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Habitat Management

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INTRODUCTION

Production strategies focused at boosting output and profitability has transformed modern agricultural landscapes. While these landscapes do an excellent job of achieving this goal, there are growing calls for agriculture to expand the spectrum of ecological services it delivers to society. All of the "conditions and processes" through which ecosystems "sustain and fulfill human life" are characterized as ecosystem services. Production of harvested products, provision of clean air and water, climate regulation, biodiversity maintenance, biological control of pests, diseases, and weeds, and cultural or aesthetic values are all examples of these services provided by both managed and natural systems. Habitat management, as part of a conservation biological control strategy, aims to maximize one specific ecosystem service, namely pest regulation, by increasing natural enemy influence in the landscape by modifying plant-based resources. Typically, this is accomplished by creating plants or plant communities inside the managed system that supply a limited resource such as pollen, nectar, alternate hosts, or shelter. Unlike other types of pest management, habitat management appears to be ideally positioned to directly or indirectly deliver a wide range of additional ecological services that society values. Aesthetics, biodiversity protection, wastewater treatment, and weed suppression while boosting invertebrate biological control are among them. The latter can be accomplished by providing natural enemies with refuge, nectar, alternate prey/hosts, and/or pollen, all of which can be easily implemented by individual producers. Biological control research in the past has generally focused on maximizing the pest reduction service it can provide. The selection criteria used to selecting plants for habitat management research reflect this approach. Plot and possibly field-level habitat management approaches can provide some quantitative ecosystem services. Floral strips, for example, can be added to specific fields or vineyards to improve biological control. Attractiveness to natural enemies, prolific pollen and/or nectar production, floral resource accessibility, flowering phenology, seed availability, use of plants already present in, or adapted to, agricultural areas, previous success, and selectivity in favour of the natural enemy rather than its own (fourth trophic level) natural enemies, or the pest itself are some of these. Researchers must consider other criteria in selecting plants for their studies, as well as new partnerships, in both the study and implementation phases of their work, if habitat management approach is to improve other ecosystem services. Habitat management is unusual among recognized biological control strategies in that it can provide a wide range of ecosystem services in addition to pest population reduction. Habitat management practices that establish and maintain greater diversity of primary producers within a system are responsible for this fundamental difference. Habitat management is ideally positioned to influence many other ecosystem processes by engaging at this first trophic level. To yet, most habitat management research has been conducted on a small scale. Setting up experimental plots in residential landscapes, urban, or golf course settings, or field level research of blooming plants in orchards, vineyards, and annual crop fields are just a few examples. There is no reason to limit application to these scales, and some studies show that habitat management may need to be done at greater landscape scales to enhance advantages.