

# Impact of humic acid on growth and vigour of coconut seedlings

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## Introduction

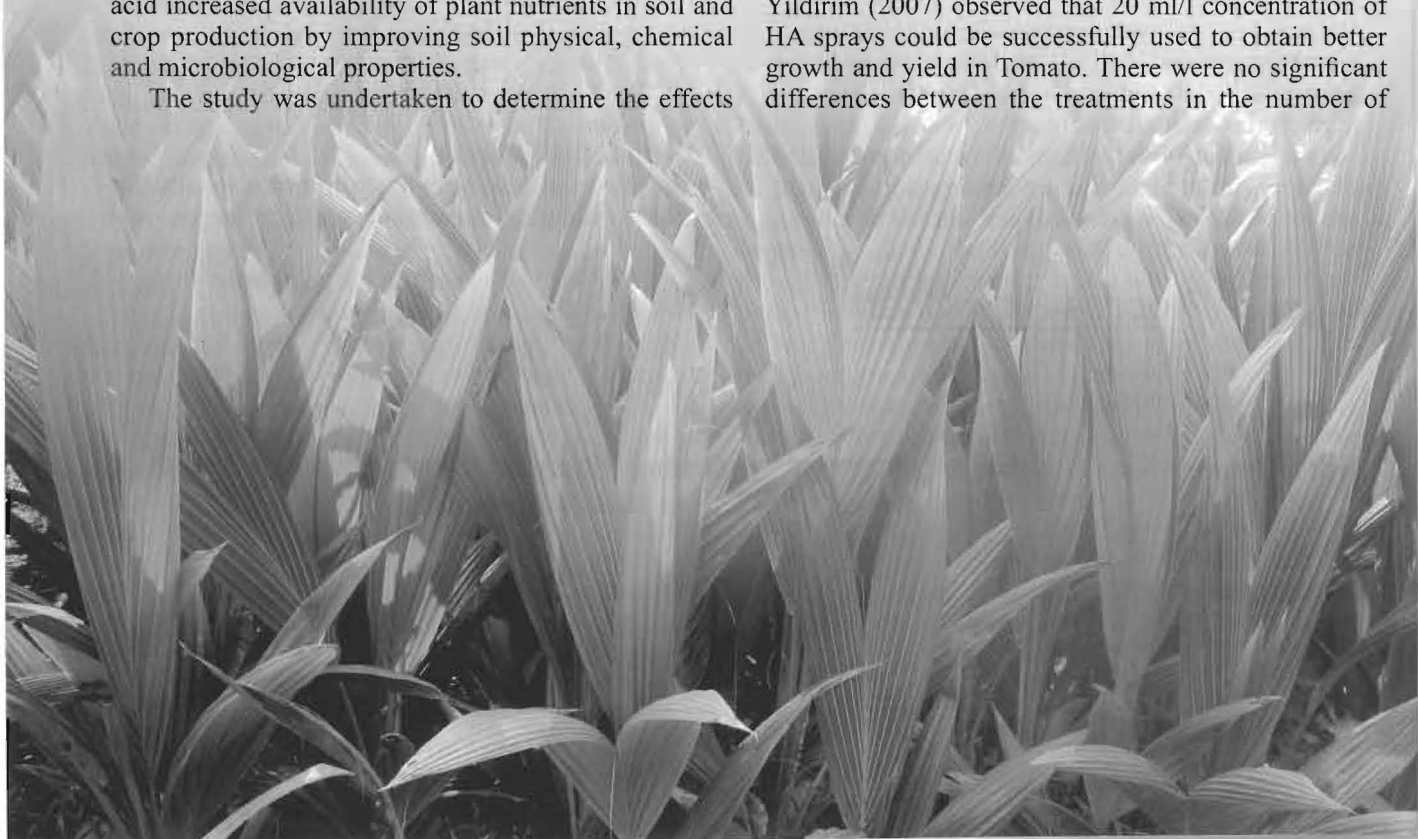
Coconut plays a very significant role in Asian economy and is grown throughout tropical world. With good farm management practices farmers can achieve maximum yield and profit from coconut. Success of coconut plantation establishment starts with the production of good quality and vigorous planting material. Kotob (2009) reported that humic acid (HA) application enhances the seedling emergence, plant growth and mitigate the harmful effect of salinity. Coconut Development Board at its DSP Farm Mandya, Karnataka during the year 2016-17 conducted an experiment for finding out the effects of different levels of humic acid (HA) on the growth and vigour of coconut seedlings. Improving soil conditions and establishing the equilibrium among plant nutrients are also important for soil productivity and plant production. For this purpose, organic matter and similar materials were applied in soil, increasing agricultural production by improving soil physical, chemical and biological properties of soil. Among various amendments humic acid increased availability of plant nutrients in soil and crop production by improving soil physical, chemical and microbiological properties.

The study was undertaken to determine the effects

of different levels of humic acid on growth and vigour of coconut seedlings. The coconut seedlings were raised in beds and after germination of seedlings, the different levels of humic acid concentration viz. 10%, 20% and 30% were applied to the soil twice at 60 days interval. Experimental layout was a completely randomized design with three replications. Growth parameters such as plant height, collar girth, number of leaves and leaf width of coconut seedlings were recorded.

Application of humic acid had positive effects on growth parameters of coconut seedlings. The results are in line with findings of Fagbenro and Agboola (1993), who had reported that HA was beneficial to the growth of teak seedlings.

Significant variations were observed between the treatments in respect to plant height. 30% HA treatment showed taller plant height followed by 20% HA compared to 10% HA and shorter plant height was recorded in control. The thickest collar girth was observed in 30% HA and 20% HA treatments and they significantly differed from 10% HA and control. Ertan Yildirim (2007) observed that 20 ml/l concentration of HA sprays could be successfully used to obtain better growth and yield in Tomato. There were no significant differences between the treatments in the number of





leaves and leaf width.

The effects of HA application is safe, effective and it can be easily adopted by farmers to improve the seedling quality. Therefore, HA may put to good use as natural fertilizer in sustainable and ecological agriculture system.

The result of the study indicates that 30% humic acid applied to the soil shows better growth and vigour of coconut seedlings.

Table1. The effects of humic acid levels on coconut seedling growth

Humic Acid Levels	Plant Height (cm)	Girth (cm)	No. of Leaves (cm)	Leaf Width (cm)
10%	130.93 b	11.60 b	4.67 a	20.13 a
20%	133.13 b	12.47 a	4.87 a	19.90 a
30%	138.73 a	12.87 a	5.27 a	21.40 a
Control	125.47d	11.40 b	4.73 a	19.93 a
C.D at 5%	3.06	0.6	NS	NS

Different alphabets shows significance difference at  $p < 0.05$

## References

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as a refining agent both as a deodorizer and as a decolourizer. The shell charcoal also finds way to laundries, smitheries etc. Well powdered shell charcoal finds limited use as a dentifrice. The charcoal is used by goldsmiths in melting gold and silver and for other metal works. The commercial value of shell charcoal lies in its use as the primary raw material for the production of activated carbon. It also finds very good demand as an industrial fuel to substitute furnace oil.



## Capital Investment required for setting up of shell charcoal manufacturing unit

Components	Total Project Cost			
	1 Tonne	3 Tonne	6 Tonne	9 Tonne
	(` in lakhs)			
Land	Own/ Lease	Own/ Lease	Own/ Lease	Own/ Lease
Plant & Equipments	10.00	15.00	25.00	40.00
Building & Civil works	6.00	8.00	10.00	12.00
Electrical installation	0.50	0.75	1.25	2.00
Preliminary & Pre op. expenses	0.16	0.23	0.36	0.64
Working Capital margin	2.00	6.00	12.00	18.50
TOTAL	18.66	29.98	48.61	73.14

## Export Potential of Shell Charcoal

Export of coconut shell charcoal from India during the year 2016 – 17 is about 30,000 MT which is around 300% higher than that of the export during previous year (7,565.85 MT). Coconut shell charcoal (ITC HS Code 44029010) is eligible for 5% incentive under Merchandise Export from India Scheme (MEIS). The international demand for coconut shell charcoal is expected to increase in the coming years.

## CDB Scheme for Promotion of Coconut Industries

Coconut Development Board under Technology Mission on Coconut extends financial assistance to the limit of 25% of the eligible project cost limited to Rs. 50 lakhs per project. For SC/ST women entrepreneurs, financial assistance is extended upto 33.3% of the total project cost limited to Rs. 50 lakhs per project. ■