



PANCHAMI

— a high yielding selection
of black Pepper

P. N. RAVINDRAN

M. K. NAIR

AND

K. NIRMAL BABU

N R C S, P. B. No: 1701

Marikunnu - P. O.

CALICUT - 673 012

Three high yielding black pepper selections from the germplasm were compared for yield performance alongwith cultivars Karimunda and Panniyur -1. Among these, Panchami (an Aimirian selection) recorded the highest average yield of 5.2 kilo gram fresh pepper per vine at 5th year. It outyielded all the other cultivars in all the years tested. Panchami has good yield attributing characters like medium - long spikes, high percentage of bisexual flowers in spikes, and high fruit set. The black pepper from this variety has 12.5 per cent oleoresin. Due to its high yield potential, Panchami was recommended for release in pepper growing tracts of Kerala and Southern Karnataka.

Black pepper (*Piper nigrum L.*) is the most important of the spices. India was the leading producer and exporter of this spice, about 95 per cent of it coming from Kerala alone. However, productivity of pepper vines in India is the lowest in the world and yield levels have remained almost static for the last few decades. This is mainly because of poor genetic stock and prevalence of a large number of old and unproductive vines. Non availability of disease free planting materials of high yielding varieties is one of the major constraints in increasing production and productivity of black pepper. Clonal selection from the vast genetic resources of black pepper constitutes the quickest method to identify high yielding elite genotype (s). Results from one such experiment are presented in this paper.

MATERIALS AND METHODS

Three lines of black pepper with promising yield attributes were selected from germplasm based on data collected from the collection surveys. These lines are viz., a selection from Aimirian (renamed as Panchami), Ottaplackal-1 and Kuching (a ruling variety of Malaysia). The lines are compared with CV. Karimunda and Panniyur-1, two most popular varieties of Kerala. In this yield trial, pepper vines are planted on 12 high *Erythrina indica* standards at 2.5m x 2.5m spacing in a randomised block design (RBD) with 12 replications. They are evaluated for five years and final selection was made based on their yield performance over the years as well as consistency in performance.

Quality parameters like percentage of Piperine, Oleoresin and Essential oil were estimated based on standard ASTA methods (ASTA, 1968).

RESULTS AND DISCUSSION

The vines standard yielding in the first year of planting. However, the yield for the first

year i.e 1986-87, is negligible and hence not used in the evaluation. Yield data for the next four years i.e. 1987-1991 are given in Table 1. Panchami (Aimpiriyan Selection) gave significantly higher yields compared to all the other lines tested in all the other years. It has a mean yield of 5.2 kilogram fresh pepper per vine at 5th year.

The average yield of green pepper per hectare as well as yield potential of Panchami in comparison with Karimunda and Panniyur-1 at 5th year estimated based on mean yield and maximum yield recorded respectively are given in Table 2. Panchami with an estimated average green pepper yield of 8,320 kilogram/hectare and yield potential of 19,200 kilogram/hectare is superior to all the other lines tested

The quality attributes of Panchami are given in Table-3. Panchami gives medium quality black pepper with 4.7 per cent 12.5 per cent oleoresin and 3.4 per cent essential oil. It has a dry recovery of 34 percent. Thus the black pepper from Panchami is comparable to that of Karimunda and Panniyur-1 in quality.

Panchami has good yield attributing characters like medium long spikes (11.2 cm), high spiking intensity (77 spikes/100 nodes), high percentage of bisexual flowers per spike (95.5 per cent) high fruit set (82 per cent) etc. This selection retains the important identifying character of five rowed arrangement of berries and the twisted nature

of the spikes due to very high fruit set. Panchami is a late maturing type, with fruits coming to harvest 7-8 months after flowering. Like all other pepper cultivars, this is also susceptible to *Phytophthora* collar rot disease, pollu beetle and nematodes

Panchami with high yield potential will significantly contribute to increase in black pepper production in the country and hence is recommended for release to the cultivators at the Group Meeting of Research workers of AICRP on Spices held in 1991 (Anonymous 1991).

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the help rendered by Dr. John Zachariah and Mr. Jose Abraham, Scientists NRC for Spices in Quality and Statistical analysis respectively. The help rendered by the R. R. L. Trivandrum in estimation of essential oil contents is gratefully acknowledged.

REFERENCES

1. Anonymous 1991. Proceedings of the group meeting of Research Workers of All India coordinated Research Project on Spices, PP. 60-61.
2. ASTA 1968. Official analytical methods, 2nd Edn. American Spice Trade Association, New York.

PANCHAMI HAS GOOD YIELD ATTRIBUTING CHARACTERS LIKE

MEDIUM-LONG SPIKES
(11.2 cm)

HIGH SPIKING INTENSITY
(77 spikes/100 nodes)

HIGH PERCENTAGE OF BISEXUAL FLOWERS
(per spike 95.5 per cent)

HIGH FRUIT SET
(82 per cent)

Table 1: YIELD DATA OF PANCHAMI IN COMPARISON WITH OTHER BLACK PEPPER SELECTIONS

Sl. No.	Variety	Mean fresh pepper yield / vine					
		1987-88	1988-89	1989-90	1990-91	Total	Mean
1.	KUCHING	0.658	0.791	5.379	3.725	10.553	2.638
2.	OTTAPLACKAL-1	0.442	0.508	4.667	4.704	10.321	2.580
3.	KARIMUNDA	0.647	1.873	5.117	2.000	9.637	2.409
4.	PANNIYUR-1	0.554	1.083	4.925	3.470	10.032	2.508
5.	PANCHAMI (AIMPIRIYAN Sel)	1.070	2.288	7.983	5.200	16.491	4.123
MEAN		0.674	1.299	5.614	3.820		
C. D 5%		0.410	0.620	1.930	2.020		

Table 2: ESTIMATED AVERAGE YIELD AND YIELD POTENTIAL OF PANCHAMI IN COMPARISON WITH KARIMUNDA AND PANNIYUR-1*

Sl. No.	Selection	Mean yield per vine (kg)	Highest recorded yield per vine (kg)	Average yield per hectare (Kg) Dry	Yield potential** per hectare (Kg) Dry
1.	PANCHAMI (Aimpiriyan Sel.)	5.2	12.0	8320	19200
2.	KARIMUNDA	2.0	8.1	3200	12960
3.	PANNIYUR-1	3.5	9.0	5552	14400

* Based on yield at 5th year at the rate of 1600 vines/ha at 2.5 m x 2.5 m spacing
** Based on highest yield recorded for each of the selections

Table 3: QUALITY ATTRIBUTES OF PANCHAMI IN COMPARISON WITH KARIMUNDA AND PANNIYUR - 1

Sl. No.	Selections	Piperine %	Oleoresin %	Essential Oil %*	Dry Recovery %
1.	PANCHAMI (Aimpiriyan Sel.)	4.7	12.5	3.40	34.0
2.	KARIMUNDA	5.2	12.6	3.60	35.0
3.	PANNIYUR-1	3.6	9.5	3.50	34.5

* Based on the analysis given by R.R.L., Trivandrum.