

Research  
Paper

## Effect of salinity on growth, yield and yield attributes of summer groundnut (*Arachis hypogaea* L.) in coastal saline belts of West Bengal

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### ABSTRACT

Groundnut is an important oilseed crop and emerging as a food crop in India and the area of the crop is more than 26.0 million ha around the world (FAO, 2003). The crop grown in more than 100 countries across the world. However, the average yield of the crop 998q/ha mainly due to the majority of the crop (80%) is grown under rainfed condition. Also the crop encounters several biotic and abiotic stresses. Drought, high temperature and salinity are the most important factors effecting the yield of the crop. This crop agriculture faces three way problems in the sundarban blocks of South 24 Parganas district of West Bengal. These are i) soil salinity, ii) late release of land for *Rabi* crop due to poor drainage system along with low percolation rate of water and iii) poor irrigation facility as the ground water is saline and unfit for irrigation. In this perspective, it was tried to understand the response of summer groundnut to soil salinity and also which can grow with minimum irrigation facilities. Limited work has been attempted so far for identifying the threshold salinity level in coastal and saline belts of West Bengal. Present investigation was with an aim of finding the threshold salinity level for growing groundnut successfully and profitably in coastal saline areas of sundarbans (south 24 Parganas), W.B. It was observed that this crop can not grow successfully at high salinity of EC 2.4 dS/m and above. The mortality of seedlings increased with the advancement of plant growth and clear-cut differences were observed in high and low soil salinity level. The crop was grown in summer season and soil salinity (EC > 2.3dS/m) caused more than 50 per cent mortality, (average 35%) pod and kernel formation was severely reduced. In that situation the plant growth was good but on the other side root development, pegging and seed filling were severely hampered due to high soil salinity which ultimately led to the poor kernel yield of the crop. Also, with the increase in environmental temperature during the month of March-April, when the crop was in full growth stage, yellowing and scorching of leaf was observed.

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Groundnut (*Arachis hypogaea* L.) is a very important oilseed /food crop in the world as well as India. In India out of 329 million ha of land 7.61 million ha of land is saline land out of which 2.0 million ha of land is coastal and saline belts (Singh and Basu 2004). The soil salinity is an emerging problem of these areas where ground nut is major crop and preferred by the farmers due to its importance as oilseed /food and fodder crop. Salinity in these areas is emerging in alarming rate. The measuring electrical conductivity (EC) of ground water is mainly unsuitable for irrigation.

Groundnut is a self pollinated oil-yielding warm season crop. The nut contains 26 per cent protein and 45 per cent oil. India will need 34.64 million tons of oilseed production in the year 2020. But the present production as

well as rate of annual increase in production is far away from the target. Presently, groundnut shares 32 per cent of total oilseed production in India. To meet the call of the future, the area under production and the productivity of groundnut should be increased. In west Bengal groundnut is largely grown as a summer crop under rainfed condition and yield is influenced due to erratic monsoon, the scope of increasing area under pre-*Kharif* ground nut is limited. In the southern parts of South 24 Parganas district, *i.e.* parts of Sundarbans, the agriculture faces three way hindrances. These are i) soil salinity, ii) late release of land for *Rabi* crop due to poor drainage system along with low percolation rate of water and iii) poor irrigation facility as the ground water is saline and unfit for irrigation. So, the farmers of this region have a very less mobility in