Purge spurge: leafy spurge database

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The first ARS CD-ROM for broad distribution was produced in 1994. The disk, entitled 'Purge Spurge: Leafy Spurge Database', was distributed throughout the user community. The disk contains over 400 papers on leafy spurge and its control. It also contains hundreds of charts, graphs and photographs pertaining to leafy spurge and related topics. The disk provides information on all known biological, chemical and cultural control methods. A literature review disclosed that: (i) there has been little research on the economics of noxious weed control; (ii) the research that has been conducted is largely orientated to the impact of the weed on the livestock industry of the western states of the United States of America; (iii) while many tax dollars are spent each year to control weeds, the general public is either unaware or apathetic to this issue; and (iv) noxious weeds, by some accounts, are one of the worst threats that the western USA faces. Because leafy spurge infests at least five million acres (about $2x10^6$ ha) in the USA and costs over $100 million every year, it is one of the foremost weed problems, and thus is a priority target for biological control. Although information on leafy spurge has been available, dissemination of this material has been limited and often not accessible to the end users. We conceived and initiated efforts to overcome this lack by developing the 'Purge Spurge: Leafy Spurge Database'.

Multivariate analysis in the selection of potential candidates for biological control

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A survey of natural enemies of *Senna obtusifolia* (Leguminosae: Cesalpinaceae) was made in 46 localities in Brazil. Twenty-one pre-selected insect species were used in a multivariate analysis to search for potential biocontrol agents, based on frequency of occurrence of each species, degree of insect/host association and damage levels. Insect communities were organized in a binary matrix (presence/absence of the species); measures of distance and similarities were based on Jaccard Coefficients and cluster analyses were then conducted. Construction of a dendrogram showed similarities among geographically-close localities where phenological stages of sicklepod plants were similar. Analysis of correspondence based on the correlation matrix showed that Eigenvalues of the three first axes explained 40.1% of the observed variation only. Correlation among the scores produced by species Eigenvectors in each locality on axis 1, and latitude, height and phenological stage showed that phenological stage only was correlated ($r=0.45$, $p=0.02$). The results indicate that weather will not be a limiting factor for the establishment of these insect species in an environmental gradient similar to that of the surveyed area (12-22 degrees latitude and 600-1200 m altitude). Distribution in the ordinal space of axes 1 and 2 showed that *Agrilus oceanicum* (Buprestidae), *Fundella argentina* (Pyralidae), *Thyphedanus undulatus* (Hersperidae). *Phoebis sennae* (Pieridae) are grouped and separated from the others in axis 2, suggesting that these species co-occur with each other. Based on their feeding guilds, multiple introduction of these species can be considered. Multivariate analysis proved to be a good tool for the initial selection of biocontrol agents.