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Evaluation of the resistance to *Phytophthora sojae* in widely-grown soybean cultivars from major production regions in China across a century-long breeding

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Phytophthora root rot, caused by *Phytophthora sojae*, is an important yield-limiting disease of soybean (*Glycine max* (L.) Merr.). Developing and planting resistant cultivars is the most effective, economical, and environmental friendly strategy for managing this disease. To develop new cultivars, widely-grown varieties are often used as parents in soybean breeding because of their excellent overall performances and broad adaptation. Meanwhile, understanding the resistance responses of crossing parents to *P. sojae* is important in the breeding programs. The objectives of this study were to evaluate the resistant responses of 94 widely-grown cultivars, from four main sub-regions in China since 1920s, to 8 *P. sojae* isolates using the hypocotyl inoculation technique, and to investigate the distribution and diversity of phytophthora-resistant soybean in China and screen germplasm that confer the resistance to multiple isolates for implementation into breeding new cultivars. The result showed that 94 widely-grown cultivars elicited 44 different reaction types based on resistant or susceptible reactions to each of the 8 *P. sojae* isolates, and 80 of 94 cultivars were resistant to at least one *P. sojae* isolate. There is a higher resistance frequency and more diverse in cultivars from Yellow-Huai-Hai Valley region (YHH) than that from other three subregions, and the cultivars with resistance to seven or more of the eight isolates tested were all from YHH. Cultivars with resistance to multiple isolates or different resistance reactions may provide sources of resistance for the control of phytophthora root rot of soybean in the future.