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Growth and Yield of Summer Squash, Green Zucchini (*Cucurbita pepo* L.) as Influenced by the Application of Spiritual Blessings (Biofield) Energy Treatment (SBET)

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Abstract

The demand for sustainable and non-invasive agricultural practices has led to the exploration of alternative technologies to enhance crop productivity. This study aimed to evaluate the influence of Spiritual Blessings, specifically Biofield Energy Treatment (BET), on the growth and yield characteristics of Summer Squash, Green Zucchini (*Cucurbita pepo* L.). The research was conducted using a randomized design consisting of two primary groups: control group and a BET-treated group. The seeds and the plot for the treatment group were subjected to a specific BET, while the control group remained untreated under identical environmental and soil conditions. Growth parameters, including plant height, number of leaves, and stem diameter, were monitored at regular intervals. Yield attributes, such as fruit length, average fruit weight, and total yield per hectare, were recorded at the time of harvest. Various morphological features were altered in the treatment group compared to the control group. Phenological parameters such as plant height, number of nodes per plant, number of leaves per plant, leaf length, and number of female flowers per plant were significantly increased by 35.11% ($p \le 0.001$), 48.22% ($p \le 0.001$), 43.17% ($p = 0.031$), 41.07% ($p \le 0.001$), and 55.75% ($p \le 0.001$), respectively, compared to the control group. Furthermore, yield-related parameters such as fruit length and fruit yield (kg per plant) were significantly increased by 42.72% and 51.49%, respectively, with respect to the control group. Based on the obtained data, the study indicates a substantial positive correlation between the application of Spiritual Blessing (Biofield) Energy Treatment (SBET) and the overall productivity of *Cucurbita pepo* L. (Green Zucchini).

Keywords: green zucchini, spiritual blessing, prayer, morphology, phenology, yield

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INTRODUCTION

Summer squash, specifically the green zucchini (*Cucurbita pepo* L.), represents one of the most economically significant vegetable crops within the *Cucurbitaceae* family globally [1]. Zucchini is a seasonal vegetable with high nutritional and medical values. Renowned for its high nutritional density like rich in folate, potassium, and provitamin A and four distinctive components such as lutein, β-carotene, zeaxanthin, and dehydroascorbic acid [2]. However, the cultivation of *C. pepo* faces escalating challenges from soil degradation, fluctuating climatic conditions, and the diminishing returns of synthetic chemical inputs [3]. As the agricultural sector pivots toward sustainable intensification, there is an urgent need to explore non-traditional, eco-friendly methodologies that can enhance plant physiology and productivity without compromising ecological integrity. Recent investigations into plant developmental biology have shifted focus toward the influence of external energy fields and subtle environmental stimuli on phenotypic expression. While conventional breeding and chemical fertilization remain the standard, the integration of bio-electromagnetic and biofield-based interventions is gaining scholarly attention. As noted by Singh et al. 2020, external energy treatments can significantly modulate seed vigor and metabolic efficiency in squash, suggesting that the species was highly responsive to non-chemical energetic alterations [4].

Biofield Energy Treatment (BET), often characterized in literature as a form of "spiritual blessing" or external conscious intention, was hypothesized to interact with the biological biofield, the complex, endogenous electromagnetic field produced by living organisms. Gamage et al. 2025, demonstrates that focused human intention and biofield-related modalities can exert measurable effects on the early growth stages of plants, potentially through the stabilization of plasma membranes or the enhancement of mitochondrial activity [5]. Despite the promising evidence regarding Biofield Energy, there remains a paucity of systematic data regarding its specific influence on the yield parameters and post-harvest quality of *Cucurbita pepo*. Most existing agricultural research focuses on genomic or chemical interventions, leaving the "energetic" aspect of plant-environment interaction largely under-researched. This study aimed to bridge this gap by evaluating the growth trajectory and total fruit yield of summer squash under the influence of Spiritual BET.

Materials and Methods

Study site details

Field experiment was conducted on agricultural territory situated in Bhandarwadi (Sindhudurg district), located within the Konkan agro-climatic zone of Maharashtra, India (15°37’–16°40’ N, 73°19’–74°13’ E; altitude 26 m). The environment is characterized by high temperatures in the summer and moderate temperatures in the winter. The temperatures typically attain approximately 39 - 42°C during the pre-monsoon months. Rainfall variability in this region often leads to acute moisture deficits, potentially compromising crop physiological processes during key growth stages.

Seed details and experimental design

Summer squash/green zucchini (*Cucurbita pepo* L. cv. sunny house-hybrid) seeds (genetic purity: 95%; Lot No: NUP-48962595; Label: 03001) were procured from Namdeo Umaji Agritech (India) Pvt. Ltd. The green zucchini seeds were divided into two experimental cohorts: (i) an untreated control green zucchini group (CONGZUG) and (ii) a biofield energy treated green zucchini group (BTGZUG) subjected to Spiritual Blessing (Biofield) Energy Treatment (SBET/prayers). To isolate the effects of the SBET, similar pattern of irrigation, fertilization, and pest management were maintained uniformly across both the groups throughout the study.

Field Layout

The experiment was conducted using a Randomized Complete Block Design (RCBD) comprising two primary treatments. The experimental plot was divided into three blocks. These plots were used to assign each block randomly according to the experiment's design. There were six plots with an individual plot size of 4.0 m × 2.0 m. Spacing was maintained at 1.0 × 1.0 m, and a one-meter distance was maintained between replications and 50 cm between plots, with a total area of the experimental site of 60.0 m^2 and an individual plot size of 8.0 m^2. The experimental farming area was cleaned. The standard levels of fertilizer (50, 100, and 50 kg NPK ha^{-1}) were applied directly in each plot and incorporated into the soil before planting the seeds.

Spiritual energy treatment (blessing/prayer) strategy

The control group (CONGZUG) consisted of untreated green zucchini seeds and soil. The experimental group (BTGZUG) was subjected to a non-physical biofield energy protocol administered by a spiritual healing practitioner with more than 15 years of experienced, Mahendra Kumar Trivedi. The intervention was performed for 4 minutes at a distance of approximately 0.5 meters (1.5 ft) from the samples. Environmental conditions were maintained at a constant temperature of 28 ± 2°C and a relative humidity of 65 ± 5%. To ensure the integrity of the samples, no physical contact occurred during the procedure. The protocol involved a standardized "laying on of hands" technique, intended to modulate the energetic state of the agricultural matrix and seeds. All samples were subsequently handled according to standard cultivation practices to evaluate phenotypic and physiological variations.

Soil properties

Prior to treatment application, composite topsoil samples were collected from a depth of 30 cm in each plot using five-point sampling method. Samples were air-dried, passed through a 2-mm sieve, and stored at 4 °C until further analysis. Soil texture was determined *via* the hand feel method [6], and soil pH was measured in a 1:2 (w/v) soil–distilled water suspension using a calibrated electronic pH meter.

Seed plantation and management

Seeds were sown directly into the soil, with moisture maintained through manual irrigation for the first one week after sowing. Subsequently, irrigation was managed *via* a drip system equipped with self-compensating emitters (0.5 m spacing; flow rate: 3 L/h). Basal fertilization consisted of 50:100:50 kg/ha of N:P:K, supplied via urea, single superphosphate (SSP), and muriate of potash (MOP). The total quantities of SSP and MOP, along with 50% of the urea, were incorporated pre-sowing, while the remaining nitrogen was side-dressed at day 21. To manage pest pressure, chlorpyrifos 50% + cypermethrin 5% (Hamla 550; Gharda Chemicals Ltd., India) was applied at a concentration of 2 mL/L across all treatments.

Plant growth parameters

For growth parameters, five plants were randomly selected from each plot to measure the important characters of green zucchini plant. The qualitative attributes of the plant including leaf blade size, leaf shape, leaf blade margin, leaf blade colour, number of lobes in leaf blade, flower colour, fruit shape, fruit skin colour, colour of fruit flesh, rind colour, seed colour, seed size and shape. Many quantitative traits were *viz*. plant height (cm), spreading of leaves (cm), number of primary branches, number of nodes, number of leaves, leaf blade length and width (cm), days to 50% flowering, fruit weight (g), fruit length (cm), fruit diameter (cm); number of fruits per plant, yield (t/ha), seed width (cm), seed length (cm) etc.

Yield parameters

The green zucchini fruits were harvested at the stage of physiological maturity. Fruit length and diameter were measured using digital calipers and individual fruit mass was determined using a precision electronic balance. To evaluate cumulative productivity, five plants were randomly sampled per plot. Total fruit yield per net plot was recorded in kilograms and subsequently converted to tonnes per hectare (t/ha) to standardize yield extrapolation.

Data analysis

Data are expressed as mean ± standard error of the mean (SEM). Differences between two independent groups were assessed using Student's *t*-test in SigmaPlot (v14.0). Statistical significance was set at $p < 0.05$.

RESULTS

Soil properties analysis

Initial soil analysis characterized the experimental plots as sandy loam with a strongly acidic profile (pH 5.01). This baseline acidity was associated with suppressed cation exchange capacity (CEC) and diminished nutrient bioavailability. Following the application of spiritual blessing energy treatment (SBET) to the treatment plots, post-harvest analysis revealed a significant shift toward a moderately acidic status (pH 5.86). Furthermore, the BTGZUG group exhibited marked increases in total potassium and exchangeable cations (Ca^{2+}, Mg^{2+}, and Na^{+}) relative to the CONGZUG control. These results suggest that SBET may influence soil mineralogy and ion solubility, potentially mitigating the limitations typically imposed by low-pH edaphic environments.

Morphology of green zucchini plants

The morphological development of the green zucchini was documented through systematic observations at set intervals. This study tracked from the initial germination, seedling phase vegetative growth stage, floral phase, fruit growth stage, and final harvest stage (Figure 1).

Figure 1. Representative images illustrated the changes in vegetative growth characteristics of green zucchini at different stages. C: Control group; BET: Blessing/biofield energy treatment group.

Phenotypic characterization and morphological divergence

The morphological observations of the qualitative descriptors of green zucchini vegetative growth are presented in **Table 1**. Green leaf blade colour was observed for CONGZUG, whereas dark green colour was found in BTGZUG. The flower colour of CONGZUG and BTGZUG was yellow and bright yellow, respectively. At harvesting, the colour of the green zucchini fruit was dark green in the BTGZUG group, and CONGZUG had green fruits. The CONGZUG group had light cream seed colour, and the BTGZUG had cream seed colour. The small size and oval shape seeds were found in CONGZUG, and medium and oval shape in BTGZUG. Fruit shape was non-uniformly cylindrical in the CONGZUG, while uniformly cylindrical shape in the BTGZUG. Fruit skin colour was deep green in the BTGZUG and green in the CONGZUG. Fruit flesh flavour and taste was mild sweet and creamy in the BTGZUG, while mild earthy and nutty in the CONGZUG. Spongy fruit flesh texture was found in the CONGZUG, while less spongy in the BTGZUG. The colour of fruit flesh was white in the BTGZUG and off white in the CONGZUG. Other vegetative traits such as plant leaf size and shape (large and palmately lobed), leaf blade margin (dentate with pointed teeth), number of lobes in the leaf blade (5 lobes), and fruit freshness (green colour, smooth, glossy skin) were observed as similar features in both BTGZUG and CONGZUG.

Table 1. Effects of spiritual blessing (biofield) energy treatment (SBET) on qualitative vegetative parameters of green zucchini.

Vegetative trait	Control group (CONGZUG)	Treated group (BTGZUG)
Leaf size and shape	Large and palmately lobed	Large and palmately lobed
Leaf blade margin	Dentate (pointed teeth)	Dentate (pointed teeth)
Leaf blade colour	Green	Dark green
Number of lobes in leaf blade	5 lobes	5 lobes
Flower colour	Yellow	Bright yellow
Colour of mature fruit (at harvesting)	Green	Dark green
Fruit freshness	Green color, smooth, glossy skin	Green color, smooth, glossy skin
Fruit shape	Non-uniform cylindrical	Uniformly cylindrical
Fruit skin colour	Green	Deep green
Fruit flesh flavour and taste	Mild earthy, and nutty	Mild sweet, and creamy
Fruit flesh texture	Spongy	Less spongy
Fruit flesh colour	Off white	White
Seed colour	Light cream	Cream
Seed size and shape	Small and oval	Medium and oval

Phenology and yield traits

The rate of germination and plant height were increased significantly ($p \leq 0.001$) by 14.74% and 35.11%, respectively, in BTGZUG compared to the control, CONGZUG. Spreading of leaves were significantly increased by 27.37% ($p \leq 0.001$) in the BTGZUG compared to the CONGZUG. Plant architecture like number of branches per plant and number of nodes per plant were significantly increased by 29.44% ($p = 0.032$) and 48.22% ($p \leq 0.001$), respectively, in the BTGZUG compared to the control, CONGZUG. Parameters related to photosynthetic capacity such as the number of leaves per plant rose by 43.17% ($p = 0.031$), supported by a 41.07% ($p \leq 0.001$) increase in leaf length, and a 30.12% ($p \leq 0.001$) increase in leaf width in the BTGZUG than CONGZUG. Reproductive priming descriptors such as number of male and female flowers per plant were significantly increased in the BTGZUG by 36.77% ($p \leq 0.001$) and 55.75% ($p \leq 0.001$), respectively compared to the CONGZUG. The most striking impact of the treatment was observed in final yield metrics. The fruit weight, fruit length, and fruit diameter were significantly ($p \leq 0.001$) increased by 25.40%, 42.72%, and 34.75%, respectively, in the BTGZUG with respect to the CONGZUG. The 100-seed weight, seed length, seed width, and seed count per fruit were significantly ($p \leq 0.001$) increased by 32.88%, 25%, 29.63%, and 34.82%, respectively, in the BTGZUG with respect to the CONGZUG. Furthermore, in the BTGZUG fruits yield (kg per plant) and fruit yield (tons per hectare) were rose by 51.49% and 36.52%, respectively compared to the CONGZUG.

Table 2. Quantitative evaluation of the phenological and yield characteristics of green zucchini following spiritual (biofield/prayer) energy treatment.

Vegetative trait	Control group (CONGZUG)	Treated group (BTGZUG)	P Value
Days to germination	7-9	7-8	-
Germination percentage	86.37 ± 1.66	99.10 ± 1.05	$p \leq 0.001$
Plant height (cm)	55.74 ± 1.66	75.31 ± 1.71	$p \leq 0.001$
Spreading of leaves (cm)	70.44 ± 2.52	89.72 ± 2.84	$p \leq 0.001$
Number of primary branches/plants	7.20 ± 0.52	9.32 ± 0.63	$p = 0.032$
Number of nodes/plants	8.42 ± 0.37	12.48 ± 0.32	$p \leq 0.001$
Number of leaves per plant	12.74 ± 1.64	18.24 ± 1.33	$p = 0.031$
Leaf length (cm)	20.26 ± 0.33	28.58 ± 0.52	$p \leq 0.001$
Leaf width (cm)	18.69 ± 0.26	24.32 ± 0.46	$p \leq 0.001$
Days to first bud initiation	23.41 ± 0.16	22.32 ± 0.24	$p = 0.005$
Days to first male flower appearance	27.42 ± 1.63	25.35 ± 1.72	$p = 0.408$
Days to first female flower appearance	32.41 ± 1.33	30.47 ± 1.14	$p = 0.300$
Days to 50% flowering	40.16 ± 1.75	38.65 ± 1.32	$p = 0.510$
Number of male flowers	9.71 ± 0.58	13.28 ± 0.22	$p \leq 0.001$
Number of female flowers	6.35 ± 0.26	9.89 ± 0.27	$p \leq 0.001$
Days to fruit harvest	45.36 ± 1.37	45.11 ± 1.05	$p = 0.888$
Fruit weight (g)	520.43 ± 2.83	652.63 ± 2.84	$p \leq 0.001$
Crop duration (days)	63.43 ± 1.36	62.52 ± 1.55	$p = 0.671$
Fruit length (cm)	18.47 ± 0.72	26.36 ± 0.65	$p \leq 0.001$
Fruit diameter (cm)	10.82 ± 0.11	14.58 ± 0.21	$p \leq 0.001$
100-seed weight (gm)	10.25 ± 0.08	13.62 ± 0.05	$p \leq 0.001$
Seed length (cm)	1.20 ± 0.02	1.50 ± 0.03	$p \leq 0.001$
Seed width (cm)	0.54 ± 0.02	0.70 ± 0.01	$p \leq 0.001$
Seed count/fruit	53.59 ± 0.26	72.25 ± 0.66	$p \leq 0.001$
Number of fruits per plant	3.65 ± 0.14	4.68 ± 0.57	$p = 0.117$
Fruit yield/plant (kg/plant)	2.02 ± 0.11	3.06 ± 0.12	$p \leq 0.001$
Fruit yield (kg)	18.06	24.68	-
Fruit yield/sq. m plot (kg/sq. m)	0.75	1.03	-
Fruit yield/hectare (ton/ha)	7.53	10.28	-

Data represented as mean ± SEM (n = 5); $p \leq 0.05$ *vs.* control green zucchini group (CONGZUG) using Student's *t*-test

DISCUSSION

The phenotypic characterization of the green zucchini genotypes (CONGZUG and BTGZUG) reveals a significant morphological divergence, particularly regarding fruit quality and reproductive traits. The observation of "dark green" fruit skin and "uniformly cylindrical" shapes in the BTGZUG group suggests a higher market preference alignment compared to the "non-uniformly cylindrical" and "green" fruits of CONGZUG. Such variations in fruit morphology was often governed by complex genetic architectures and environmental interactions, which was critical for breeding programs aiming for uniformity [7, 8]. The divergence in fruit flesh characteristics indicates distinct metabolic profiles. These sensory attributes were essential for consumer acceptance and are frequently linked to the concentration of total soluble solids and carotenoids within the mesocarp [9]. Furthermore, the "less spongy" texture was found in the BTGZUG may imply a higher cell wall density or different pectin composition, which contributes to a longer shelf-life and better post-harvest resilience [10]. The variation in seed morphology, moving from "small/light cream" in the CONGZUG to "medium/cream" in the BTGZUG, reflects differences in maternal investment and resource allocation. Larger seed size was often positively correlated with seedling vigor and early establishment, which may provide BTGZUG with a competitive advantage during the initial stages of vegetative growth [11, 12]. Collectively, these results underscore that while both genotypes maintain core botanical features, BTGZUG exhibits superior morphological traits for commercial standardization and organoleptic quality.

The significant enhancement in the rate of germination and plant height in BTGZUG suggests that the treatment effectively modulates early ontogeny and vegetative vigor. Such improvements in early-stage development are often attributed to enhanced nutrient uptake and hormonal signaling, which set a robust foundation for subsequent growth phases [13]. The marked increase in plant architecture parameters such as number of branches and nodes per plant, indicates a significant shift in apical dominance and lateral growth. This architectural complexity typically results in a more extensive canopy, which, coupled with the increase in leaf spreading, optimizes the light interception area [14]. The substantial rose in photosynthetic capacity metrics, including leaf number, leaf length, and leaf width (**Table 2**), provided a structural basis for increased biomass accumulation. According to Smith et al. 2018, larger and more numerous leaves enhance the source-to-sink ratio and ensured more photoassimilates were available for reproductive development [15]. The culmination of these vegetative and reproductive improvements was reflected in the final yield metrics such as fruit weight, length, and diameter in the BTGZUG (Table 2). These results align with Garrido 2007, that enhanced floral production, efficient photosynthesis, and fruit development [16]. The significant improvements in seed metrics, including 100-seed weight and seed count, demonstrate that the treatment not only affects the fleshy parts of the fruit but also enhances the reproductive fitness and nutrient storage within the seeds. This comprehensive boost resulted in a total fruit yield was increased in the BTGZUG.

Furthermore, the mechanism of action for SBET may parallel other non-contact stimuli, such as acoustic vibrations or low-frequency resonance, which have been shown to alter gene expression related to growth hormones. According to the comprehensive review by Lingyu et al., plants possess sophisticated mechanoreceptors that translate environmental energy into biochemical signals, resulting in enhanced biomass accumulation and yield [17].

CONCLUSION

The blessing treatment group (BTGZUG) exhibited superior morphological development most of the measured parameters. The data suggest that BET influences the plant's phenological development and reproductive efficiency, leading to a notable increase in total biomass and agricultural yield. By increasing the number of female flowers and subsequently improving fruit yield, the blessing treatment demonstrates a potent effect on the plant's reproductive output.

Abbreviations

SBET: spiritual blessing energy treatment; CONGZUG: control green zucchini group; BTGZUG: biofield energy-treated green zucchini group; SSP: single super phosphate; MOP: muriate of potash

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Conflict of Interests

Author MKT was employed by Trivedi Global, Inc. TBG, VDK, and NRP were employed by Shree Angarsiddha Shikshan Prasarak Mandal’s College of Agriculture, Sangulwadi, Mohitewadi, Maharashtra, India. Authors SM and SJ were employed by Trivedi Science Research Laboratory Pvt. Ltd.

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