GROWTH PATTERN AND BIOMASS YIELD OF *STEVIA REBAUDIANA* (BERT.) GROWN UNDER POLYHOUSE CONDITIONS IN RELATION TO CLIMATE CHANGE.

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Abstract: Climate change affects the earth's temperature, precipitation, hydrological cycles, frequency and intensity of heat waves and many extreme events, which has a great impact on agricultural production. On the wake of the climatic change, polyhouse farming is the only way to protect crops and manage a better yield than in normal climatic condition. It protects crops from wind, rain, radiation, and precipitation, etc again it facilitates the farmers not to depend on the monsoon for the cultivation but allow scheduling of the production according to the market needs.

A polyhouse experiment was conducted during winter season of 2011 at Government P.G College, Noida to study the effect of polyhouse condition on the growth pattern and biomass yield in *Stevia rebaundiana* (Bert.). The experiment was laid out in two different environmental conditions as Polyhouse environment and the other one is Control (open field) environment. Forty five days old Stevia seedlings are planted with row spacing 40-45 cm and between each plant 25 cm in well prepared field of both the environments in the month of january-2011 and the crop was established successfully. The studies on growth pattern, leaf area and biomass yield were made after an interval of 15 days from the date of transplantation till four month stage. In the present study it is revealed that polyhouse environment trigger the production of plant material especially leaf numbers, leaf fresh weight, plant height and total biomass considerably over open climatic condition, where the growth of the plant is ceased in the January as crop was frost-susceptible.

Keywords: Climate change, market needs, polyhouse, protect crops, *Stevia rebaudiana*

REFERENCES

Behera, P.C., Rao, K.A. and Mittra, B.N. (1990). Design, development and management of plastic houses for nursery rising. Proc. XI Int. Cong. On the Use of Plastics in Agriculture. IARI, New Delhi. 149-155.

Bosnjak, S. (1988). Collection of works from the 15th meeting of scientists and experts: Agricultural technology (POT'88), Opatija Yugoslavia, 23-30 January 1988. Yojvodjansko drustvo zo poljoprivrednu tehniku. 269-274

Bridel, M. and Lavieille, R. (1931). Le Principe a saveur sucree du kaa-he-e (*Stevia rebaudiana* Bertoni). Bull Soc. Chim. Biol. **13**: 636-655.

Crammer, B. and Ikan, R. (1986). Sweet glycosides from the stevia plant. Chem. Br. **22**: 915–916.

Goudriaan, J. and de Ruiter, H.E. (1983). Plant growth in response to CO2 enrichment, at two levels of nitrogen and phosphorus supply. 1. Dry matter, leaf area and development. Neth J. Agric. Sci. **31**: 157-169.

Goyal, A.K. (1991). Temperature regulated botanical aspects of polyhouse grown summer squash (*Cucurbita pepo* L.) productivity. J. Indian Bot. Soc. **70**: 435-436.

Gupta, S. (2000). Production biology and physiological aspects of brinjal and chillies under solar energy traps. Ph. D. Thesis, HNB Garhwal Univ. Srinagar, India.

Hartrath, H. (1986). Summer flowers for cutting in protected culture. Deutscher Gartenbau **40**: 1476-1478.

Konyaeva, M.A. and Korzinnikova, E.G. (1983). Effect of mulching the soil with transparent polyethylene film on tomato root system, plant and leaf productivity. Ratsional'nye. Putilspol'zovaniya Udobrenii pod sel'skokhozyaistvennye Kil'tury Zapadnoi Sibiri 91-101.

Kumar, M. (1994). A study of some botanical aspects of polyhouse grown green gram and broad bean crops. Ph. D. Thesis, HNB Garhwal Univ., Srinagar, India.

Mittra, B.N., Ghosh, B.C., Behera, P.C., Rao, K.A., Tiwari, K.N., Rao. Y.P. (1990). Use of plastic in crop fields and in low tunnel for augmenting agricultural productivity. Proc. XI Intl. Cong. On the Use of Plastics in Agriculture. IARI, New Delhi. 135-140.

Mowrey, D. (1992). Life with Stevia: How sweet it is. Op. Cit. pp. 1- 9.

Samuelsen, R.T. (1979). Swedish turnip grown in the open and under low plastic tunnels at Tromco. II. Leaf characteristics and dry matter, nitrogen and mineral contents. Forskning-og-Forsok-i-Land bruket. **30**: 227-244.

Spellerberg, B. and Buemann, G. (1985). Rate of rooting, sprouting and over wintering of cutting for propagation of difficult broad leaf trees. Deutsche Baumschule **37**: 421-423.