Supplementary methodological details

We performed this study in 2018 during the growing season of soybean in a crop rotation field, which was established at the Henry J. Stumpf International Wheat Center (Grant, Nebraska, USA). This research Center works under the management of University of Nebraska Lincoln. The location of the experimental soybean field with following dimension; latitude 40.847081° and longitude of -101.701110°. We collected soil samples at the depth of 0-20cm for analysis before planting crop. As per the properties, the soil was described as a loam soil which contained 47% sand, 42% silt, and 11% clay. The soil physicochemical properties were as follow; soluble salt 0.58 ppm, pH 6.8, organic matter 2.2%, phosphorus (P_2O_5) 6 mg kg^{-1}, nitrate-nitrogen (NO_3-N) 9.3 mg kg^{-1} and potassium (K) 302 mg kg^{-1}.

Because the P_2O_5 concentrations in the top soil were below the recommended levels for soybean (https://extensionpubs.unl.edu), we applied 85 kg ha^{-1} of P_2O_5 using 10-34-0 (N-P-K) liquid chemical fertilizer that was injected 25 cm below soil surface during strip-tillage operations. Moreover, the soybean plants were also inoculated with the N-Take liquid soybean inoculant (Verdesian Life Scienses, Clay, North Carolina) to accelerate the nodulation and N-fixation in soybean plants. The corn plants were planted on June 4, 2018, with a seeding rate of 345800 seeds/ha (140,000/ac). The soil field soil had a relative humidity ~ 50% and two days after sowing (June 6, 2018), we recorded a precipitation of 2.3 cm there. The experimental plots were a randomized complete block design and it consisted of several experimental treatments while each treatment had four replicates as described in our previous publication[1]. The experimental replicate plot had a dimension of 3-m by 6-m (~10 by 20 feet) with a row spacing of 0.76 m (2.5 feet). Moreover, the field had a 0.76 m (2.5 feet) buffer between the experimental plots. This field had a past history of the *Fusarium* infection though we did not see any infected plants in the experimental plots other than the established *Fusarium* treatment in this study. We treated field to control weed by applying the pre-emergence herbicides Zidua Pro (BASF, Research Triangle Park, NC) at 146 ml (2 oz ac^{-1}) in the tank-mixed with the glyphosate at 2.3 L ha^{-1} (32 oz ac^{-1}). Moreover, we applied two subsequent post-

emergence treatments of the Xtendimax at 1.6 L ha^{-1} (22 oz ac^{-1}) in the tank-mixed with the glyphosate at 2.245 L ha^{-1} (32 oz ac^{-1}) at the V3 and V7 soybean growth stages.

We collected belowground and aboveground plant samples from the experimental treatments at the soybean reproductive stage six. We sampled three whole plants including their roots, shoots, and rhizosphere soil in the V-shaped pattern from each experimental plot. The soil and plants sample bags were kept in the iceboxes until reaching to the laboratory. All samples were preserved at -20ºC until further processing. We seprated plant leaves randomly from each sampled plant to measure leaf trichome density. The leaf disks (area = 0.29 cm^2) from the center of the leaf blade were removed using a paper punch. Then, we counted adaxial and abaxial trichomes from the leaf-discs under the dissecting microscope. We processed root and shoot samples carefully to avoid any damages to the plant tissues. The rhizosphere soil was separated from plant root. Then, these root samples were thoroughly washed using tap water to remove intact soil. Meanwhile, we determined root and shoot biomass of the sampled plant samples, and the mean biomass was determined for each experimental treatment.

Then, root-attached soybean nodules were counted while root traits were measured. For root traits, we scanned roots using WinRHIZO imaging system (Regent Instruments, Sainte-Foy, Quebec, Canada). Using WinRHIZO, the total root length (cm), area (cm^2), and diameter (mm) were determined. After this, each root was cut into the large and fine portions to take samples for large roots (LR) and fine roots (FR) for mineral analysis. We defined that the stem-attached roots were LR while the FR (hair-like) were collected from large roots. These roots were dried at 70°C for three days before mineral analysis. The root samples were profiled for mineral analysis using inductively coupled plasma-atomic emission spectroscopy (ICP-AES) at the Ward Laboratories, Kearney, Nebraska. The contents of some mineral element (P, K, Ca, Mg, S) are described as percent (%) of the sample dry matter, while some (Zn, Fe, Mn, Cu, Mo, and B) are described as ppm. Briefly, each root sample was first weighed, and then subjected to the chemical digestion process with nitric and hydrochloric acids. Then these were treated with hydrogen peroxide to dissolve and

remove any fats and oils. Then, the digested mixture was cooled, mixed and filtered. Then, the digested sample was poured into the test tubes for analysis using ICP-AES. Further details can be found elsewhere[1].

Reference

1. Adesemoye, A., Pervaiz, Z. H., Parikh, L., Kodati, S., Zhang, Q., Stepanović, S., & Saleem, M. (2021). Rhizobacterial, Fusarium Complex, and Fungicide Seed Treatments Regulate Shoot and Root Traits of Soybean Plants. Journal of Soil Science and Plant Nutrition, 21, 3502-3513.