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Quantitative trait loci associated with major fatty acid components in soybean

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The soybean mapping population (100 BC_2F_2 lines) was developed from the cross Zhonghuang 13 × Zhonghuang 20. The linkage map contains 131 SSR markers covering a total distance of 2157.3 cM with an average of 16.5 cM. Five fatty acid components were measured by gas chromatography in three years, and QTLs associated with these fatty acid components were analyzed using ICIM model in software IciMapping 3.3. A total of 26 QTLs were detected to be associated with the five fatty acid components, including five QTLs for palmitic acid, five QTLs for stearic acid, seven QTLs for oleic acid, five QTLs for linoleic acid and four QTLs for linolenic acid. Three marker intervals associated with the same fatty acid were detected repeatedly across years, including sat_294–satt228 for palmitic acid detected in three years and sat_253–satt323 and sat_292–satt397 for oleic acid detected in two years. Four intervals were found to be associated with two fatty acid components, i.e., sat_294–satt228 for palmitic and oleic acids, satt308–sat_422 for stearic and linoeic acids, sat_292–satt397 for oleic and linoeic acids, and satt374–satt269 for linoeic and linolenic acids.