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Eeffect of brassinosteroids on of greengram crop(*Vigna radiata* L.)

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SUMMARY

Brassinosteroids (BRs) are now widely accepted as essential regulators of plant growth as they play a key role in a variety of developmental processes,including cell elongation,vascular differentiation and fruit ripening (Clouse and Sasse 1998, Symons *et al.*, 2006).The experiment was laid out in randomized block design with three replicacations.Seven treatments were assigned to experimental units at random.in the redsoils of Pakasam district,Andhra Pradesh where the soils are poor. The HBL was serially diluted to 2.5ppm, 5.0ppm, 7.5ppm, 10.0ppm, 12.5ppm, 15.0ppm and water spray(control).Plant samples were collected at vegetative stage *i.e.*,at 15 days 30days, 45days of the crop.Final yield data was collected at at maturity with 5 plants from each plot and recorded. The HBL favoured the total drymatter production,no.of pods per plant.The lean vegetative growth of plants resulting from the foliar spray of water(control) gave poor yields may be due to limited transport of assimilatesto the sink.However,HBLs alone improved the seed yield which was highest in treatment where greengram plants were sprayed with 7.5ppm of Homobrassinolides yielding 1025 kg/ha. The treatment T_4 followed the effect where the plants were sprayed with 100ppm of HBL yielding 955 kg/ha. of seed followed by T_2 where the greengram plants were sprayed with 7.5ppm of foliarspray of HBL yielding 947 kg/ha.of seed.The seedweigh was high in T_3>T_4>T_2>T_5 *i.e.*, 4.1gm, 4.0gm, 3.8gm, 3.2gm, respectively.Along with the test weight, no, of pods per plant recorded highest *i.e.*, 38 in T_3 followed by T_4 *i.e.*, 33,followed by T_2 *i.e.*, 24.The generation of such responce in the plants by the harmone (HBL)was possible due to a cumulative expressinon of accelerated rate of nitrate assimilation, protein synthesis, preferential translocation of photosynthates to the sink and delayed leaf senescence.The healthy growth obviously had an input on the productivity.

Key words : Homobrassinols -HBLs, Brassinosteroids (BRs)

Brassinosteroids (BRs) have been suggested to increase the resistance of plants to a variety of stresses, including water stress.This is based on application studies, where exogenously applied bioactive BRs have been shown to improve various aspects of plant growth under water stress conditions. Brassinosteroids are now widely accepted as essential regulators of plant growth as they play a key role in a variety of developmental processes,including cell elongation,vascular differentiation and fruit ripening (Clouse and Sasse, 1998, Symons *et al.*, 2006).Numerous studies have also reported that BRs are able to increase the plants ability to cope with stress,such as water stress, salt stress and pathogen attack (Krishna, 2003), although the mechanisms by which BRs modulate plant stress responses are not yet understood.

The majority of research focusing on BR-mediated stress responses has involved simple application studies such as spraying plants with BRs.Application of BRs has resulted in reduced phytophthora infections in potato increased resistance to viral pathogens,fungi and/or disease in tobacco (Nakashita *et al.*, 2003) and tomato (Krishna,2003); a reduced inhibitory effect of salinity on seed germination in rice (Anuradha and Rao, 2001) and an increased tolerance of lethal heat treatment in *Brassica napus* and tomato seedlings (Dhaubhadel *et al.*,1999).Various studies have also reported that BR applications increase water stress tolerance. Water stress tolerance is one of the most common environmental stresses that affects plant growth and development.A deficit of water leads to various alterations in plants,including stomatal closure, leaf abscission and changes in the composition of the cell wall or plasma membrane and can result in a decline in growth as photosynthesis and turgor are decreased.A study involving cucumber (*Cucumis sativus)* showed that plants sprayed with a synthetic BR, 24-epibrassinolide (EBR), had improved resistance to dehydration,as EBR treated leaves retained more water than the controls after drought. Another study, using sugar beet (*Beeta vulgaris)* showed that BR treatment fully compensated for the reduction in taproot mass normally caused by mild drought stress (Schilling *et al.*, 1991).A BR application resulting in increases in relative water content (RWC), nitrate reductase activity,chlorophyll content and photosynthesis under water stress conditions (Sai ram,1994).

Recently it has been shown that EBR –treated *Arabidopsis* and *B.napus* seedlings had a higher survival rate when subjected to drought (Kagale *et al.*, 2007) and that BR-treated sorghum (*Sorghum vulgare*) showed

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