Chromosomal localization of genes mediating tolerance to boron in pea (Pisum sativum L.) using molecular markers

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Introduction

Boron (B) is an essential micronutrient that is required for plant growth and development. However, excessive boron uptake can lead to boron toxicity, which affects plant photosynthesis, respiration, and nutrient uptake (Gupta et al., 1985). Therefore, identifying genes that mediate boron tolerance in plants is crucial for improving crop productivity under boron-affected conditions.

Materials and Methods

To study the chromosomal localization of genes mediating tolerance to boron in pea (Pisum sativum L.), a RFLP and RAPD analysis were conducted. The study used molecular markers, including 15 RFLP markers and 39 RAPD primers, to identify polymorphisms in a genic region. The primer sets were designed based on sequence alignments of pea genomic DNAs.

Results

A total of 15 RFLP markers and 39 RAPD primers were employed to map the genes mediating boron tolerance in pea. The markers were used to analyze the DNA samples from different pea genotypes, including those tolerant and susceptible to boron stress.

Conclusion

The study identified several genes that mediate boron tolerance in pea. These genes were localized on different chromosomes, indicating the presence of multiple loci contributing to boron tolerance. Further research is needed to understand the underlying mechanisms of boron tolerance at the molecular level.

References

Gupta et al., 1985

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