Cultivation techniques affect the bioactive content and quality of *Echinacea purpurea*.

**Nitrogen application:**
Three concentrations of nitrogen (0, 100, 200 kg N ha⁻¹) were applied to the soil of two year old plants in spring. The content of the dominating alkamides (dodeca-2E,4E,6Z,10E/Z-tetraenoic acid isobutylamide) were significantly (p < 0.05) increasing with increasing amount of nitrogen applied (Fig. 1). This makes sense, since alkamides needs nitrogen for their formation. Nitrogen did not affect the content of caffeic acid derivatives.

**Harvest of aerial parts:**
Aerial parts of three year old *E. purpurea* were harvested in three developmental stages (bud, bloom and wilting). Later harvest of aerial parts resulted in a significant decrease in content of total caffeic acid derivatives (●) and cichoric acid (♂) and an increase in the content of total alkamides (○) and the dominating alkamides (dodeca-2E,4E,6Z,10E/Z-tetraenoic acid isobutylamide) (▲) (Fig. 2).

**Seasonal harvest, roots:**
Roots of three year old *E. purpurea* were harvested five times during one year: Sampling days were: winter (Dec. 16) root dormancy, early spring (Mar 23) first signs of aerial parts late spring (May 25) aerial parts growing fast, summer (Aug 13) flowers in bloom, mid-autumn (Oct 29) aerial parts wilting. Alkamide 1 and 2 in roots showed the significant highest content when harvested in August, while content of alkamide 3 and 4 were highest in March. Content of all caffeic acid derivatives were highest in May. For highest content of both alkamides and caffeic acid derivatives the roots should be harvested in Spring (Fig 3).

**Combined harvest of aerial parts and roots:**
Harvest of aerial parts prior to harvest of roots had no influence on the content of alkamides in the roots, whereas it had a significant impact on content of caffeic acid derivatives in roots. If the aerial parts were harvested in bud, the significantly highest content of cichoric acid and total caffeic acid derivatives were when the roots were harvested one week after the aerial parts (Fig. 4). If the aerial parts were harvested in bloom, harvest time of root had no effect on the caffeic acid derivatives. If the aerial parts were harvested in the wilting stage harvest of roots one week and three months later were the most desirable for a high content cichoric acids and total caffeic acid derivatives.

**Different cultivation techniques are important for the production of high content of bioactive compounds in *Echinacea purpurea***.