, attractive, stem-end tapering, blossom-end slightly blunt, fruit weight 32.0g, diameter 3.15 cm, yield/plant 2.573 kg, prolific yielder.
13. *Ujaraka parvar* (U32/DR/46): Collected from Rapti river *diara*, Sandekalan Karmanighat, District Basti; fruits greenish white in colour, without stripes, uniform fruiting, stem-end tapering, blossom-end blunt, fruit weight 20.0g, diameter 2.60 cm, yield/plant 0.348 kg, poor yielder, but very tasty.
14. *Parvar deshi* (U 32/DR/48): Collected from Rati river *diara*, Karmanighat, Basti district; whitish-green fruits, soft without stripes, very attractive fruit weight 27.0 g, diameter 3.40 cm, yield/plant 2.8 kg, bumper yield for 2-3 months (May to August).
15. *Damphar parora* (U32/DR/52): Collected from upland area, Navakapura, District Mau; fruits green, pointed from both ends, striped, high bulging, fruit weight 24.0g, diameter 3.2 cm, yield/plant 0.835 kg, average yielder.
16. *Parori* (U32/DR/53): Collected from upland area Navakapura, Mau District; fruit size very small (3.90 cm) green, high bulge in the middle; almost round in shape, fruit weight 22.0g, diameter 3.30 cm, yield/plant 0.845 kg, prolific fruiting potential, good taste, good market potential.
17. *Parora deshi local* (U32/DR/56): Collected from upland portion of Ganga river basin in Bayepur, District Ghazipur; fruit light green whitish, tapering from both ends, slender (6.90 cm), fruit weight 25.0g, diameter 2.90 cm, yield/plant 0.907 kg, good yielder, very tasty.

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