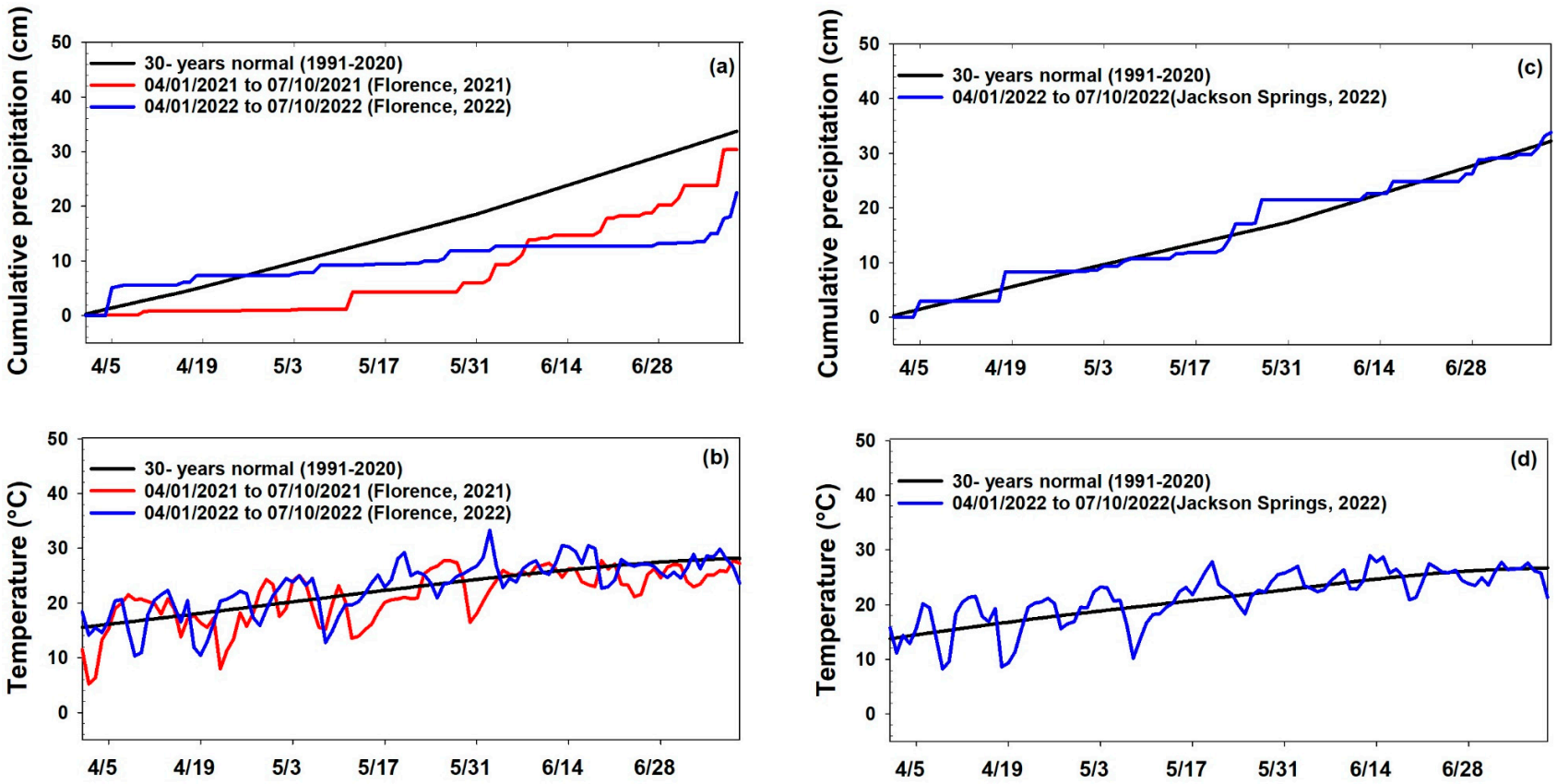

Figure S1. Cumulative precipitation and daily average temperature from one month prior to planting to one month after planting at Florence, SC (a&b) and Jackson Spring, NC (c&d) in comparison with the historic weather data (cumulative precipitation normal for a period of 30 years from 1991 to 2020 in panel-a&c and daily average temperature normal for the same 30-year period in panel-b&d). Daily temperature and precipitation data pertaining to the Florence experimental fields (a&b) were obtained from Clemson University's Pee Dee Research and Education Center Weather Station at Florence. Daily temperature and precipitation data pertaining to the Jackson Springs experimental field (c&d) were obtained from the North Carolina State Climate Office. The historic temperature and precipitation data were obtained from the National Oceanic and Atmospheric Administration (NOAA). During the experiment, soybean seeds were sown on 21 May 2021 and 31 May 2022 at Florence and on 7 June 2022 at Jackson Springs.

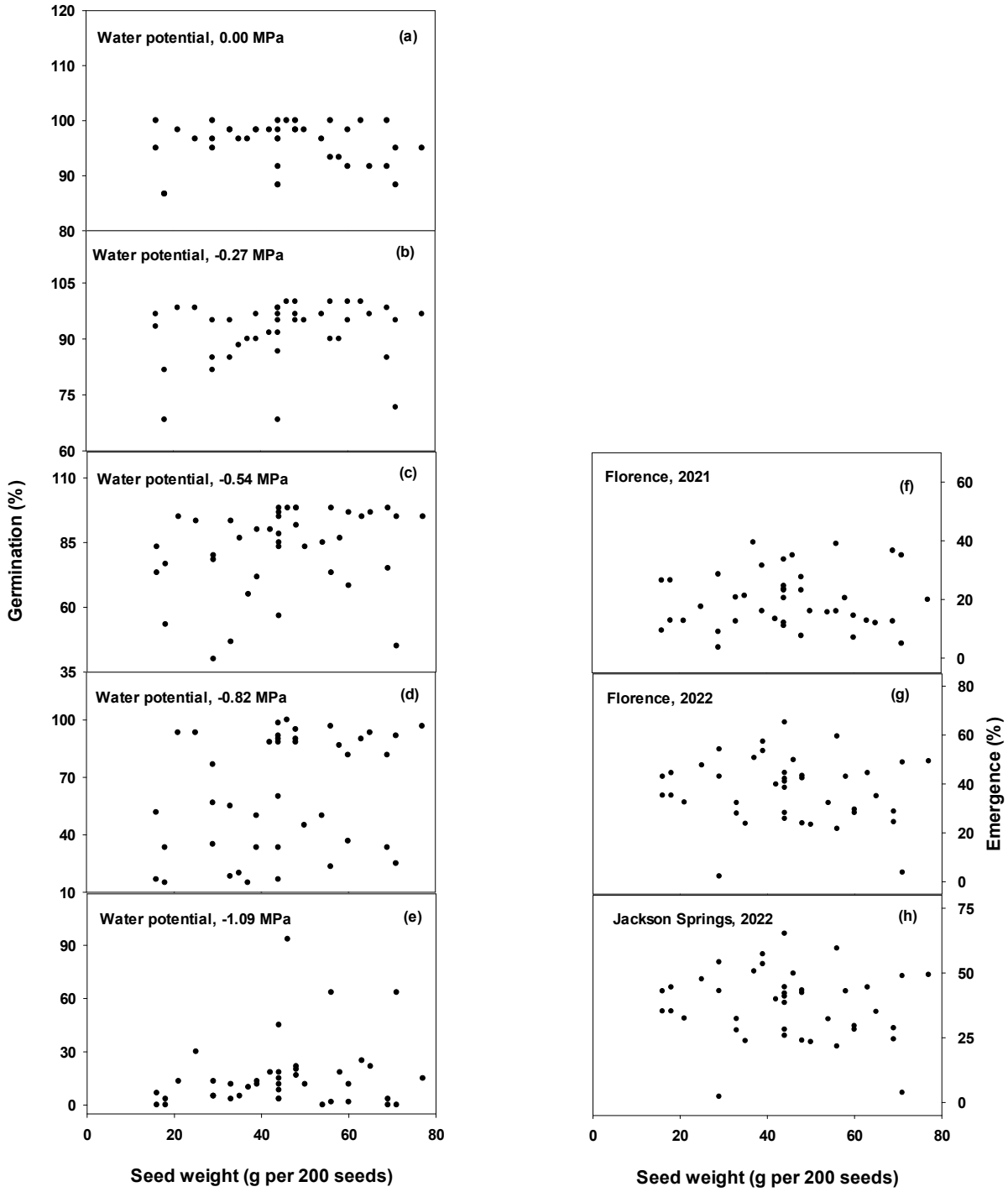

Figure S2. Relationship of seed size (measured through 200-seed weight) with germination percentage under controlled environmental conditions (a-e) and with emergence percentage under field conditions (f-h). The slope of the regression line was not significant (P≥0.05) in any of the above figures. A water potential of 0.00 MPa represents control (no stress); −0.27 MPa, low water stress; −0.54 MPa, mild water stress; −0.82 MPa, severe water stress; and −1.09 MPa, extreme water stress. Emergence was measured at Florence, SC in 2021 and 2022 and at Jackson Springs, NC in 2022.

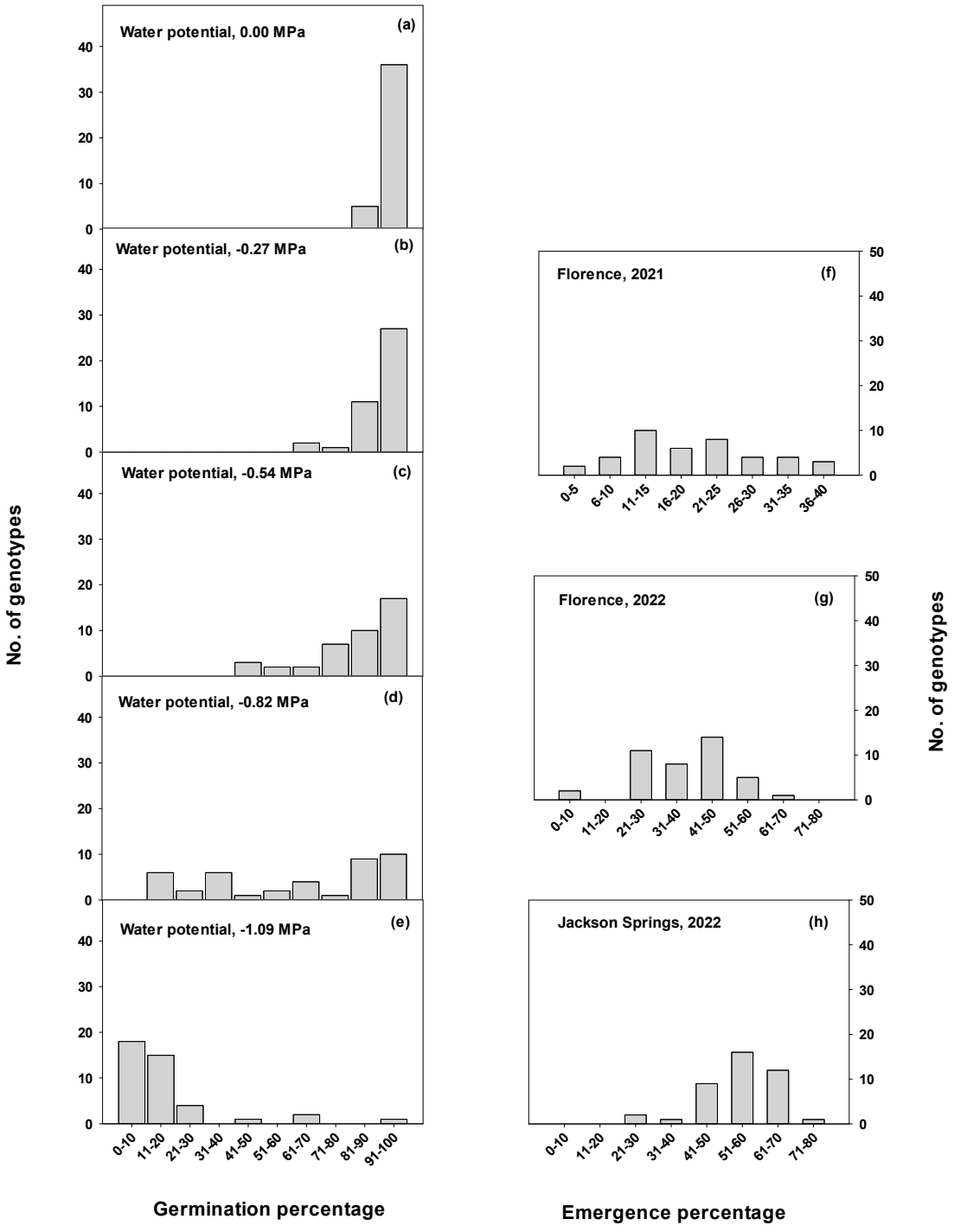

Figure S3. Distribution of germination percentage values among 41 soybean genotypes under controlled environmental conditions (a-e) and distribution of emergence percentage among the same genotypes under field conditions (f-h). A water potential of 0.00 MPa represents control (no stress); −0.27 MPa, low water stress; −0.54 MPa, mild water stress; −0.82 MPa, severe water stress; and −1.09 MPa, extreme water stress.