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Full Length Research

Impact of non-physical spiritual blessing (biofield) energy on the morphological development and yield of *Cucumis sativus* L.

Dahryn Trivedi[1], Vivek Dattaram Kadam[2], Tejas Bapu Gaikwad[2], Nikhil Rajendra Phutankar[2], Sambhu Mondal[3] and Snehasis Jana[3*]

[1]Trivedi Global, Inc., Research and Development, Henderson, Nevada, USA.
[2]Shree Angarsiddha Shikshan Prasarak Mandal's College of Agriculture, Dept. of Horticulture, Sangulwadi, Mohitewadi, Maharashtra, India.
[3]Trivedi Science Research Laboratory Pvt. Ltd., Research and Development, Thane (W), Maharashtra, India.

*Corresponding author. Email: publication@trivedisrl.com

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ABSTRACT: Traditional agriculture often relies on chemical treatments that carry significant environmental risks. To address the need for sustainable and non-invasive productivity enhancers, researchers are exploring the impact of non-physical Biofield Energy Treatments. These treatments were hypothesised to influence the molecular and cellular transitions in living organisms via a subtle energy field. The objective of this study was to evaluate the influence of Spiritual Blessing (Biofield) Energy Treatment (SBET) on the morphological and yield characteristics of cucumber (*Cucumis sativus* L.). The study was conducted using a randomised complete block design, where cucumber seeds and plots were divided into two groups: Control and Treated. The treated group received a non-physical SBET from a renowned spiritual practitioner, while the control group remained untreated. Both groups were maintained under identical environmental and soil conditions. The results show that Phenological traits such as plant vine length, number of branches per plant, number of leaves per plant, and leaf length were significantly increased by 34.43% ($p \leq 0.001$), 53.83% ($p = 0.006$), 38.71% ($p = 0.003$), and 42.41% ($p \leq 0.001$), respectively, in the SBET-treatment group compared to the control. Additionally, yield-related parameters such as number of fruits per plant, yield (kg) per plant, and 100-seed weight were significantly increased by 38.68% ($p \leq 0.001$), 61.83% ($p \leq 0.001$), and 39.3% ($p \leq 0.001$), respectively, in the treatment group with respect to the control. In conclusion, the results suggest that SBET has the potential to serve as an effective alternative approach for enhancing the morphological growth and yield of *Cucumis sativus* L.

Keywords: Cucumber, spiritual energy, morphology, yield enhancement, Trivedi Effect®.

Abbreviations: SBET, spiritual blessing energy treatment; **CONCCBG,** control cucumber group; **BTCCBG:** biofield energy-treated cucumber group; **SSP,** single super phosphate; **MOP,** muriate of potash; **DAS,** days after sowing

INTRODUCTION

Cucumber (*Cucumis sativus* L.) is one of the most widely cultivated vegetable crops globally, valued for its nutritional content and economic importance in both fresh and processed markets (Grumet *et al*., 2022). Its production levels exceed 91 million tons annually to satisfy the nutritional and hydrating needs of a growing population (FAOSTAT, 2024). As a member of the Cucurbitaceae family, its cultivation success was intrinsically linked to its morphological plasticity and the optimisation of yield-related components. The phenotypic diversity of cucumber remains a cornerstone for breeding programs aiming to enhance yield. They demonstrated through phenotypic path analysis that fruit size, breadth, and length, alongside leaf width and internode distance, are the most critical factors influencing total yield (Thapa *et al*., 2026). Beyond genetic variability, the morphological response of cucumber to agronomic management, such as grafting and irrigation, plays a pivotal role in yield stability. Grafting, in particular, has emerged as a robust strategy to modify the plant's architecture and nutrient uptake efficiency. This is underscored by research that examines how rootstock-scion interactions influence growth. Specifically, Aslam *et al*. (2020) reported that while grafting can alter the "bloom" of the fruit, it consistently enhances cumulative yield and vegetative vigour compared to non-grafted plants.

The global demand for sustainable agricultural intensification has prompted researchers to explore non-conventional biostimulants that can enhance crop productivity without the ecological drawbacks of synthetic fertilisers. Among these emerging frontiers is the study of Spiritual Blessing (Biofield) Energy, a non-physical, subtle energy hypothesised to interact with biological systems at the cellular and molecular levels (Sameen *et al.,* 2025). Biofield Energy is often characterised as a low-intensity electromagnetic field or "vital force" that surrounds and permeates living organisms (Rubik *et al*., 2015; Trivedi *et al*., 2024). While traditionally viewed through the lens of complementary medicine, its application in agriculture suggests a unique form of "information transfer" that can influence seed germination and metabolic efficiency (Lee and Wu, 2019; Aslam *et al*., 2020). While conventional methods such as grafting and synthetic fertilisation have been employed to enhance vegetative growth and yield, there is an increasing demand for sustainable and non-traditional agricultural interventions to optimise crop productivity (Gamage *et al*. 2023; Trivedi *et al*., 2026a). Recent studies have documented the impact of Spiritual Blessing/Biofield Energy Treatment (SBET) in diverse crops, noting improvements in germination rates, plant height, morphological, phenological, and yield-related parameters (Trivedi *et al*., 2026a; Trivedi *et al*., 2026b; Branton *et al*., 2026). By bridging the gap between subtle energy science and traditional plant physiology, this research was performed to enhance better growth and increase the productivity of the cucumber using Spiritual Blessing (Biofield) Energy Treatment.

MATERIALS AND METHODS

Study site details

Field experiments were conducted at Bhandarwadi, Sindhudurg district, situated within the Konkan agro-climatic zone of Maharashtra, India (15°37’–16°40’ N, 73°19’–74°13’ E; altitude 26 m). The regional climate is characterised by tropical extremes, with pre-monsoon temperatures peaking between 39°C and 42°C. Given the high spatio-temporal rainfall variability, the area is prone to acute soil moisture deficits. Such environmental stressors frequently coincide with critical phenological stages, potentially compromising fundamental physiological processes and overall crop productivity.

Seed details and experimental design

Cucumis sativus L. (cv. Dynasty-hybrid) seeds (95% purity; Lot No. NU6220241) were procured from Namdeo Umaji Agritech (India) Pvt. Ltd. and partitioned into two experimental cohorts: an untreated control and a Biofield Energy Treatment (BET) group. Following treatment, seeds were cultivated in randomized field plots to assess vegetative phenology, morphological characteristics, and reproductive yield. To eliminate confounding variables and isolate the influence of BET, both cohorts were subjected to identical, standardized agronomic management, including uniform irrigation, fertilization, and integrated pest management (IPM) protocols, throughout the experimental duration.

Field layout

The study utilized a randomized complete block design (RCBD) incorporating two distinct treatments. Six plots, each comprising 10.0 m² (4.0 m × 2.5 m), were distributed within a 70.0 m² total area. To mitigate cross-contamination and border effects, 0.5 m buffer strips separated all plots and replicates. Cucumber (*Cucumis sativus*) seeds were sown at a uniform 0.5 m × 0.5 m spacing. Initially, the field was cleared and composite soil samples were assayed to quantify baseline physicochemical parameters: pH, organic matter, and macronutrient availability (N, P, and K). This characterization ensured that initial edaphic conditions were homogeneous across the site, thereby minimizing confounding analytical variables.

Spiritual blessing (biofield/prayer) energy treatment strategy

The control cohort (CONCCBG) comprised untreated *Cucumis sativus* seeds and substrate (soil). The experimental group (BTCCBG) of both cucumber seeds and soil received a non-physical spiritual blessing (biofield) energy treatment (SBET) which was delivered by one single practitioner with more than 12 years expertise of blessing, Mrs. Dahryn Trivedi. This procedure was executed for 4 minutes at a range of approximately 0.5 meters (1.5 feet) from the specimens. Ambient parameters were stabilized at a constant temperature of 28 ± 2°C and a relative humidity of 65 ± 5%. To preserve sample integrity, no physical contact was permitted throughout the entire experimental duration. The protocol involved a standardized "laying on of hands" technique, intended to modulate the energetic state of the agricultural matrix and seeds. All specimens were thereafter managed following standard cultivation protocols to evaluate distinct phenotypic and physiological variations.

Soil properties

Before experimental initiation, representative composite topsoil specimens were extracted from a depth of 30 cm within every plot using five-point sampling. Specimens were subsequently air-dried, screened through a 2-mm mesh, and refrigerated at 4 °C pending characterization. Soil texture was ascertained *via* the qualitative feel method (Richer-de-Forges *et al*., 2023), while potentiometric pH was quantified within a 1:2 (w/v) soil–distilled aqueous suspension utilizing a standardized pre-calibrated electronic pH meter.

Seed plantation and management

Seeds were sown directly into the soil, with moisture sustained *via* manual irrigation during the initial nine days after sowing (DAS). Thereafter, irrigation was regulated through a drip irrigation system featuring self-compensating emitters (0.5 m spacing; 3 L/h flow rate). Basal fertilisation consisted of 50:100:50 kg/ha of N:P:K, supplied using urea, single superphosphate (SSP), and muriate of potash (MOP). The entire quantities of SSP and MOP, along with 50% of the urea, were incorporated pre-sowing, while the residual nitrogen was side-dressed at 21 DAS. To suppress pest pressure, chlorpyrifos 50% + cypermethrin 5% (Hamla 550; Gharda Chemicals Ltd., India) was applied at a concentration of 2 mL/L at 21 and 49 DAS across all treatments. At 70 DAS, five plants per plot were randomly sampled to quantify biometric growth parameters and yield components.

Plant growth parameters

The germplasm was characterised using an extensive array of qualitative and quantitative morphological phenotypic traits. Qualitative descriptors targeted vegetative and reproductive architecture, encompassing plant vigor, growth habit, stem morphology, and leaf attributes (pubescence, lobing depth, blade coloration, and maximum width). Phenotypic variations in fruit and seed attributes, including skin pigmentation, shape, seed colour, and density, were meticulously documented. Quantitative metrics were systematically recorded to evaluate growth and productivity. Measured vegetative parameters encompassed vine length (cm), primary branch count, nodes per vine, internode length (cm), and stem diameter (cm) to define structural crop development. Foliar and phenological data included leaf blade dimensions (length and width, cm) and the duration required to reach fifty per cent anthesis within plots. Yield and seed components were quantified *via* fruit weight (g), dimensions (cm), and diameter (cm); total productivity (t/ha); and seed dimensions, specifically length and width in metric centimetres.

Yield parameters

Upon reaching physiological maturity, cucumbers were harvested for morphometric and yield assessments. Digital callipers were utilised to measure fruit length and diameter; individual mass was recorded *via* a precision electronic balance. Cumulative productivity was determined by randomly sampling five individual plants per plot. Aggregate fruit yield per net plot was recorded in kilograms and subsequently converted to tonnes per hectare (t/ha) for standardised yield extrapolation

Data analysis

Results are presented as mean ± standard error of mean (SEM). Statistical comparisons between two independent cohorts were performed *via* Student's *t*-test using SigmaPlot (v14.0). For all analyses, a p-value < 0.05 was considered the threshold for statistical significance.

RESULTS

Soil properties analysis

Baseline characterization of the experimental soil across all plots identified a sandy loam texture with a strongly acidic profile (pH 5.01). This acidity correlated with restricted cation exchange capacity (CEC) and suboptimal nutrient bioavailability. Post-harvest analysis demonstrated that plots subjected to SBET exhibited a significant pH shift to 5.90, transitioning the classification from strongly to moderately acidic (data not shown). These data suggest that the intervention modulates soil chemical properties, potentially by enhancing buffering capacity or altering ionic concentrations within the soil matrix, thereby mitigating the constraints associated with extreme pedological acidity.

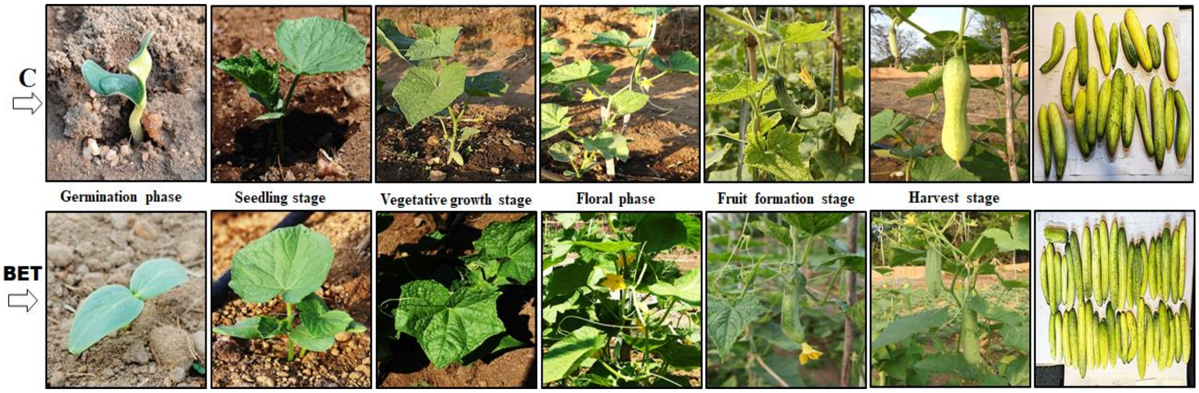

Figure 1. Representative images illustrated the changes in vegetative growth characteristics of cucumber at different stages. C: Control group; BET: Blessing/biofield energy treatment group.

Table 1. Effects of blessing (biofield) energy treatment on qualitative vegetative parameters of cucumber at 70 days after sowing (DAS).

Vegetative trait	Control group (CONCCBG)	Treated group (BTCCBG)
Plant growth type and habit	Indeterminate & viny	Determinate & viny
Stem color	Green	Dark green
Stem pubescence density	Indeterminate	Dense
Leaf color intensity	Medium green	Dark green
Leaf pubescence density (at the vegetative stage)	Indeterminate	Dense
Flower colour (at fully developed flower)	Yellow	Deep Yellow
Blossom end fruit shape (at the table maturity stage)	Flat	Flat
Fruit skin texture	Wrinkle	Smooth
Fruit shape	Oblong	Oblong
Fruit skin color shape	Light green	Green
Fruit skin colour (at the mature harvest stage)	Brownish yellow	Brown
Seed colour (at the mature harvest stage)	Cream white	Cream

Morphology of cucumber plants

The morphological progress of cucumber was recorded through systematic observations at set intervals. This study assessed systematically from the initial germination, seedling phase vegetative growth stage, floral phase, fruit formation stage, and final harvest stage (Figure 1).

Comparative analysis of vegetative traits

A fundamental shift was observed in the growth pattern. While the control group displayed an indeterminate habit, the treated group transitioned to a determinate habit. Both groups maintained a viny (climbing/creeping) nature. The treated plants exhibited a dark green stem colour compared to the standard green in the control. Furthermore, the stem pubescence density (hairiness) increased from indeterminate in the control to dense in the treated group, which often correlates with improved pest resistance and moisture retention. The leaves of the treated group (BTCCBG) showed a higher colour intensity (dark green) compared to the medium green of the control. Similar to the stem, the leaf pubescence density at the vegetative stage was significantly higher (dense) in the treated group compared to the indeterminate density in the control. At the fully developed stage, the flowers of the treated plants were a deep yellow, whereas the control group produced standard yellow flowers (Table 1). This increased intensity can sometimes influence pollinator attraction.

Phenology and yield traits

The rate of germination and plant vine length were increased significantly ($p \leq 0.001$) by 13.23% and 34.43%, respectively, in BTCCBG compared to the control, CONCCBG. Plant architecture like number of branches per plant and number of nodes per plant were significantly

Table 2. Quantitative evaluation of plant growth and harvest quality of cucumber following spiritual blessing/prayer-based interventions.

Vegetative trait	Control group (CONCCBG)	Treated group (BTCCBG)	P value
Days to germination	5 - 7	5 - 6	-
Germination rate (%)	86.42 ± 0.68	97.85 ± 0.36	$p \leq 0.001$
Vine length (cm)	212.17 ± 3.08	285.21 ± 3.14	$p \leq 0.001$
Number of branches per plant	4.31 ± 0.35	6.63 ± 0.52	$p = 0.006$
Number of nodes per plant	34.02 ± 0.64	40.83 ± 0.52	$p \leq 0.001$
Internode length (cm)	6.01 ± 0.76	7.84 ± 0.98	$p = 0.178$
Number of leaves per plant	33.12 ± 2.47	45.94 ± 1.72	$p = 0.003$
Days to first male flower	31.59 ± 2.57	30.49 ± 1.32	$p = 0.713$
Days to first female flower	38.27 ± 1.76	35.62 ± 1.33	$p = 0.264$
Days to 50% flowering	54.89 ± 2.27	50.33 ± 2.84	$p = 0.245$
Number of male flowers per plant	179.21 ± 5.76	214.76 ± 4.42	$p = 0.001$
Number of female flowers per plant	33.28 ± 1.97	42.15 ± 1.84	$p = 0.011$
Number of days to the first fruit harvest	56.68 ± 1.57	51.88 ± 0.47	$p = 0.019$
Crop duration (days)	109.64 ± 2.34	105.44 ± 1.59	$p = 0.176$
Leaf length (cm)	12.38 ± 0.54	17.63 ± 0.37	$p \leq 0.001$
Leaf width (cm)	5.87 ± 0.82	6.86 ± 0.30	$p = 0.290$
Fruit length (cm)	17.86 ± 0.46	21.73 ± 0.42	$p \leq 0.001$
Fruit width (cm)	6.57 ± 0.38	7.27 ± 0.18	$p = 0.135$
Fruit weight (g)	180.35 ± 4.27	245.38 ± 2.37	$p \leq 0.001$
Number of fruits per plant	6.23 ± 0.26	8.64 ± 0.27	$p \leq 0.001$
Yield (kg) per plant	1.31 ± 0.07	2.12 ± 0.09	$p \leq 0.001$
100-seeds weight (g)	2.57 ± 0.03	3.58 ± 0.03	$p \leq 0.001$
Fruit Yield (kg)	47.61	60.54	-
Fruit Yield/sq. m plot (kg/sq. m)	1.59	2.02	-
Fruit Yield/hectare (tones/hectare)	15.87	20.18	-

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

increased by 53.83% ($p = 0.006$) and 20.02% ($p \leq 0.001$), respectively, in the BTCCBG compared to the control, CONCCBG. Parameters related to photosynthetic capacity such as the number of leaves per plant rose by 38.71% ($p = 0.003$), supported by a 42.41% ($p \leq 0.001$) increase in leaf length in the BTCCBG than CONCCBG. Reproductive priming descriptors such as number of male and female flowers per plant were significantly increased in the BTCCBG by 19.84% ($p = 0.001$) and 26.65% ($p = 0.011$), respectively compared to the compared to the CONCCBG. The most striking impact of the treatment was observed in final yield metrics. The fruit length and fruit weight were significantly increased by 21.67% and 36.06%, respectively, in the BTCCBG with respect to the CONCCBG. Furthermore, in the BTCCBG number of fruits per plant, yield (kg) per plant, and 100-seed weight were significantly increased by 38.68% ($p \leq 0.001$), 61.83% ($p \leq 0.001$), and 39.30% ($p \leq 0.001$), respectively, compared to the CONCCBG. The harvest index was profoundly shifted; fruit yield (tons per hectare) rose by 27.16% in the treatment group (BTCCBG) compared to the control group. Other parameters such as internode length, days to first male flower, days to first female flower, days to 50% flowering, crop duration (days), leaf width, and fruit width were altered in the BTCCBG compared to the CONCCBG, while the data were non-significant ($p > 0.05$) (Table 2).

DISCUSSION

Based on the qualitative vegetative growth habit of treated cucumber (BTCCBG), a shift to determinacy was observed compared to the CONCCBG, while maintaining a viny nature, which suggested a decoupling of apical dominance and internode elongation. In cucumbers, vegetative and reproductive development occurred concurrently, manifesting as either indeterminate or determinate growth habits (Wen *et al*., 2019). While fresh-market cultivars typically exhibited indeterminate growth to facilitate staggered, continuous harvesting, the pickling industry prioritized determinate varieties. These compact phenotypes were specifically engineered to accommodate high-density field populations and mechanized, single-pass harvesting operations, optimizing commercial efficiency and yield uniformity in industrial processing systems (George, 1970). The transition to dark green stems and leaves indicated an increase in chlorophyll concentration or an alteration in the chloroplast ultrastructure. Darker foliar pigmentation was frequently correlated with enhanced nitrogen assimilation and photosynthetic efficiency, which may have provided the metabolic energy required for the dense pubescence observed (Evans, 1989). This improvement might have been due to the SBET to the cucumber seeds and corresponding plot.

The significant increase in stem and leaf pubescence density (from indeterminate to dense) served as a primary structural defense. Trichomes acted as physical barriers against herbivory and reduced the boundary layer conductance, thereby improving moisture retention under transpiration stress. These improvements in the structural defense system and moisture retention ability in the treated plant (BTCCBG) might have been due to the SBET (Trivedi Effect®) (Aryal *et al*., 2025). The shift from standard to deep yellow flowers suggested an accumulation of carotenoids or flavonoids. This increased colour intensity was a known strategy for optimizing plant-pollinator interactions, as deeper hues increased the visual contrast against green foliage, potentially leading to higher visitation rates and improved fruit set (Wang *et al*., 2018).

The significant enhancement in the germination rate and vine length in the BTCCBG group compared to CONCCBG suggested that the treatment effectively triggered early-stage metabolic activation. Such improvements in early vigor were often attributed to the modulation of endogenous phytohormones or improved nutrient uptake, as discussed by Zulfiqar *et al*. (2022). The robust expansion of plant architecture, specifically the increase in branches (53.83%) and nodes (20.02%), indicated a shift in biomass partitioning that favored structural complexity. This structural development was critical as it provided a larger framework for reproductive sites, a phenomenon consistent with findings that optimized vegetative growth directly correlated with higher yield potential in cucurbits, according to Souri *et al*. (2019). The physiological basis for these gains was further supported by the 38.71% increase in leaf number and 42.41% increase in leaf length. These parameters were primary drivers of photosynthetic capacity; larger and more numerous leaves increased the light-intercepting surface area, facilitating higher carbon assimilation rates. This relationship between leaf morphometry and biomass production was well-documented by Murchie *et al*. (2013). The transition to reproductive growth showed a significant "priming" effect, with male and female flower counts rising by 19.84% and 26.65%, respectively. The higher percentage increase in female flowers was particularly noteworthy, as it suggested the treatment may have influenced sex expression or flower retention, which were vital for maximizing fruit set. Similar reproductive shifts had been analyzed by Labudda *et al*. (2022).

Ultimately, the most profound impact of the BTCCBG treatment was reflected in the final yield metrics, specifically the 61.83% increase in yield per plant and the 27.16% rise in tons per hectare. This surge was likely a cumulative result of increased fruit weight (36.06%) and 100-seed weight (39.3%), indicating more efficient sink-source translocation during fruit filling. These results aligned with the conclusions of Parmar *et al*. (2025), who emphasized that significant yield deviations ($p \leq 0.001$) were typically the result of integrated improvements across all phenological stages.

Overall, the SBET significantly improved plant architecture and the expanded photosynthetic capacity provided the necessary resources to support a higher number of reproductive units and heavier fruits. Notably, these productivity gains occurred without significantly altering the crop's phenological timeline or total growth duration.

Conclusion

The BTCCBG treatment group significantly enhanced both vegetative growth and reproductive efficiency, leading to a substantial increase in overall fruit yield compared to the control (CONCCBG) group. Consequently, the treatment effectively establishing it as a potent strategy for boosting agricultural output. These findings encourage further molecular-level investigation into the mechanism of action behind biofield-plant interactions.

CONFLICT OF INTERESTS

Authors declare that they have no conflict of interest.

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