

عنوان مقاله:

AMELIORATION OF NICKEL TOXICITY IN SOYBEAN PLANTS BY GIBBERELLIN AND ASCORBIC ACID

محل انتشار:

دوفصلنامه رستنیها، دوره 6، شماره 1 (سال: 1384)

تعداد صفحات اصل مقاله: 18

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خلاصه مقاله:

The interactive effects of nickel (Ni) and ascorbic acid (AsA) and gibberellin (GA³) on soybean seedlings (*Glycine max* L. cv. Union × Elf) were examined. Seven-day old hydroponically-grown seedlings were exposed to NiCl₂ · 6H₂O (۰.۵ mM), either with or without AsA (۱ mM) or GA³ (۰.۰۵ mM) or AsA (۱ mM) plus GA³ (۰.۰۵ mM), for five days. Nickel toxicity symptoms, such as formation of reddish-brown mottled spots on the leaf blade, observed in Ni-treated plants. Addition of GA³ or AsA to the culture medium reduced toxic effects of nickel. Interestingly, with application of GA³ plus AsA, these symptoms did not appear in Ni-stressed plants. Ni decreased dry weights of both roots and shoots and reduced chlorophyll content in leaves. An enhanced level of malondialdehyde and changes in the activities of the antioxidant enzymes, catalase (CAT, EC ۱.۱۱.۱.۶) and guaiacol peroxidase (GPX, EC ۱.۱۱.۱.۷), in both roots and leaves indicated that Ni caused oxidative stress in soybean plants.

کلمات کلیدی:

Nickel, Gibberellin, ascorbic acid, Oxidative damage, soybean

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