
Allelopathic interactions in grasslands: a systematic review

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Abstract

Grassland ecosystems have been in the focus of many allelopathy studies. We conducted a systematic review including studies that evaluated the role of allelopathy in dynamic of grasslands. Several descriptive and methodological aspects were assessed in each article. We found that the studies have mostly investigated interactions involving herbaceous plants. Inhibitory effects of donor species on germination or growth of recipient species were mostly reported. We observed that in recent years, allelopathy research in grasslands has improved in some experimental design issues, but not in others. In relation to positive aspects, fewer studies used inadequate recipient species in recent years, and more studies used appropriate controls for field and greenhouse evaluations. Regarding negative issues, most of studies used artificial substrates, and did not perform chemical analysis. In recent years, more studies were only conducted in the laboratory, and field evaluations diminished. Therefore, some problems that led to critics about the relevance of allelopathy, and which have been extensively highlighted, are still present. Nevertheless, for all of the critical issues, there are also positive examples of studies that conduct experiments close to natural conditions and that observe interaction in the field. In spite of some progress, more caution should be taken with experimental design, in order to better understand the relevance of allelopathy in structuring grasslands, as well as other types of ecosystems.

Keywords: experimental design, plant community, progress and problems.

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