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SEW-REAP: planting the seeds of early career soil-soya research in China

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SEW-REAP (Addressing food **S**ecurity, **E**nvironmental stress and **W**ater by promoting multidisciplinary **R**esearch **E**U **A**nd China **P**artnerships in science and business) was a European Union funded project (2016-2019) that placed European environmental researchers at Chinese institutions, in contrast to the more typical model of China Scholarship Council-funded visits of Chinese PhD students to the EU. These EU students were registered for their PhDs in European institutions, but conducted most of their research (18-24 months) in China. Since Chinese government policy is to become more self-sufficient in soya (Glycine max) production, and this crop provides a well-studied model system with significant genomic resources, two European students (PC and PMM) investigated variation in environmental stress responses (water deficit and phosphorus deficiency respectively) of diverse Chinese soya germplasm. PC identified significant variation in soya stomatal sensitivity to drying soil, which was related to variation in root-shoot signalling of the stress hormone ABA. PMM identified significant variation in soya root growth sensitivity to lack of phosphorus, which was related to variation in root accumulation of the stress hormone ABA. Whether variation in stomatal closure affects phosphorus transport to the shoot, and whether phosphorus-mediated changes in root growth affect root-to-shoot signalling of water deficit, needs to be investigated as different genotypic strategies may have antagonistic or complementary effects in multi-stress environments. Regardless of the physiological mechanisms involved in plant responses, SEW-REAP early career researchers have accessed complementary expertise across two continents to embrace a unique training opportunity and develop new scientific networks.