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# The Research Program of the Southwest Watershed Research Center

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**Abstract.**—The Southwest Watershed Research Center of the USDA Agricultural Research Service operates the Walnut Gulch Experimental Watershed located at Tombstone in southeastern Arizona. The semiarid lands which the watershed represents are characterized by extreme variability of precipitation, soils, vegetation, infiltration, runoff, and erosion and sediment yield. The results obtained from the research program of the Southwest Watershed Research Center describe and summarize this temporal and spatial variability and the impact of management decisions in altering the hydrologic and sedimentation cycles. Examples of publications pertaining to erosion control and water quality impacts that have been prepared by the staff of scientists and engineers are presented.

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## INTRODUCTION

The Southwest Watershed Research Center of the USDA Agricultural Research Service consists of a multidisciplinary staff of 10 scientists and engineers located in Tucson, Arizona. This staff operates the Walnut Gulch Experimental Watershed located at Tombstone in southeastern Arizona. The semiarid lands which the watershed represents are characterized by extreme variability of precipitation, soils, vegetation, infiltration, runoff, and erosion and sediment yield.

## THE RESEARCH PROGRAM

The results obtained from the research program of the Southwest Watershed Research Center describe and summarize this temporal and spatial variability and the impact of management decisions in altering the hydrologic and sedimentation cycles. Potential impacts of global change on the natural resources of such semiarid lands are also reported. Specific results include frequency relationships for runoff amounts. Analytic simulation models such as CREAMS, RUSLE, WEPP, and KINEROS, developed using data col-

lected on the Walnut Gulch Experimental Watershed, are described and used to illustrate the impact of land management practices on the hydrologic cycle in a semiarid environment. Data and research findings from Walnut Gulch are being used to develop new technology for natural resource modeling and management.

Examples of publications pertaining to erosion control and water quality impacts that have been prepared by the staff of scientists and engineers at the Southwest Watershed Research Center are listed below to illustrate the nature of their work.

### 1994

Kustas, W. P., and D. C. Goodrich. 1994. Preface to a collection of papers entitled "Monsoon '90 Multidisciplinary Experiment." *Water Resources Research* 30:1211-1225.

### 1993

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Emmerich, W. E. 1990. Precipitation Nutrient Inputs in Semiarid Environments. Journal of Environmental Quality 19:621-624.

Osborn, H. B., J. R. Simanton. 1990. Hydrologic Modeling of Treated Rangeland Watersheds. Journal of Range Management 43:474-481.

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