

Short Communication

PG-18: A new variety of garlic

RK Dhall* and PS Brar

Received: October 2016 / Accepted: December 2016

Garlic (*Allium sativum* L., 2n=16) is one of the most important bulb vegetable grown and used as spice and flavoring agent for foods. At national level, it is the second most important cultivated bulb crop after onion in area and production. Garlic products have become popular in recent years and a variety of culinary and pharmaceutical preparations are now available in market. Garlic has several medicinal values such as antibacterial, antifungal, antiviral, antiprotozoal, antioxidant and anticancer properties. Punjab Agricultural University, Ludhiana has recommended a new variety of garlic 'PG-18' for commercial cultivation in Punjab in 2015. It is developed by clonal selection. The salient features of the new variety are mentioned below:

Salient characteristics: Plants of PG-18 have soft-neck (non-bolting) with green leaves. Bulbs are large (4.55 cm diameter), attractive and white with average bulb weight of 28.4 g. Cloves are medium to large sized, white and average clove number of 26 per bulb. It has dry matter of 38% and allicin content of 1.15%. Bulbs can be stored upto five months with 40% losses. Average yield is 127 q/ha (51 q/acre).

Agronomic characters: The plant height of PG-18 is 73.6 cm, which is less than the check variety PG-17 (Table 1). The bulb and clove colour of PG-17 is white which is same as that of PG-18. The number of cloves per bulb of PG-18 (26.2) is less than that of PG-17 (30.7). Average weight of 10 bulbs is 284.1 g which is higher than check variety PG-17 (240.4 g). The average weight of 20 cloves is 22.1 g which is 27 percent higher than the check variety PG-17 (17.4 g). Bulb equatorial diameter of PG-18 is 45.5 mm which is 28% higher than PG-17 (35.5 mm).

Yield performance: Yield performance of new garlic variety PG-18 and the check variety PG-17 is given in Table 2. The average yield of PG-18 is 130.7 q/ha at PAU, Ludhiana which is 24.8 percent higher than PG-17. In multi-location trials, the total yield of PG-18 is 124.7 q/ha which is 33.2 percent higher than the check variety PG-17. In adaptive research trials conducted over 17 locations, the total yield of PG-18 is 125.6 q/ha which is 21.5 percent higher than the check variety PG-17. The overall total yield of PG-18 including the local, multilocation and adaptive research trials is 127.0 q/ha which is 26.3 percent higher than PG-17.

Quality traits: PG-18 and PG-17 recorded dry matter content of 37.86 and 36.60 percent, respectively (Table 3). Total soluble content of PG-18 is 43.93 percent which is higher than PG-17 (38.57%). Reducing sugars content in PG-18 is 2.30 percent which is less than the check variety PG-17. The allicin content of PG-18 (1.15%) is higher than the check variety PG-17.

Reaction against insect-pests and diseases: Different disease reactions are described in Table 4. Upon screening against natural inoculation conditions, PG-18 gave severity percent of 13.4 and 4.2 against stemphylium blight and purple blotch, respectively which is less than the check variety PG-17 (19.0 and 7.8 percent, respectively). The foliar damage due to attack of thrips varies from 20 to 40 percent having moderately resistant reaction.

Storage studies: The physiological loss in weight in PG-18 is 22.80 percent after 150 days of storage under ambient conditions, whereas it is 25.70 percent in PG-17 during the same storage period and condition (Table 5). After 150 days of garlic storage under ambient conditions, rotting in PG-18 and PG-17 is 16.80 and 18.24 percent, respectively. No sprouting was observed in PG-18 and PG-17 during 150 days storage period at ambient conditions.

Table 1: Performance of PG-18 for various horticultural traits

Variety	Plant height (cm)	Bulb skin colour	Bulb equatorial diameter (mm)	Weight of 10 bulbs (g)	Clove skin colour	Clove length (cm)	Clove diameter (cm)	Number of cloves per bulb	Average weight of 20 cloves (g)
PG-18	73.6	White	45.5	284.1	White	3.14	1.20	26.2	22.1
PG-17 (check)	81.7	White	35.5	240.4	White	3.08	1.16	30.7	17.4

Table 2: Total yield of garlic variety PG-18 in local, multi-location and adaptive research trials

Yield (q/ha)	Ludhiana		Multi-location trials		Adaptive research trials		Overall mean	
	PG-18	PG-17 (C)	PG-18	PG-17 (C)	PG-18	PG-17 (C)	PG-18	PG-17 (C)
Total Yield	130.7	104.6	124.7	93.6	125.6	103.4	127.0	100.6
Percent increase over check	+ 24.8		+ 33.2		+21.5		+26.3	

(C) = Check variety

Table 3: Performance of garlic variety PG-18 for various quality characters

Variety	Dry matter (%)	TSS (°B)	Reducing sugar (%)	Alcohol insoluble solid (%)	Pyruvic acid (mg/100 g)	Lachrymatory factor (mg/100 g)	Allicin (%)
PG-18	37.86	43.93	2.30	55.34	22.12	32.66	1.15
PG-17 (check)	36.60	38.57	4.00	50.20	25.12	30.60	1.12

Table 4: Performance of garlic variety PG-18 for stemphylium blight, purple blotch and thrips

Variety	Stemphylium blight		Purple blotch		Average thrip rating*	
	Incidence (%)	Severity (%)	Incidence (%)	Severity (%)	Mean	Rating
PG-18	35.0	13.4	7.5	4.2	2.0	MR
PG-17 (check)	38.0	19.0	11.0	7.8	2.0	MR

* Scale used for thrip reaction is given below:

Scale used	Reaction
1= 1-20% foliage damage	<1=Resistant
2=21-40% foliage damage	1.1-2.0=Moderately resistant
3=41-60% foliage damage	2.1-3.0= Moderately susceptible
4=61-80% foliage damage	3.1-4.0=Susceptible
5=81-100% foliage damage	4.1-5.0=Highly susceptible

Table 5: Physiological loss in weight, rotting and sprouting percent during storage in garlic at ambient temperature

Variety	Storage interval				
	I ₁ (30 days)	I ₂ (60 days)	I ₃ (90 days)	I ₄ (120 days)	I ₅ (150 days)
	Physiological loss in weight (%)				
PG-18	0.40	2.97	11.36	15.39	22.80
PG-17 (check)	0.44	3.22	13.35	19.03	25.70
CD (p?0.05)	0.06	0.28	2.12	3.88	4.02
	Rotting (%)				
PG-18	0.00	2.50	8.66	12.92	16.80
PG-17 (check)	0.00	4.80	9.56	14.10	18.24
CD (p?0.05)	-	1.25	1.82	1.96	1.79
	Sprouting (%)				
PG-18	0.00	0.00	0.00	0.00	0.00
PG-17 (check)	0.00	0.00	0.00	0.00	0.00
CD (p?0.05)	-	-	-	-	-