

Effect of panchagavya on the growth and biochemical contents of *Oryza sativa* var. Ponni

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Rice is most important food crop of India. An experiment was designed to improve the yield and biochemical contents of rice for which panchagavya (an organic fertilizer) was applied. Panchagavya was prepared and applied through flow irrigation on the 15th, 30th, 45th and 60th day. Shoot length, height of the plant, number of grains, 1000 grains weight, number of spikelet, grains protein and carbohydrates were studied. The results showed that in all the parameters studied panchagavya had a positive influence over the control.

Key words : Panchagavya, *Oryza sativa*

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An agricultural strategy based on indigenous knowledge and traditional cropping systems can bring moderate to high levels of productivity using local resources alone (Quiroz, 1996). In agricultural field many fertilizers are used for plant growth. In organic farming, the problem of hazards and pollution will be much reduced. Organic farming is an eco- friendly system of farming which can maintain soil health in terms of soil biological fertility and productivity besides producing quality produce which can fetch high price in market. Organic manures from animal waste play an important role in soil fertility in association with chemical fertilizers (Walz, 2004). Use of panchagavya is a traditional method used to safeguard plants and soil microorganisms and to increase crop production. Panchagavya refers to a combination of cow products (dung, urine, milk, curd, ghee). In the present work experiments were done to study physio- chemical characters and its effects on plant growth of *oryza sativa* var.ponni.

The field experiments were conducted in an Agricultural farm at Gobichettipalayam in Tamil nadu. The soil was well ploughed. The soil samples were collected and analyzed for their physio- chemical characters with respect to pH, electrical conductivity, moisture content, bulk density, micronutrients, and macro nutrients. Fifteen days the seedlings were collected and transplanted to the experimental plots. The soils were well ploughed and

divided into the equal sized plots of 8x39 feet. Triplicates were maintained for each treatment. About 300 seedlings were sown in each plot. Only one seedling was sown in each hill. Irrigation was done by continuous flooding. Cow dung, urine, milk, curd, ghee were used for panchagavya preparation. All the ingredients were taken in cement troughs. The container was kept covered with a muslin cloth and kept in the shade. The contents were stirred twice a day both in the morning and evening. The panchagavya stock solution was ready after 18th day. The organic fertilizer panchagavya was used on the 15th, 30th, 45th and 60th day through irrigation water by flow irrigation. Control plots were maintained in which the plants were not treated with panchagavya. When the plants attained maturity and the paddy grains were ready for harvest, the plant height was measured and the numbers of spikelets as well as number of grains in each spikelet were counted. The weight of the spikelet and grains were also recorded.. The grains were separated from the spikelets and analyzed for their carbohydrate and protein contents.

Physico-chemical characteristics of the soil :

The soil type was black soil:

The results showed that the panchagavya treated soil made a positive impact on all the parameters studied. (Table 1).

Table 1 : Physico-chemical characteristics of the soil

Sr.No.	Parameters studied	Initial soil analysis before cultivation	Control soil without the addition of panchagavya	Cultivated soil amended with panchagavya
1.	PH	5.49	5.50	5.93
2.	Electrical conductivity	38	39	43
3.	Moisture content	2.96	2.98	3.03
4.	Bulk density	1210	1213	1279
5.	Nitrogen, mg/kg	819	817	823
6.	Phosphorus, mg/kg	623	620	643
7.	Potassium, mg/kg	205	210	228
8.	Cadmium, mg/kg	1.4	1.0	1.3
9.	Zinc, mg/kg	20.1	20.3	23.5
10.	Copper, mg/kg	15.5	15.1	17.6

The biochemical analysis (protein, carbohydrates) was done of the mature grains of *Oryza sativa*. In this experiment panchagavya influenced the increase in protein and carbohydrates contents of the paddy grains.(Table 2).

Table 2: Biochemical analysis of *oryza sativa* var. ponnigrains

Biochemical contents	Panchagavya amended soil	Control
Protein (g)	19	12
Carbohydrates(g)	169	165

The results (Table 3) showed that in all the parameters studied, panchagavya had a positive influence over the control. Better nutrient availability and uptake would have increased growth and yield parameters as it is also reported by (Rameshwar Singh, 2002) in maize plant.

Panchagavya an organic fertilizer is safe eco-friendly manure that be applied to more crop plants for a sustainable agriculture.

Table 3 : Growth and yield attributes of *Oryza sativa* var. ponnigrains

Parameters	Panchagavya amended soil	Control
Shoot length (cm)	17.2	16.4
Height of the plant(cm)	128	17
Number of grains in each spikelets	205	87
Number of spikelet	21	16
Weight of the spikelet (g)	90	75
1000 grains weight(g)	450	357

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