**Supplementary Figure S1.** Kernel density maps based on occurrence records for the five *Cuscuta* species and the two host crop plants.

**Supplementary Figure S2.** Pearson's correlation coefficients between the environmental variables used for environmental niche modelling of (a) *Cuscuta australis*, (b) *Cuscuta japonica*, (c) *Cuscuta chinensis*, (d) *Cuscuta europaea*, (e) *Cuscuta approximata*, (f) soybean and (g) alfalfa.

**Supplementary Figure S3.** Results of jacknife evaluations of the relative importance of predictor variables and their percentage contribution in the MaxEnt model for each of the five *Cuscuta* species and the two host crop species. (a) *Cuscuta australis*, (b) *Cuscuta japonica*, (c) *Cuscuta chinensis*, (d) *Cuscuta europaea*, (e) *Cuscuta approximata*, (f) soybean and (g) alfalfa.

**Supplementary Figure S4.** Projected potential distribution maps ofsoybean under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S5.** Projected potential distribution maps of alfalfa under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S6.** Projected potential distribution maps of *Cuscuta approximata* under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S7.** Projected potential distribution maps of *Cuscuta australis* under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S8.** Projected potential distribution maps of *Cuscuta chinensis* under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S9.** Projected potential distribution maps of *Cuscuta europaea* under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S10.** Projected potential distribution maps of *Cuscuta japonica* under the current climate and potential future climates in 2070. (a) current period; (b-e) RCP 2.6~8.5 in 2070.

**Supplementary Figure S11.** Maps showing the overlap of suitable habitat between soybean and five *Cuscuta* species in the current climate (panels on the left side) and potential future climatic scenario RCP 2.6 in 2070 (panels on the right side).

**Supplementary Figure S12.** Maps showing the overlap of suitable habitat between alfalfa and five *Cuscuta* species in the current climate (panels on the left side) and potential future climatic scenario RCP 2.6 in 2070 (panels on the right side).

**Supplementary Figure S13.** Maps showing the overlap of suitable habitat between soybean and five *Cuscuta* species in the current climate (panels on the left side) and potential future climatic scenario RCP 6.0 in 2070 (panels on the right side).

**Supplementary Figure S14.** Maps showing the overlap of suitable habitat between alfalfa and five *Cuscuta* species in the current climate (panels on the left side) and potential future climatic scenario RCP 6.0 in 2070 (panels on the right side).

**Supplementary Figure S15.** Maps showing the overlap of suitable habitat between soybean and five *Cuscuta* species in the current climate (panels on the left side) and potential future climatic scenario RCP 8.5 in 2070 (panels on the right side).

**Supplementary Figure S16.** Maps showing the overlap of suitable habitat between alfalfa and five *Cuscuta* species in the current climate (panels on the left side) and potential future climatic scenario RCP 8.5 in 2070 (panels on the right side).