

The response of maize to inoculation with *Arthrobacter* sp. and *Bacillus* sp. in phosphorus-deficient, salinity-affected soil

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Supplementary figures

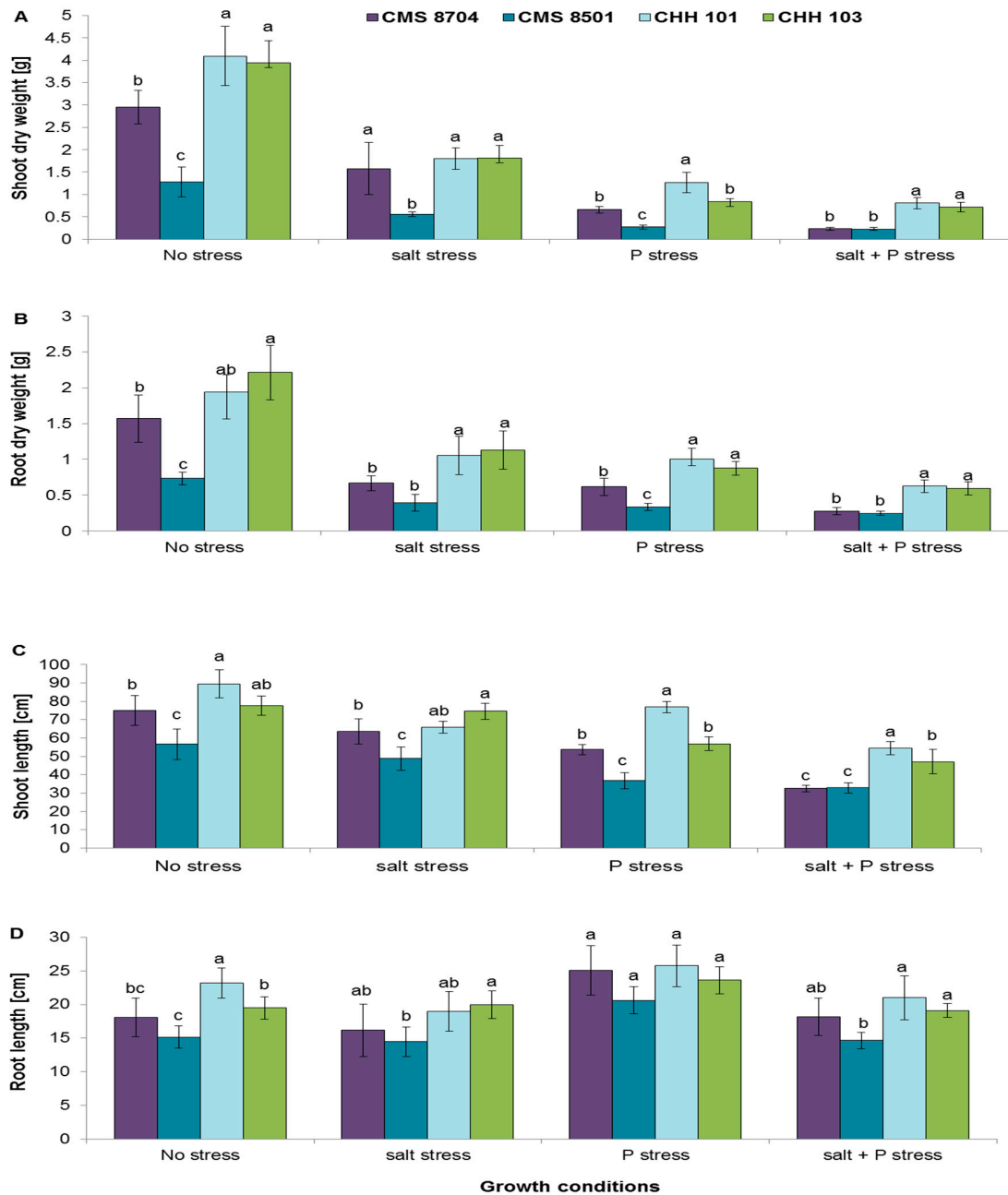


Figure S1. The growth of each of the four test maize varieties (CMS 8704, CMS 8501: composite varieties, CHH 101, CHH 103: F1 hybrid varieties) in response to the four treatments (no stress, salinity stress, P deficiency and salinity stress + P deficiency) with respect to (A) shoot dry weight, (B) root dry weight, (C) shoot length, (D) root length. Values shown in the form mean \pm SD ($n = 6$). Within each variety, values marked by the same letter do not differ significantly ($p < 0.05$) from one another.

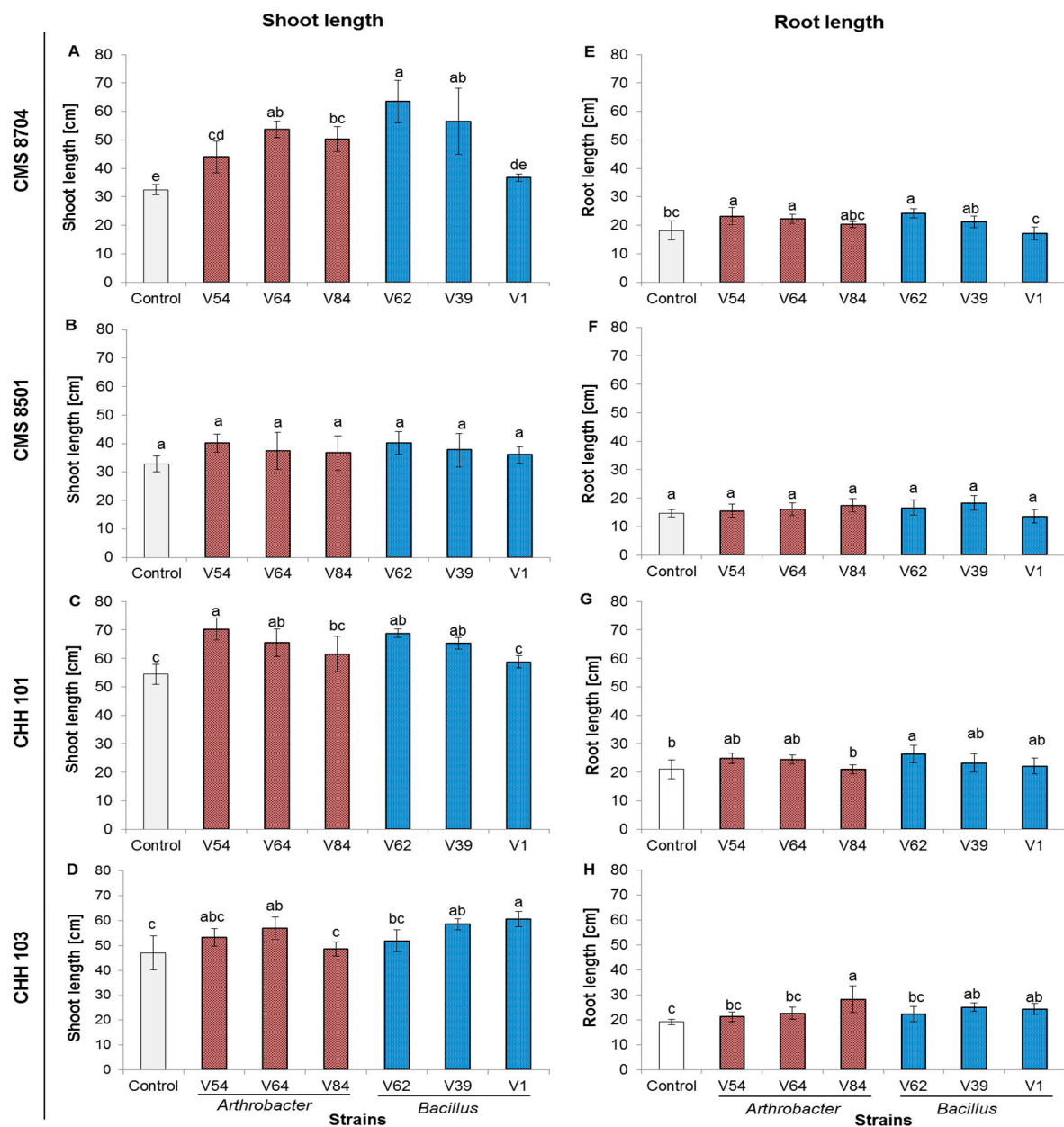


Figure S2. PGPR inoculation promotes the shoot and root growth of maize plants subjected to simultaneous P deficiency and salinity stress. (A–D) Shoot length, (E–H) root length of (A,E) CMS 8704, (B,F) CMS 8501, (C,G) CHH 101, (D,H) CHH 103. Measurements were performed after a six week growth period in a greenhouse. Values shown in the form mean \pm SD ($n = 6$). Within each variety, values marked by the same letter do not differ significantly ($p < 0.05$) from one another. Control: non-inoculated plants; V54, V64 and V84: *Arthrobacter* spp. strains, V62, V39 and V1: *Bacillus* spp. strains.

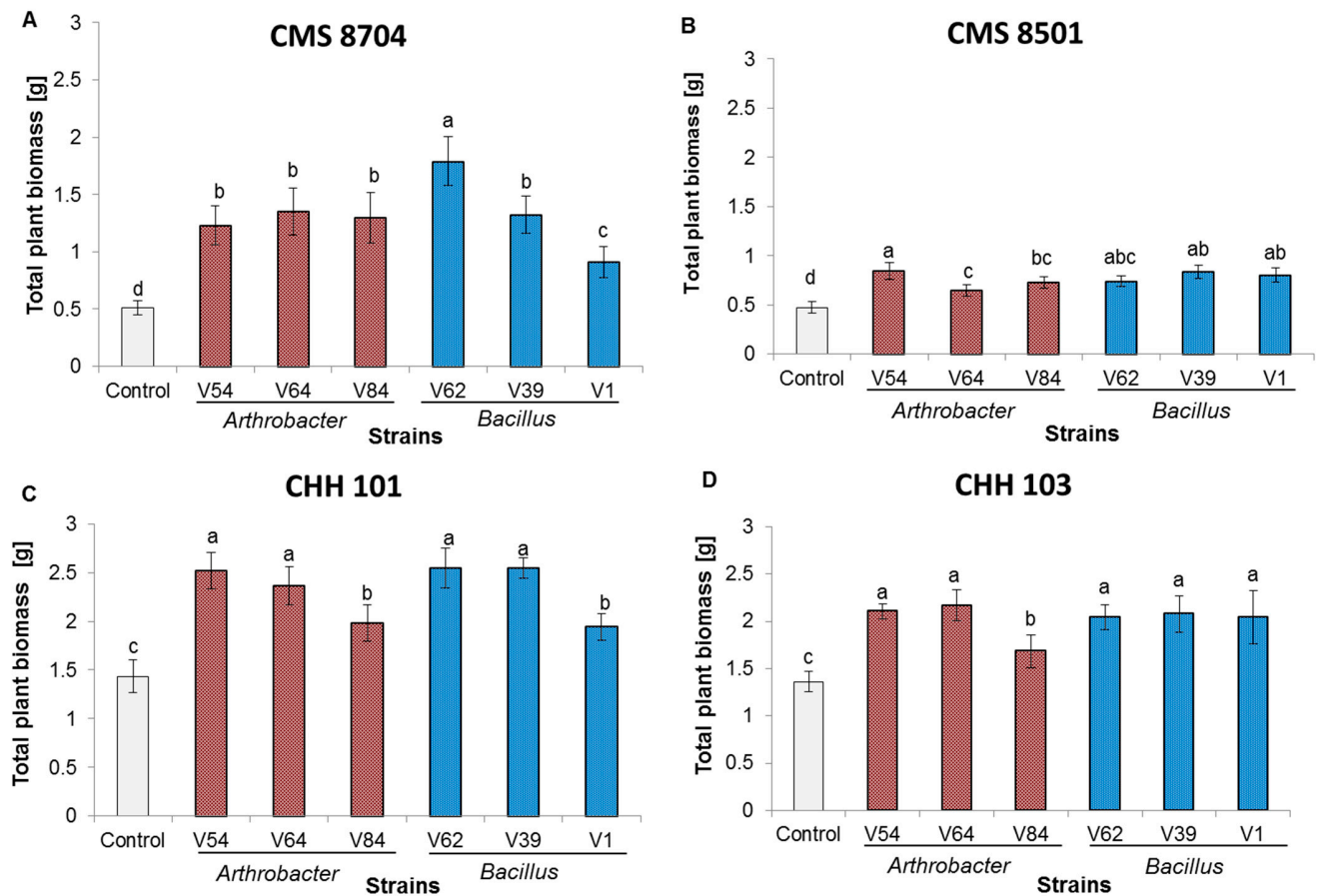


Figure S3. Inoculation with PGPR enhances the biomass accumulation of the four test maize variety plants subjected to simultaneous P deficiency and salinity stress. (A) CMS 8704, (B) CMS 8509, (C) CHH 101, (D) CHH 103 inoculated with one of *Arthrobacter* sp. strains V54, V64 or V84, or *Bacillus* sp. strains V62, V39 or V1. Measurements were performed after a six week growth period in a greenhouse after transplanting. Values shown in the form mean \pm SD ($n = 6$). Within each variety, values marked by the same letter do not differ significantly ($p < 0.05$) from one another. Control: non-inoculated plants.

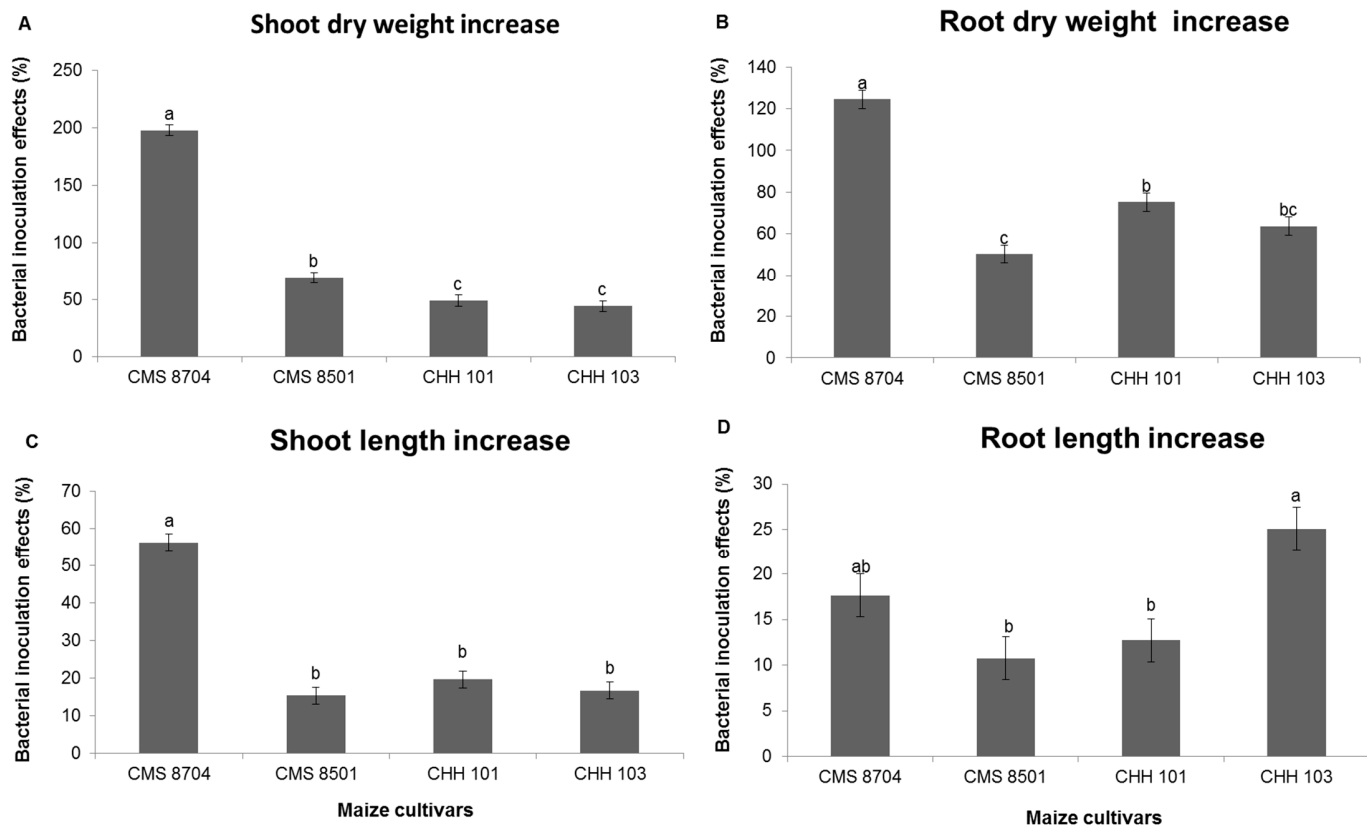


Figure S4. The differential varietal response to inoculation with PGPR. The bars indicate the mean (averaged over all six bacterial strains) increase over non-inoculated plants with respect to (A) shoot dry weight, (B) root dry weight, (C) shoot length, (D) root length of the two composite varieties CMS 8704 and CMS 8501, and the two F1 hybrid varieties CHH 101 and CHH 103. The plants were subjected to simultaneous P deficiency and salinity stress and were assessed after a six week growth period in a greenhouse. Values shown in the form mean \pm SD ($n = 6$). Within each trait, values marked by the same letter do not differ significantly ($p < 0.05$) from one another.

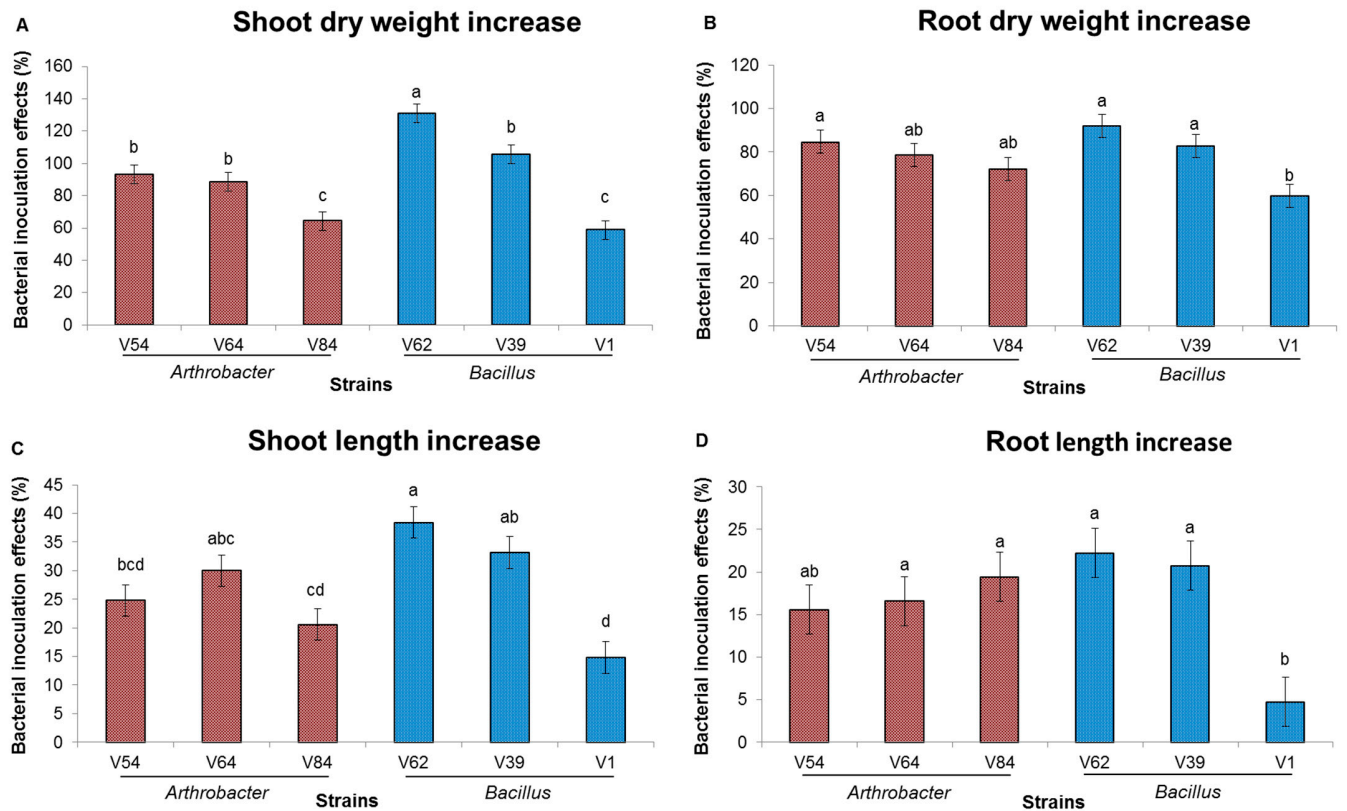


Figure S5. The differential varietal response to inoculation with PGPR. The bars indicate the mean (averaged over all four maize varieties) increase over non-inoculated plants with respect to (A) shoot dry weight, (B) root dry weight, (C) shoot length, (D) root length achieved by inoculating with either an *Arthrobacter* sp. strain (V54, V64, V84) or a *Bacillus* sp. strain (V62, V39, V1). The plants were subjected to simultaneous P deficiency and salinity stress and were assessed after a six week growth period in a greenhouse. Values shown in the form mean \pm SD ($n = 6$). Within each trait, values marked by the same letter do not differ significantly ($p < 0.05$) from one another.

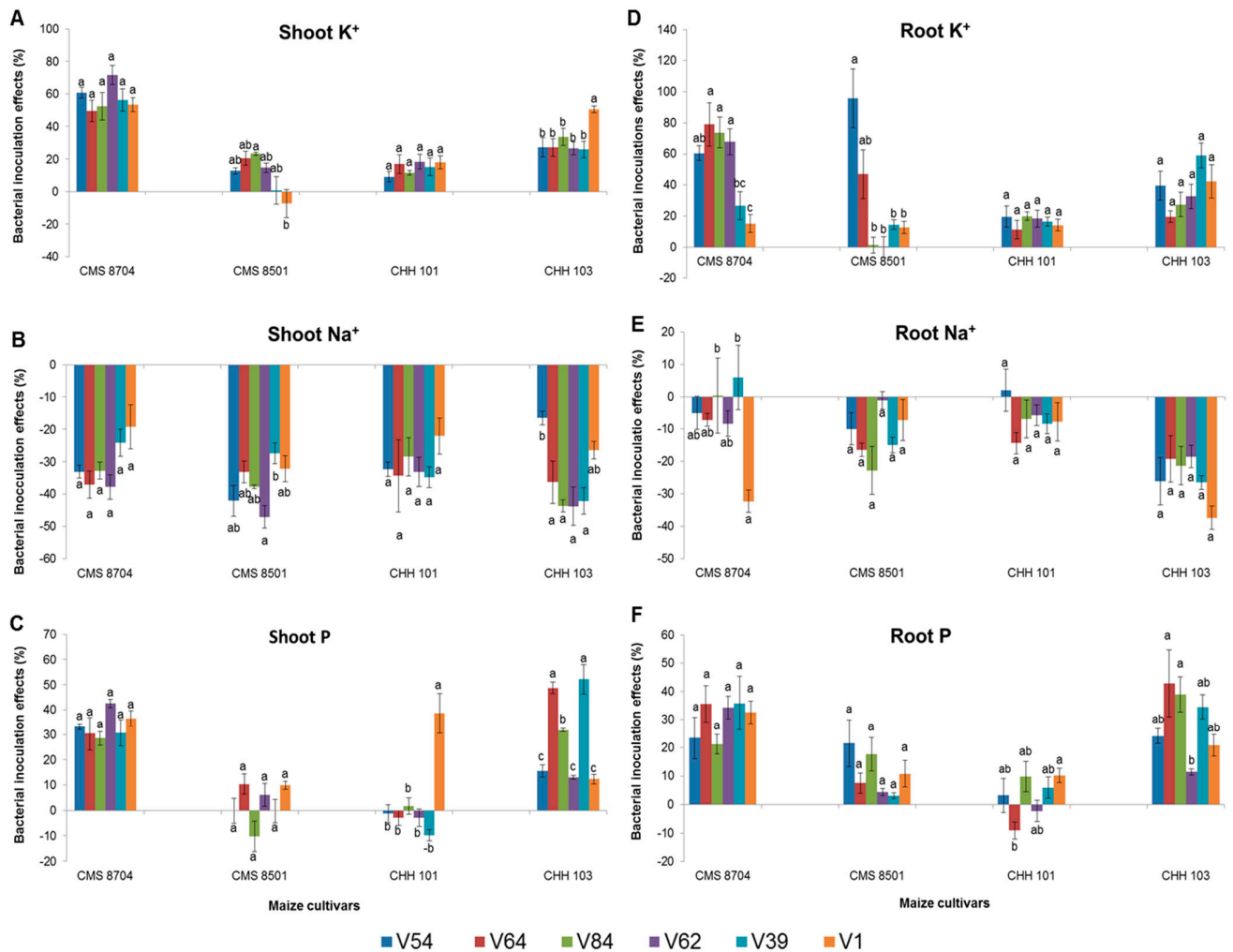


Figure S6. The effect of PGPR inoculation on the concentrations of Na⁺, K⁺ and P of maize plants subjected to simultaneous P deficiency and salinity stress. The % improvement in performance over non-inoculated control plants shown by each variety (CMS 8704, CMS 8501, CHH 101, CHH 103). The content in the shoot (A–C) and root (D–F) of (A,D) K⁺, (B,E) Na⁺, (C,F) P. Measurements were taken six weeks after transplanting in a greenhouse. Values shown in the form mean ± SD (*n* = 6). Within each variety, values marked by the same letter do not differ significantly (*p* < 0.05) from one another.

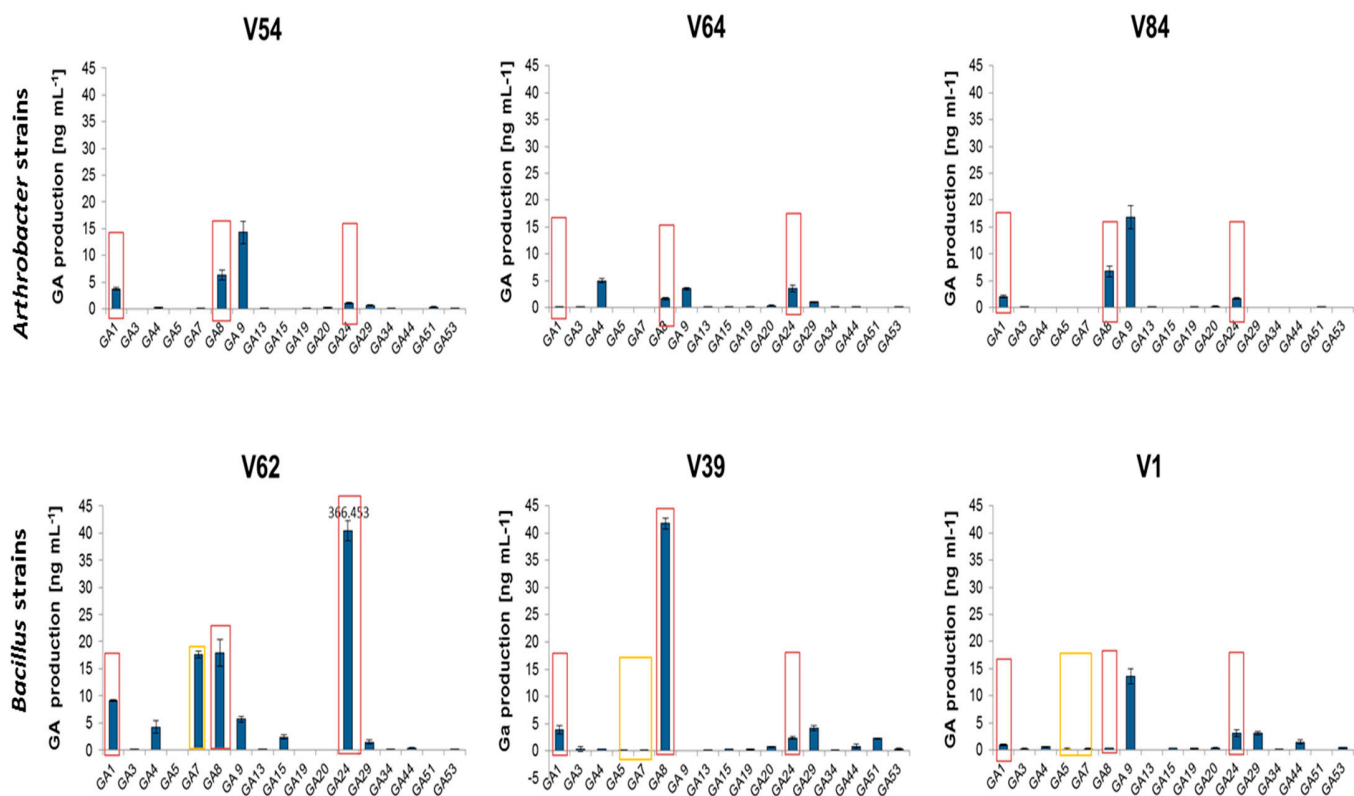


Figure S7. Gibberellins (GAs) in PGPR cells cultured *in vitro*. Compounds highlighted in red were produced by each of the six strains (V54, V64, V84: *Arthrobacter* sp. strains, V62, V39, V1: *Bacillus* sp. strain), while those highlighted in yellow were only produced by the *Bacillus* sp. strains.