

PANNIYUR 9- A Promising High Yielding, Drought Tolerant Black Pepper Variety Recommended for South India

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Introduction

Black pepper, the major spice cultivated across the globe is prone to drought. Water stress often results in wilting and death of the vine. Pepper Research Station, Panniyur has developed a high yielding variety, Panniyur 9 which is tolerant to drought stress and the variety was released and notified in 2018 by Central variety release committee and released by State variety release committee for Kerala in 2018.



The variety is well suited to all the pepper growing tracts with better performance in high altitude/ hilly areas which contribute to 70 % of black pepper production in the country. The spikes are medium long with compact setting and medium sized berries.

Materials and methods

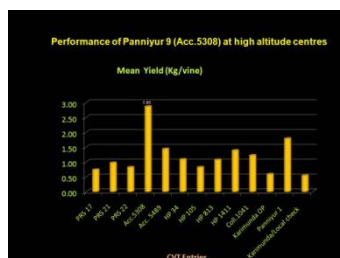
The variety Panniyur 9 was developed by open pollinated progeny selection of Panniyur 3 and tested under the name Cul.5308 in Coordinated Varietal Trials

under AICRP Spices at 5 AICRP centres all over India, during the period 2009-2014. The experiment was laid out in RBD with 13 treatments and three replications. Studies on agronomic, morphological, yield and quality traits, tolerance to major pests, diseases and water stress were conducted.

Berry yield (kg)	Panniyur	Ambalavayal	Pangashamparam	Sini	Chintapalle	Mean Yield (Kg/vine)
PRS 17	1.20	2.15	0.30	1.10	0.05	0.96
PRS 21	1.10	1.50	1.35	0.20	0.05	0.84
PRS 22	1.10	0.55	1.85	1.00	0.05	0.91
Cul.5308	2.64	2.69	2.64	1.40	3.24	2.52
Cul.5489	2.94	2.59	1.05	0.55	0.65	1.56
HP 34	0.85	2.30	0.60	1.55	0.35	1.13
HP 105	1.20	1.65	0.30	1.30	0.50	0.99
HP 111	1.00	1.80	0.75	0.95	0.65	1.03
HP 1411	1.25	2.10	1.80	0.60	0.25	1.20
Cul.1041	1.45	2.40	0.60	0.70	0.65	1.16
Karimunda OP	1.40	1.65	0.30	1.40	0.10	0.97
Panniyur 1	1.45	2.05	1.70	1.30	1.60	1.62
Karimunda L.C.	1.30	1.25	0.35	0.30	0.30	0.70
CD (5%)	0.55	0.45	0.81	0.10	1.18	0.75
CV	8.33	6.14	5.04	6.29	5.55	6.27

Results

Panniyur 9 has a potential yield of 3.24 kg dry pepper/ vine with 38% dry recovery in hilly tracts. The average yield recorded in CVT of different centres is 2.52 kg dry pepper / vine (6.3 kg green berries/ vine). The variety had better performance in hilly tracts



The yield data on drought years (2009-2013) at different centres indicated that the variety is extremely tolerant to drought. The percent change in relative water content (RWC) under water stress conditions was

lesser in Panniyur 9 (2.55) as compared to check variety Panniyur 1 (11.05) and Karimunda (4.09). Panniyur 9 also has higher total chlorophyll (1.98) and reasonably high Chlorophyll a/b ratio (1.69) indicating its ability to tolerate drought stress (George *et al.*, 2017).



It has very high quality attributes with oleoresin 12.71 %, piperine 6.11 % and volatile oil 5.00%. Higher polyphenol oxidase (11.65 µmol/g) content three days after artificial inoculation of *Phytophthora* indicated efficient defence mechanism in Panniyur 9 against deadly disease *Phytophthora* foot rot. Percent leaf area infection was also significantly lesser than that in popular varieties Panniyur 1 and Karimunda.

References

George, K. J., Malik, N., Vijesh Kumar, I. P. 2017. Gene expression analysis in drought tolerant and susceptible black pepper (*Piper nigrum* L.) in response to water deficit stress. *Acta Physiol. Plant*, **39**:104.

