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Roles of Auxin and Cytokinin in Soybean Pod Setting

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Abstract: Soybean plants differentiate abundant floral buds, but most of them fail to grow pods and abort during development. Many studies indicated promotive effects of exogenously applied cytokinin on pod setting, but the effects of auxin application on pod set are ambiguous. In this study, we examined the changes in the concentrations of endogenous auxin and cytokinin in racemes and the effects of application of the two hormones on pod setting to clarify the role of auxin and cytokinin in soybean pod setting. The long-raceme soybean genotype IX93-100 was grown in pots and in the field. The auxin (IAA, indoleacetic acid) concentration in racemes was high for a long period from pre-anthesis to 9 days after anthesis (DAA) of the first flower on a raceme, but the cytokinin concentration was high for a short period, with a peak at 9 DAA. The IAA concentration was higher in distal portions of racemes, but the cytokinin concentration was higher in basal portions of racemes. In pot-grown plants, IAA applied to racemes tended to reduce the number of flowers and pods. In contrast, 6-benzylaminopurine (BA) applied to racemes before anthesis tended to reduce the number of flowers and pods, and that applied around 7 DAA significantly increased the pod-set percentage. However, these effects of IAA and BA application were slight in field-grown plants. These results indicate that the concentration of endogenous auxin and cytokinin in racemes changes in a different manner, and that cytokinins have a positive, and auxin a negative effect on pod setting when respective hormones are applied to racemes after the anthesis stage.

Keywords: [Auxin](#), [Cytokinin](#), [Flower abortion](#), [Pod set](#), [Sink formation](#), [Soybean](#)

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