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Application of Pranic Agriculture to Improve Growth and Yield of Banana (*Musa* sp. var. Nanjangud Rasa Bale)-A Comparative Field Trial

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ABSTRACT

Background: The projection of prana to soil, seeds and seedlings to enhance plant growth is referred to as Pranic Agriculture (PA). **Methods:** A field study was carried out to study the influence of PA on Banana var. (*Musa sps*. var. Nanjangud rasabale) growth for a duration of one year. Banana suckers and agricultural land were divided into two groups namely pranic and control in half acre. The land and suckers were treated with PA and were referred to as the pranic group, while non-pranic were referred to as the control group. Growth parameters (shoot length, shoot diameter, number of leaves, leaf length and leaf diameter) were evaluated on the 2nd, 4th, 6th, 8th, 10th and 12th months and statistically analyzed using repeated measure ANOVA. Fruit morphology and days to flowering were analyzed using a t-test.

Result: For pranic group, shoot diameter (F= 9.407, p= 0.001), leaf length (F= 7.082, p= 0.003) and leaf diameter (F= 11.459, p= .000), flowering days (t= 3.39, P=.002), fruit characteristics like fruit bunch weight (t= 8.81, p= .000), total number of fruits in bunch (t= 9.20, p= .000), fruits weight (t= 7.48, p= .000), fruit length (t= 7.94, p= .000) enhanced considerably and the results were all significant when compared to control. Further studies are needed to find out the mechanism for the improved growth in the pranic group. This study will help the farmers to get higher yields and more income by using pranic agriculture.

Key words: Complementary agriculture, Ecological balance, Pranic healing, Supplementary farming, Sustainability.

INTRODUCTION

Banana, is one of the most important commercial tropical fruits traded in India. Globally, India is the world's largest producer comprising 27%, with about 3,33,79000 MT productions (2020-21) from 923 thousand ha under cultivation (Takale *et al*., 2023). Bananas with year-round availability provide a permanent source of income to the small and marginal farmers in developing countries and rural populations, thus, playing an important role in poverty alleviation. The fruit can be eaten raw and is composed of mainly water and unripe fruit is a good source of resistant starch comprising of 30-50%, along with other nutrients. Resistant starch has found many clinical applications as probiotics, in regulating blood sugar levels and cholesterol, having a positive impact on the human colon. Bananas are a rich source of potassium, protein, carbohydrates, vitamins and minerals, which are the most essential parts of the diet of a human being (Paramasivam *et al.,* 2021). Banana fruits are known to be a good source of antioxidants, polyphenols and carotenes. Banana fruit and plants are treated as symbols of prosperity, owing to their greater socio-economic significance and utility in Indian religious culture. All the parts of the banana plant (fruit, flowers, stem, leaves) have medicinal and nutritional importance and are commonly referred to as 'kalpatharu' in India (Ranjha *et al.,* 2020).

Among different banana cultivars, Nanjangud rasabale (NR) is a native variety of banana that originated from a divine place known as 'Nanjangud' in Karnataka, India. It is considered as an exotic and elite variety in Karnataka and has been given Geographical Indication (GI) protection in 2005 by the Government of India for its distinguished aroma when ripened fully, fibrous texture and taste. NR is grown in and around Mysuru and Chamarajanagar districts of Karnataka and drives huge demand throughout the country. The flowers of this fruit have antidiabetic properties (Ramu *et al.,* 2016), Unfortunately, this variety is highly susceptible to Panama disease and its popularity among the farmer is diminishing. Hence, the area under cultivation has been drastically reduced over the last three decades from 500 acre to just 5 ha and hence, this is now regarded as an endangered variety (Babu, 2019). Hence, an increase in NR productivity is important. Various methods have been implemented to increase NR productivity. Among them, micropropagation (Babu, 2019) and chemical-induced mutations (Kishor *et al.,* 2017) have been attempted.

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However, these methods use chemicals, are costly, cannot be easily implemented by farmers and are not sustainable. Hence, alternative methods are needed which are traditional, environmentally friendly, cheap, easily adoptable by farmers and sustainable.

Traditional methods like Pranic Agriculture (PA) (Prasad *et al.,* 2022), Agnihotra, meditation (Wright, 2021) and biofield therapy (Lee and Wu, 2019) are known to increase productivity. These methods are not substitute for farming but are complementary in nature. Pranic agriculture is a traditional agriculture practice in India and it uses the application of subtle energies or prana to modify plant growth, health and soil conditions (FAO, 2014). Prana is that vital energy which is essential to keep the body alive and in healthy conditions (Sui, 2015). Prana is also referred to as Ki or Bioplasmic energy. Every object including human beings, plants and trees is surrounded by an energy field. We can feel, interact with this energy and transfer energy to plants. Plants obtain prana from three major sources namely ground prana, sun prana and air prana (Sui, 2015). Using Kirlian photography, investigators have been able to take photographs of the bioenergy/prana of leaves (Pisotska *et al.,* 2020). Pranic agriculture can be applied to plants to produce faster growth, to increase seed germination and seedling vigor and to enhance yield (Prasad and Jois, 2021). Moreover, PA offers a wide range of economic benefits to farmers and under the current scenario of agrarian crisis, there is a need to adopt green and eco-friendly techniques to enhance productivity. The purpose of this paper is to provide evidence that PA treatment support farmers as a green and eco-friendly technique and helps in achieving sustainable development goals.

MATERIALS AND METHODS

Plant propagation

Healthy sword suckers of Banana cv Nanjanagudu rasabale were collected from the farmer's field at Devarasanahalli, Nanjanagudu taluk, Mysuru district. The suckers were washed and kept under shade for 2 days. It was divided into two groups, namely pranic and control.

Growing conditions

The experiment was conducted in March 2018 at an organic farm in Hosakote Masge village, Nanjangud, Mysore. The location of the organic farm was 12°07′28.3″N 76°64′22.9″E. The experiment was conducted on a half acre of agricultural land. Two experimental plots of 100 ft × 100 ft each were selected on the farm. It was named pranic and control plot and suckers were sown in their respective plots. Suckers were sown at a depth of 2 ft at a distance of 9 ft × 9 ft. The temperature was in the range of 28-35°C and with a relative humidity of 70-85%. Both plots were watered using drip irrigation.

Pranic treatment

Before sowing, banana suckers and the land of the pranic group were treated with prana. Treatment was given to suckers and land simultaneously for 8 times at an interval of twice/week and each treatment lasted for about 15 minutes. Treatment involved techniques to improve the quality and quantity of prana. The healer first prays for the almighty God during the healing process to receive his blessings. The healer then sensitizes his hands and scans the suckers/soil. Any contaminated energies were perceived as heavy energies, which are felt in his hands as tingling sensations. These contaminated energies are then removed by flicking them into a saltwater bowl using green prana. Green prana has cleansing properties. The healer then energizes the suckers and soil by projecting fresh electric violet prana. Electric violet prana has regeneration properties (Sui, 2015).

Growth parameters

Suckers of pranic and control were sown at their respective plots. Timely required cultural practices like weeding and irrigation were given as crop maintenance. Organic liquid manure in the form of Jeevamrutha was given once a month, for twelve months (Sutar, 2019). Morphological observations like shoot length (cm), leaf length (cm) and leaf breadth (cm), were recorded once in two months using measuring tape. Shoot diameter (cm) was measured using digital vernier calipers and the number of leaves was counted manually. Flowering traits like days taken for first flowering and first harvest were recorded when flower and fruit emergence was noticed. Yield-related traits like fruit bunch weight (kg), no. of fruits per bunch, fruit diameter (cm), fruit weight (g) and fruit girth (cm) were recorded after harvest.

Statistical analysis

Growth and yield data were analyzed for 25 samples from each treatment (pranic and control) and presented as the mean value±standard error (SE). Analysis for growth was carried out by repeated measure ANOVA and yield by paired t-test using SPSS-21 and Microsoft Excel and the level of significance was expressed at 5% probability ($p<.05$) for all the parameters.

RESULTS AND DISCUSSION

From the results, a significant difference in the growth of Nanjangud rasabale plants in control and pranic is noticed (Fig 1). Shoot length in pranic was increased when compared to the control but, the results were found to be insignificant ($F=2.862$, $p=0.062$) (Fig 2A). At twelve months of growth, the shoot diameter (cm) of the pranic group was 47.8±9.8 cm, while for the control it was 37.9±6.6 (Fig 2B) and the difference between both groups was found to be significant ($F=9.407$, $p= 0.001$). However, number of leaves (Fig 2C) results were insignificant ($F=1.033$, $p= 0.390$), while leaf length ($F=7.082$, $p= 0.003$) (Fig 2D) and leaf diameter ($F=11.459$, $p= .000$) (Fig 2E) of pranic group were found to be significantly higher when compared with control. A plant height of 79.1 cm is reported by Arun *et al*. (2012), at 6 months which is in agreement with our current findings

(73.7±9.4). Also, the number of leaves (8.8) at 6 months and leaf width (30.8 cm), is parallel to our results.

Flowering was first noticed in the pranic group, 356±9.5 days, while in control it took 365.9±12.9 days and the results were significant (t= 3.39, P<0.001) (Table 1). Fruit harvest was earlier in pranic (125.7±8.9 days), while in control it took more days to fruit harvest (132.8±9.7) and the results were significant (t= 2.76, p<0.01). Fruit bunch weight in pranic was higher (6.3±0.5 kg), while in control it was only 4.9±0.6 kg and the results were significant (t= 8.81, p=.000). Hence, pranic fruit bunch weight was higher by 29.9%, when compared with control (Fig 3). A fruit bunch weight of 9.1 kg was reported by Kotur *et al*. (2014), which is higher than in our present findings. The number of hands per fruit bunch, fruit weight and fruit length were all higher in pranic when compared with the control. Fruit weight and fruit length of pranic were 22.4% and 23.5% higher than the control (t= 7.48, p= .000). However, even though the fruit diameter in pranic was more, the results were not significant (t= 0.731, p= 0.472). Kumar *et al*. (2011) have reported a fruit length of 13.1, a fruit weight of 97.30 g and fruit bunch weight of 6.37 kg which is in consistent with our findings (Table 1).

Various treatments including Pranic Agriculture (Prasad *et al*., 2022), Biofield (Lee and Wu, 2019) and chi energy (Bai *et al.,* 2000) involve interaction with energy fields of the plants by trained healers. These energies when applied on plants, have been proven to enhance growth and improve yield. For instance, pea and wheat seeds when treated with chi energy, germinated faster, against the

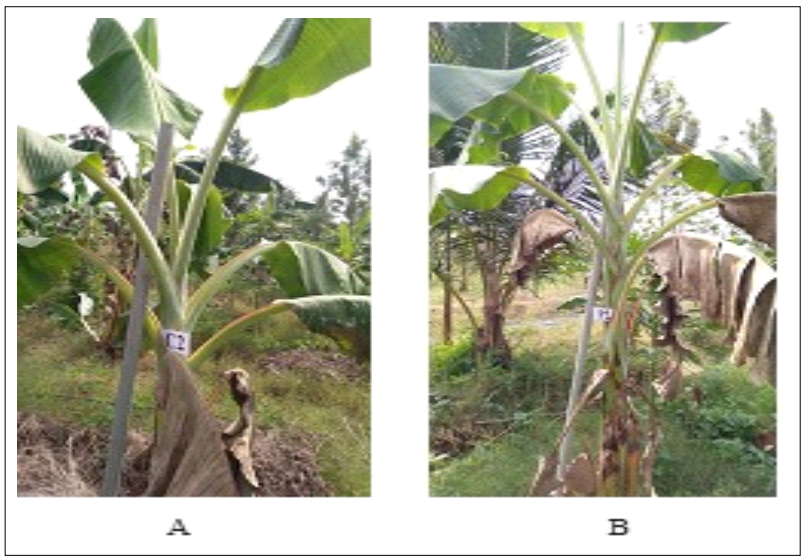


Fig 1: Growth of Nanjangud rasa bale. A); Control B); Pranic.

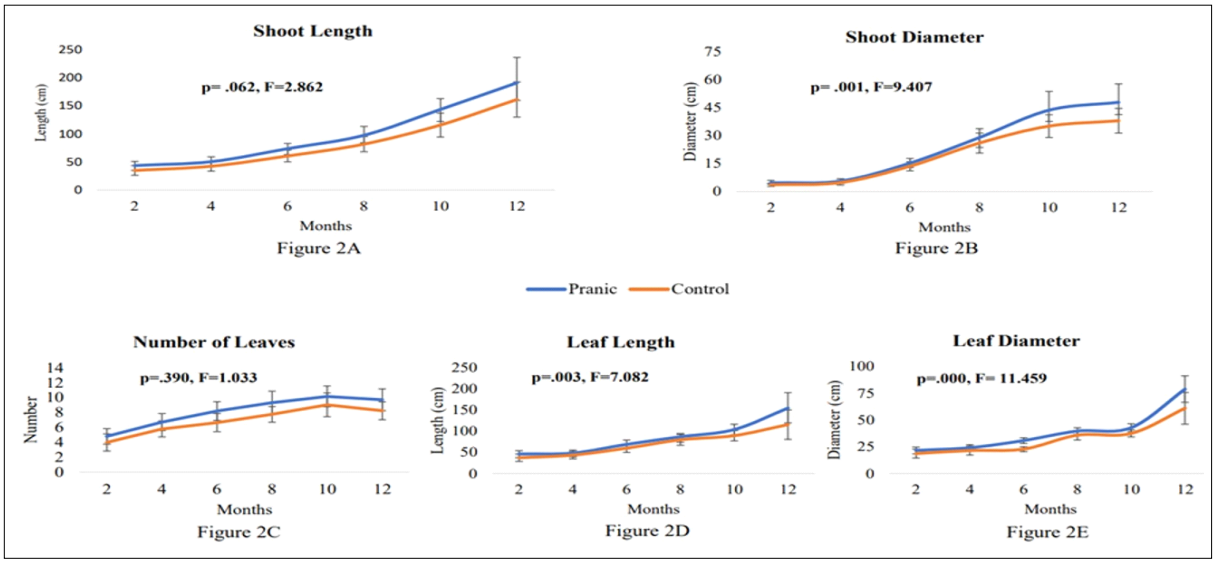


Fig 2: Growth parameters of Nanjangud rasa bale.

control (Bai *et al*., 2000). Bok choy and lettuce plants obtained improved vegetative growth, an increase in chlorophyll and carotenoid contents in Biofield treated plants (Lee and Wu, 2019). Earlier studies have reported an increase in shoot length, shoot diameter, root length, number of leaves and increase in plant yield when pranic agriculture has been applied to plants (Prasad *et al*., 2022).

In all cultures and medical traditions, healing has been achieved by projecting energy in the form of prana or Qi. Healers have been postulated to produce large magnetic fields from their hands during healing (Srinivasan, 2017). Magnetic field application has been proven to increase the growth and yield of many crops by altering enzyme activity and nutrient uptake among others, (Hafeez *et al*., 2023). Plant height and stem girth are good indices of plant vigor and contribute to an increase in productivity (Oke *et al*., 2020; Yang *et al*., 2022). Pranic-treated Nanjangud rasabale shoot diameter and shoot length was higher when compared to the control. Thus, higher plant vigor and yield is noticed in our current findings.

Previously, we have reported that pranic-treated plants had longer root lengths. The longer the root length, the higher the nutrition absorption by the plants and thus great plant vigor and enhanced crop yield (Fageria and Moreira, 2011). Water when treated with pranic energy, the contact angle and surface tension is reduced which helps in better nutrient absorption by the plants (Ananthakeshava *et al*., 2021). Chi can alter the structure of mitochondria, enzyme activity and nucleotide polymerization, influence cell metabolism and affect gene expression (Bai *et al*., 2000). Probably, in the current work, when the pranic energy was applied on the banana suckers, the energy level in the suckers was increased and results in more energy supplied to the cells during cell division and elongation, growth and differentiation, resulting in enhanced growth of plants and increase in crop yield. By applying pranic energy in the ridge gourd, a polymorphism of 22% was obtained between the pranic and control groups. This indicates that there is substantial variability between the two groups (Poornima *et al*., 2020). The externally applied pranic energy might have acted as a stimulus to the plants and might have brought changes at DNA and at cellular levels. Nevertheless, the mechanism behind this needs to be studied.

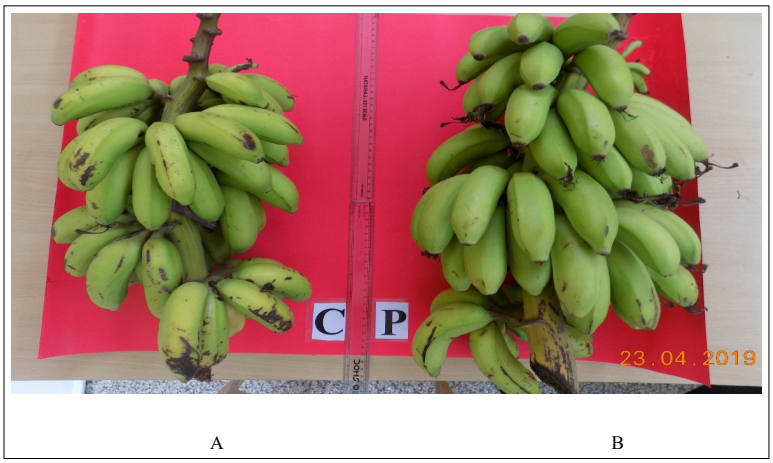


Fig 3: Nanjangud rasa bale fruit bunch. A); Control B); Pranic.

Table 1: Fruiting parameters of Nanjuangud rasa bale.

Parameters	Pranic		Control		Difference*	Statistics	
	Mean	SD	Mean	S.D	%	t	Sig
Number of days to flower	356.44±1.92	9.58	365.96±2.59	12.95	-2.67	-3.39	.002
Days to fruit harvest	125.72±1.78	8.90	132.80±1.95	9.73	-5.63	-2.76	.011
Total duration in days	482.16±2.91	14.57	498.76±3.23	16.15	-3.44	-4.42	.000
Fruit bunch weight (kg)	6.35±0.57	0.57	4.90±0.65	0.65	29.59	8.81	.000
Total no. of fruits in bunch	69.20±1.27	6.35	53.96±1.17	5.86	28.24	9.20	.000
No. of fruits/bunches	6.80±0.15	0.76	5.36±0.10	0.49	26.87	7.49	.000
No. of fruit in bunches	10.80±0.15	0.76	10.56±0.26	1.29	2.27	0.732	.471
Fruit weight (g)	90.54±1.88	9.40	73.95±1.70	8.52	22.47	7.48	.000
Fruit length (cm)	14.69±0.25	1.25	11.89±0.31	1.56	23.55	7.94	.000
Fruit diameter (cm)	3.30±0.08	0.41	3.22±0.06	0.28	2.48	0.731	.472

*When compared with control.

CONCLUSION

The results show that pranic agriculture can have a significant impact on NB to increase the yield, shoot length, shoot diameter and number of leaves. The use of pranic agriculture to obtain these benefits does not require any specialized care or equipment or conditions. Any person who is interested can be trained. This would have a positive impact on the soil, air, water and human health. Further studies are needed to study the mechanism behind improved growth when treated with pranic agriculture.

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Conflict of interest

All authors declare that they have no conflict of interest.

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