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ORIGINAL ARTICLE

Enhancement of seed germination and seedling vigour of green gram, paddy, and radish by Pranic Agriculture

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ABSTRACT
Pranic agriculture (PA) is a traditional technique to enhance plant growth. Pranic agriculture protocol uses prana to produce faster growth, increase yield, and improve physical, nutritional, and sensory qualities of plants. It is done by the projection of prana to soil, seeds, and seedlings to improve their growth. Seeds (100 no's) each of radish, green gram and paddy were exposed to PA treatment and grown in a paper towel and seedling growth was evaluated on 10th, 12th and 14th day. Seeds (100 no's) that did not receive any pranic treatment were referred to as control. For the Pranic group, percentage germination, shoot length, root length, and seedling vigour enhanced considerably when compared to control. The percentage increase in the pranic group was between 15-30%. Thus, by applying PA treatment, an increase in seed germination and vigour was noticed. By using this technique, farmers will be benefitted to enhance the growth of their crops.
Keywords: Environmentally friendly, Germination, Prana, Sustainable farming

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INTRODUCTION

Commercial agricultural practices need fast, uniform and higher seed germination and seedlings vigour for the successful establishment of plants. Early and healthy accelerated germination and seedling vigour have a vital role in optimal plant growth and are necessary for better crop establishment. Seedling vigour is critical when competition for light, nutrients, air, and water becomes limited. Seeds with a high vigour can compete successfully under stress, influencing the overall plant growth, and ultimately lead to an increase in grain yield [1].

Numerous strategies are developed to improve seed germination and seedling vigour including seed coating, seed priming in different solutions, transgenic crops, and genetic manipulations [2,3]. However, some of these methods are complex, very expensive, and time-consuming. By employing methods that are easy to adopt, environmentally friendly, sustainable and does not incur extra cost is of utmost importance to the farmers. One of them is Pranic Agriculture.

Pranic Agriculture (PA) helps in obtaining a higher yield with no additional inputs. It is considered as one of the ancient agriculture techniques. It works by applying *prana* for plants to enhance their growth [4]. *Prana* is also called *qi* energy or subtle energy and is essential to keep the body healthy and alive. The major sources of *prana* are namely solar *prana* from sunlight, air *prana* obtained from the air, and ground *prana* obtained from the ground. Plants obtain *prana* from sunlight, soil, air, and water [5]. PA can be implemented in any agriculture field practicing conventional farming with no additional cost. The application of PA is not a substitute, rather complementary in nature. By practicing PA, enhanced growth of the plants and yield was noticed [6], enhanced shelf-life has been reported [7]. Hence, in the present study, seeds of green gram, paddy, and radish, which are commonly grown, have been chosen for the present study.

MATERIAL AND METHODS

Seeds of green gram, paddy, and radish were procured from the local market, Mysore, India. The seeds of uniform shape and size, free from any deformity and disease were chosen for this study. The seeds were divided into pranic and control groups. Pranic seeds received Pranic treatment, while control seeds did not receive any treatment. This study was conducted at the World Pranic Healing Foundation India - Research Centre, Mysore in July-August 2018.

Pranic Treatment:

Seeds of green gram, paddy, and radish which were separated as Pranic group was given *pranic* treatment. Each treatment lasted for five minutes and was repeated three times per week.

Method:

Seeds of the Pranic and Control group of green gram, paddy, and radish were taken separately in a paper towel. Seeds were placed in a paper towel in ten rows, each row comprising 10 seeds. In total, 100 seeds were placed in each paper towel. This paper towel was rolled and immersed in distilled water and kept in a tray for 10-14days. After that, the paper towel was opened and seed germination was counted manually [8]. Germination was taken as the ratio of the number of seeds germinated to the total number of seeds sown and is expressed as a percentage. The shoot length and root length were measured with the help of a scale and mean value was obtained by calculating the shoot length and root length of all the seedlings. Seedling Vigour was calculated as (mean shoot length x mean root length) x (percentage germination) as described by Padma et al [9]. The data collected have been tabulated as a mean value for each treatment.

RESULTS AND DISCUSSION

The present research was conducted to investigate the effect of PA on germination and seedling vigour of green gram, paddy, and radish, and the results revealed a significant difference in growth as shown in Figure 1. Seeds treated with PA of green gram and paddy showed a higher germination percentage when compared to the control (Table 1). However, for radish, both pranic and control did not show the difference in percentage germination. Our results are in good agreement with Chanakan et al.[10]where in paddy germination was reported to be 85%. Vijaiananad et al.[3] reported green gram germination of 92-98%, which is in good agreement with our findings.

The shoot length of green gram (232.05 mm) and paddy (25.64 mm) of pranic group were much higher than control, having values of 205.25 mm and 23.34 mm respectively (Table 1). Shoot length of 213 mm was reported in green gram by Parveen *et al*., [11] which is in close agreement with our studies. The root length of green gram treated with pranic was found to be 137.55 mm, while in control it was 121.46 mm. Root length of 108-149 mm was reported in green gram by Parveen *et al.* [11] which is in close range with our results. A similar trend was also noticed in radish and paddy, wherein pranic treated had higher shoot length when compared with control. Shoot length of 23 mm was reported by Chanakan *et al* [10] in control paddy seeds, which is in good agreement with our results. Vigour indices were also recorded to be higher in the pranic treated group when compared to control. The value of the vigour index is listed in Table 1. Pranic had a 30.30% more vigour index when compared to control in paddy, 26.54% more in radish, and 15.40% in green gram respectively, against the control.

It has been reported that healers produce magnetic fields from their hands during healing [12]. The magnetic field increases plant hormones, especially Indole-3-acetic-acid (IAA) and Gibberellic acid (GA) which enhance plant growth [13]. Magnetic fields help in reducing the soil pH and release of organic acids, which are more readily available for plants to enhance their growth [14]. Pranic treated plants had an increase in root length which helps in absorption of more water and nutrients and thus increases in plant vigour and crop yield [15]. The crop yield was significantly related to the seedling vigour. The higher the seedling vigour, the higher is the crop yield [1]. Application of qi energy help in the increased rate of cellular growth, cell division, and *ATPase* activity during seed germination [16]. This results in more energy supply to the cells during cell division, growth and differentiation probably resulting in enhanced growth of plants. However, the exact mechanism of how *Pranic* Agriculture could increase seedling growth needs to be investigated.

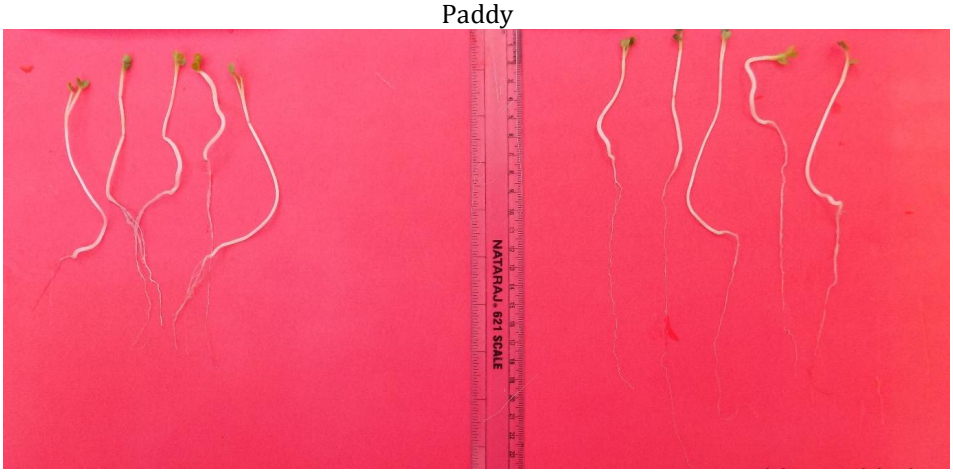
Table 1. Seedling germination and vigour index of paddy, green gram and radish.

Seeds	Treatment	Germination (%)	Shoot length (mm)	Root length (mm)	Vigour index	% Increase*
Paddy (14th Day)	Pranic	84	25.64	26.53	4382	30.30
	Control	82	23.34	17.67	3363	
Green gram (12th day)	Pranic	100	232.05	137.55	36960	15.40
	Control	98	205.25	121.46	32018	
Radish (10th day)	Pranic	96	25.88	184.65	20211	26.54
	Control	96	30.26	136.1	15971	

*Percentage increase in Vigour index in Pranic, when compared with control

Pranic Group Control

Paddy



Control PranicGroup

Green Gram

Pranic Group Control

Radish

Figure 1. Growth characteristics of Pranic and Control paddy, green gram and radish seedlings.

CONCLUSION

Pranic agriculture played an important role in enhancing the seedling vigour of green gram, radish, and paddy. Its improved germination, shoot, and root length. Overall, it can be concluded that PA treatment could help the farmers to increase seed germination and seedling vigour.

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CONFLICT OF INTEREST

Both the authors report no conflict of interest

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