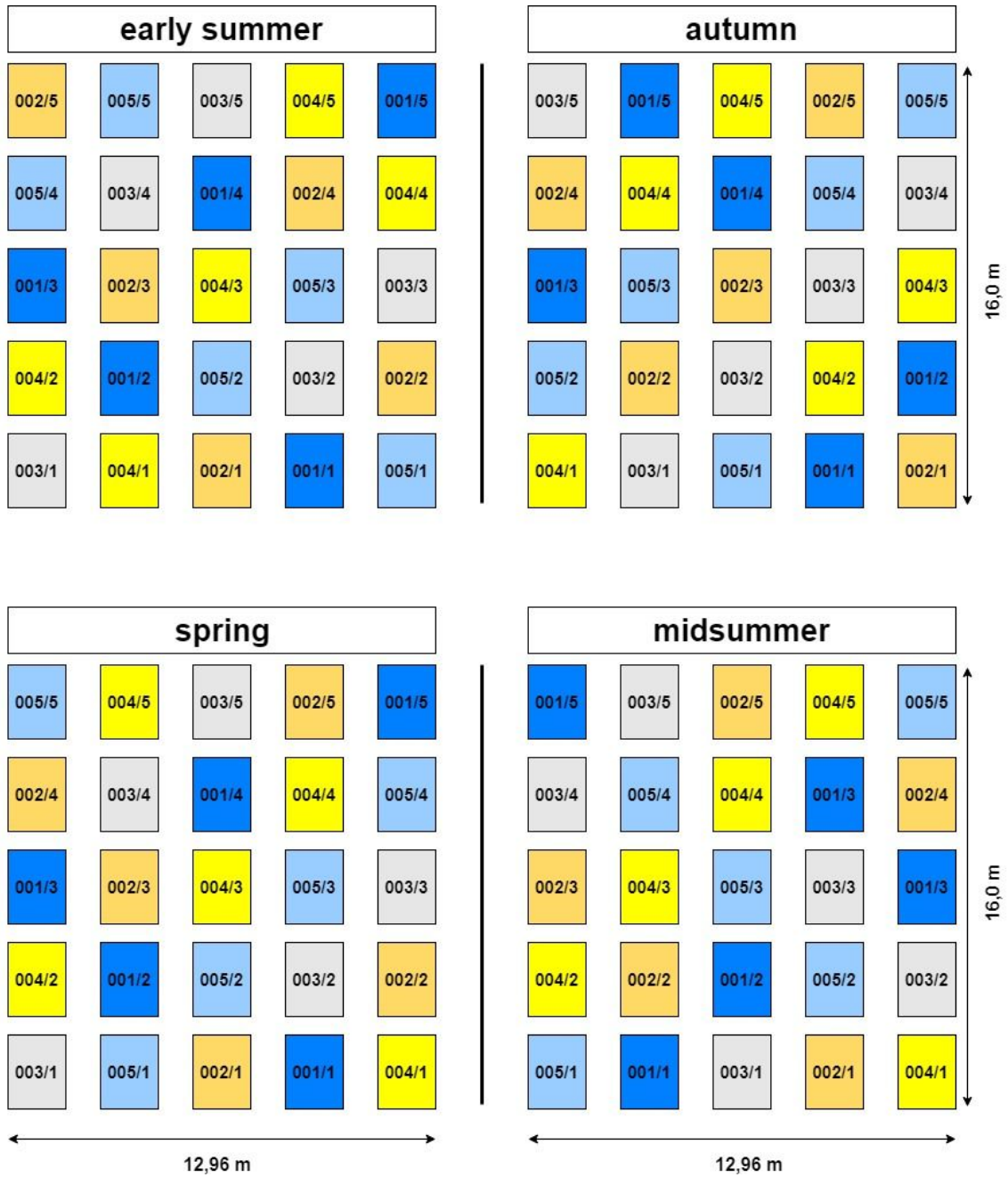
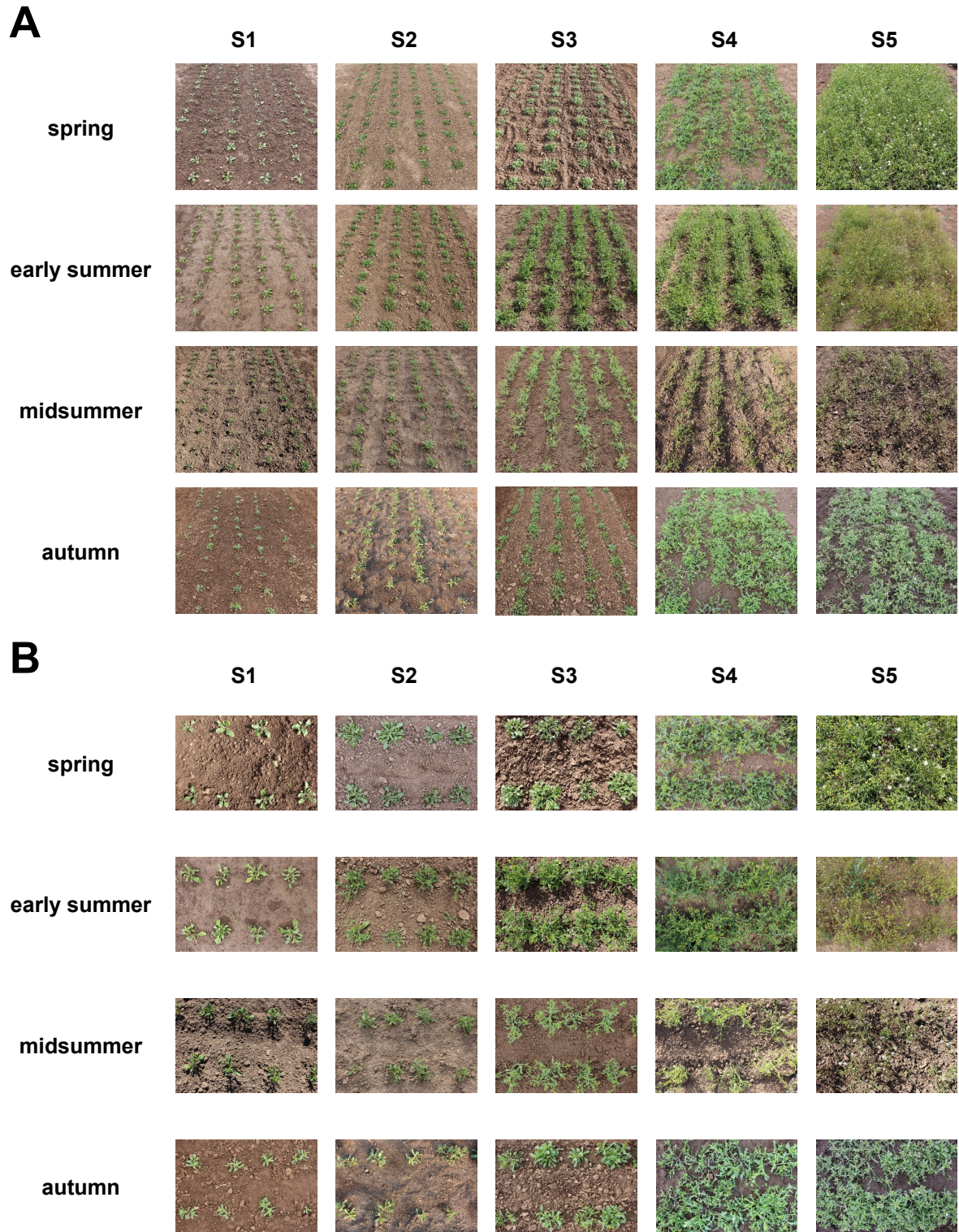




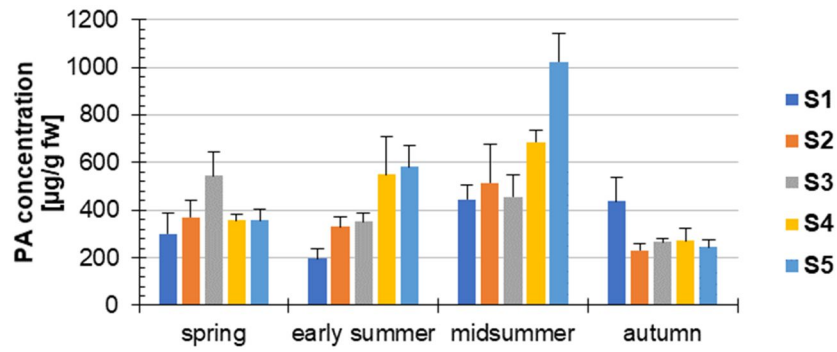
Supplemental Figure S1. A: Plants of *Senecio vulgaris* L. during cultivation in greenhouse for experimental part “autumn” in TEKU®-palettes (Pöppelmann, Lohne, Germany) for 104 plants per pallet, with a size of 55 x 28 x 3.8 cm and a volume of 21 mL per pot (16 August, 2016); B: Plants of *Senecio vulgaris* L. totally planted out for experimental part “spring”: 25 field plots scaling 5.54 m² each (30 March, 2016); C: Plants of *Senecio vulgaris* L. planted out for experimental part “spring”, one plot with a scale of 2.8 x 1.98 m (30 March, 2016).



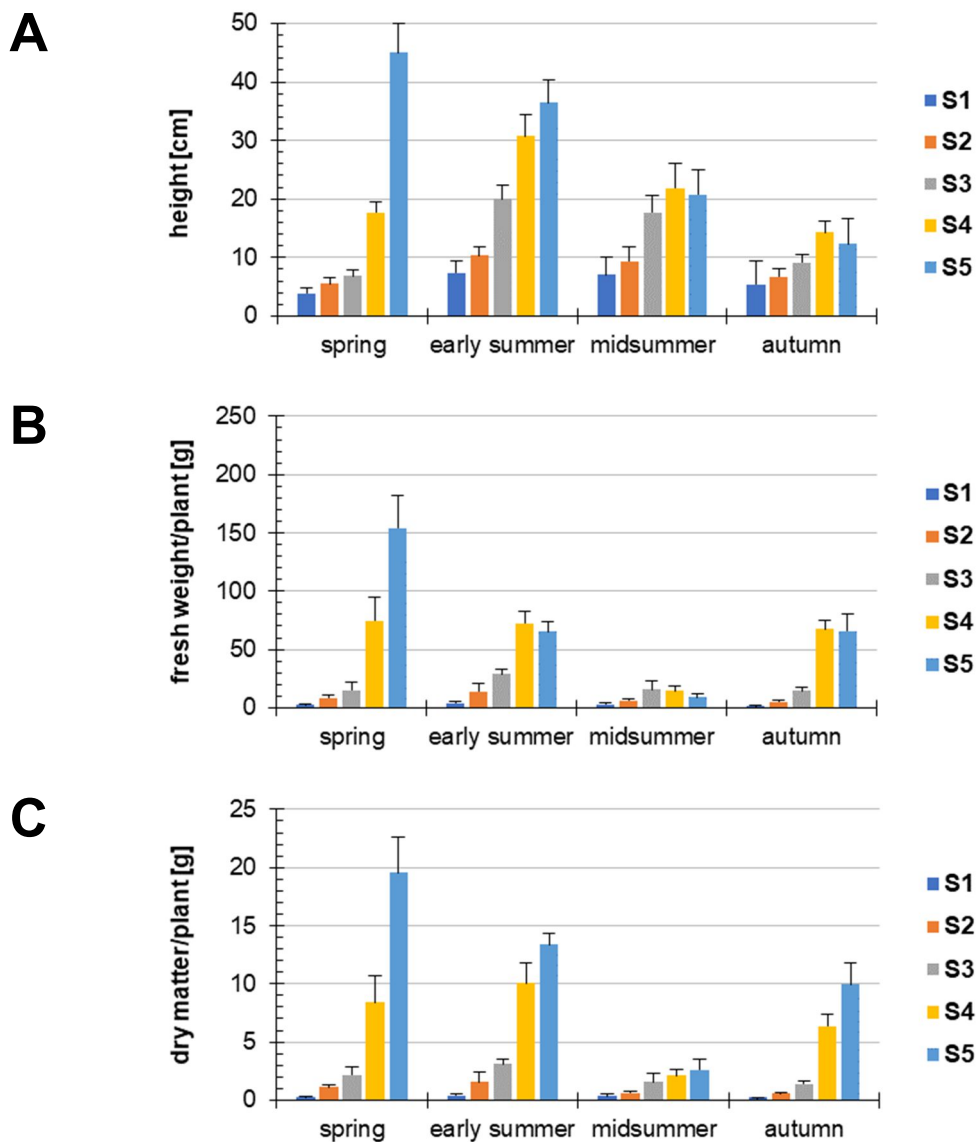
Supplemental Figure S2. Schematic representation of the complete experimental design as Latin squares for the effect stage for each sub trial, in a general linear model with: $y_{ijk} = \mu + \alpha_i + c_j + r_k + e_{ijk}$ (μ =mean; α =stage; c =column, r =row). First number represents the developmental stage, second number the replicate number. For example: 004/3 represents the 3rd replicate to investigate developmental stage 4 of the distinct season.



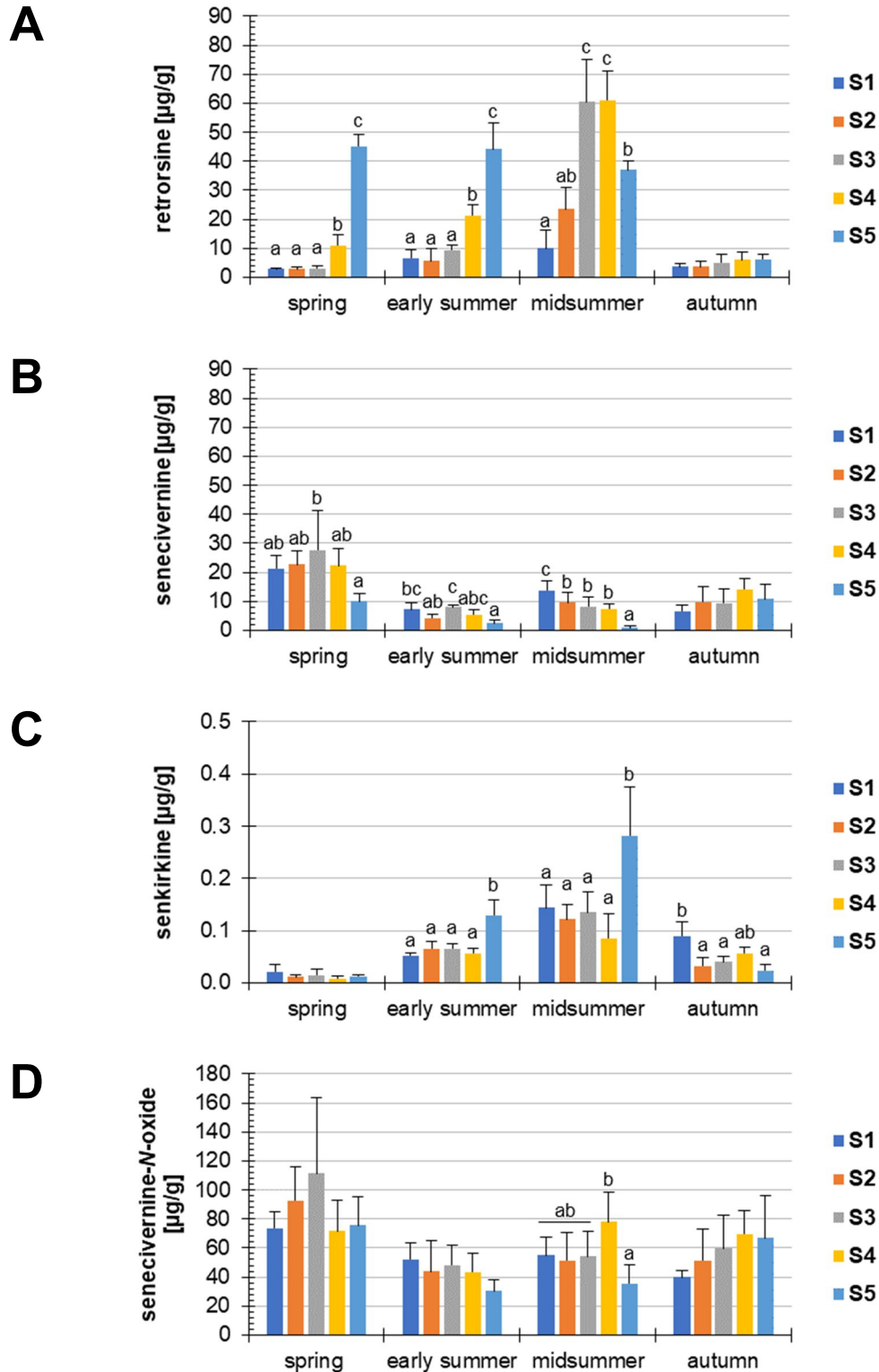
Supplemental Figure S3. A: Field plots of *Senecio vulgaris* L. before sampling, representative pictures; B: Plants of *Senecio vulgaris* L. before sampling, representative pictures.



Supplemental Figure S4. Total PA concentration ($\mu\text{g/g}$) of nine different PAs in *Senecio vulgaris* L. plants (fresh weight) depending on the developmental stage (S1 to S5) and season. Results are means \pm SD of five different determinations (distinct sub trials, see Supplemental Figure S2 and S3).



Supplemental Figure S5. A: Average height (cm) of *Senecio vulgaris* L. plants depending on the developmental stage (S1 to S5) and season. B: Average fresh weight (g) of *Senecio vulgaris* L. plants depending on the developmental stage (S1 to S5) and season. C: Average dry matter (g) of *Senecio vulgaris* L. plants depending on the developmental stage (S1 to S5) and season. Results are means \pm SD of five different determinations (distinct sub trials, see Supplemental Figure S2 and S3).



Supplemental Figure S6. PA concentration ($\mu\text{g/g}$) of A: retrorsine; B: senecivernine; C: senkirkine; D: senecivernine-N-oxide in *Senecio vulgaris* L. plants (dry mass) depending on the developmental stage (S1 to S5) and season. Results are means \pm SD of five different determinations (distinct areas, see Supplemental Figure S2). Different letters identify significant differences ($p < 0.05$) between developmental stages (ANOVA, Tukey's honest significance difference).