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Journal of Soil & Water Conservation

To advance the science and art of good land use

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Cover: Soil survey in California (see page 421). Soil Conservation Service/ June Davidek.

The Soil Conservation Society of America is dedicated to promoting the science and art of good land use, with emphasis on conservation of soil, water, air, and related natural resources, including all forms of beneficial plant and animal life. To this end, SCSA seeks through the *Journal of Soil and Water Conservation* and other programs to educate people so that mankind can use and enjoy natural resources forever.

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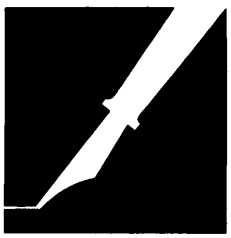

PEN POINTS

Candid and challenging!

The Peter Nowak article in the last *JSWC* issue [September-October 1986, p. 278] is a masterpiece of reality, analytical candor, and sure-fire challenges for our future.

I truly hope that those shaping the future can toss aside prejudices and recognize the need to alter traditions, stamp out lethargy, and champion innovation and enthusiasm. It is our only alternative to growing weakness and eventual extinction.

The *JSWC* continues to be outstanding, and I look forward to every issue.

Floyd E. Heft
Columbus, Ohio

Promoting the "New Age"

Orville Bidwell's commentary in the September-October *JSWC* [p. 317] could serve nicely as the introductory chapter to a broader, more flexible and highly positive era of influence for SCSA. His overview of the "New Age" as defined by the sustainable agriculture movement, replete with infinite innovation, exciting research questions, optomistic market outlook, and great reverence for building real soil, must surely appeal to the conservationist's natural instincts. For a long time conservationists haven't paid much attention to their instincts, too busy as it were consulting for an agriculture industry that hands down production rules first and asks for sustainability second. But that old loyalty could change and with it a different definition of naivety could be written. The simple premise that nature—now considered a farm trespasser—is unquestionably the best hired hand a farmer can put on the payroll may sound naive only to those who's dependency on packaged chemicals is terminal.

Yes, agriculture (with mirrors) has enjoyed, if not profited, from the conservationist's loyalty long enough. When, alas, over a 10-year span, a bevy of irrational farm policies, hyper economic theory and Guiness Book yields whip the sanity out of an industry and, on top of that, its agronomy-out-of-a-wrapper fouls the ground the system stands on, then it's time for conservationists to reassess their dedication and life commitment to that system.

There is, as Bidwell reminds us, an alternative system. And it desparately needs our support. After all, the chickens can live by the fox's rules just so long, then the chickens have the fox shot. In this alternative, soil conservation is not a superfluous luxury; it is an infinite component of the system.

Each passing year and voluntary program merely reaffirms that it is illusionary to believe a system is fixable that can barely achieve 2T much less T and certainly not less than T, no matter how many tax resources are given to the problem. It is more realistic (and much cheaper) to seek zero T by a different management style.

Is it possible to fine tune an agriculture scenario that can barely maintain bloodsuckers in the stream, much less carp and certainly not bass no matter what blessing future technology may bring? Might it not be more realistic (and much stabliér) to maintain trout in the stream, thanks to a different crop management philosophy?

SCSA can and should help the sustainable agriculture movement prosper. Minimum tillage or drip irrigation are not the end-all. These things are just individual gold bars like Mel Fischer found on his path to the Attocha. Socioeconomic storms, like the storms that hid the Attocha, have long hidden the ag trophy; however, we can see more gold bars and emeralds are surfacing each day. With SCSA's help, the "New Age" can develop fast. If conservationists need another good reason to join in the sustainable (or alternative, or regenerative, or biological) agriculture movement, it is this: Now, more than ever, soil conservation is the proverbal innocent baby in the bathwater, and the 1985 farm bill is not what I would exactly call safe bathwater. In this light, alternative agriculture takes on a whole new meaning for conservation professionals.

About 13 years from now, on the first day of the year 2000 (Saturday, I figure), when everyone else is licking their long-range prediction wounds, we could feel justly proud to have SCSA proven dead right that in being a vigorous messenger for the "New Age," particularly in influencing the teachers who teach the teachers, it did the most it could to advance the science and art of good land use...not to mention control soil erosion inexpensively.

Dale E. Marsh
Madison, Wisconsin

What answer cropland controls?

A recent *JSWC* article, "Nonpoint-source Pollution: Are Cropland Controls the Answer?" [July-August 1986, p. 215], prompted me to respond to what I feel could be a misleading piece of research. While the article went a long way toward illuminating the regional aspects of nonpoint pollution problems, it was narrowly focused on erosion control and missed a lot of the environmental linkages or handled them inadequately. I believe the authors could have better qualified their findings.

First, it's pointed out that agricultural nonpoint pollution policy has focused primarily on cropland erosion control as a proxy for water quality control. I agree with the authors that this policy is misdirected, and pollution control planners should establish criteria for the pollutants that are causing damages, in the case of this paper phosphorus. After making that point, however, the paper's thesis is negated by the authors' consideration of cropland erosion control and other runoff control measures as the only means of controlling P runoff from cropland. Previous research in USDA and elsewhere has shown nutrient management (including attendant practices such as manure storage, soil testing, and barnyard and feedlot runoff control) to be far more effective and cost effective than erosion control for controlling nutrient runoff from farmland.

A related point not discussed in the paper is the availability of P for eutrophication and other damages. While the RFF [Resources for the Future] model does not consider the various forms of P in runoff, controlling cropland erosion could increase the concentrations in receiving waters of bioavailable forms, such as soluble ortho-P and easily converted soluble organic P and polyphosphate, in cropland runoff. Inorganic P attached to sediment may have relatively low availability. Because most P is

generally transported with sediment, focusing on a reduction in total P brought about by erosion control would cause underestimation of the remaining P that causes damage in receiving waters. Thus, erosion control may not resolve water quality problems in many areas where total P concentrations can be reduced to 0.20 milligrams per liter for moving waters.

Using a standard for moving waters does not seem to be a proper policy goal either. Damages generally occur in lakes and estuaries where sediment and nutrients accumulate and reduce recreation, commercial fishing, water storage, and other benefits. Such factors as the amount of flushing, timing of pollution events, climate, and others affect the behavior of lake and estuarine systems. Thus, standards for inflow have to be determined for each class of water body in individual regions. Only in this way can stream and river standards be determined in a way that will lead to meaningful management of the watersheds responsible for the damages. A flat standard is not good policy for a nation where control of such pollutants entails large financial commitments from private landowners and a budget-conscious public sector. In addition, a flat standard can cause policymakers to ignore areas where rivers are within standards but their receiving water bodies are not.

The authors' concept of targeting should go beyond targeting populated regions where standards for P exceed some preselected value. Those watersheds where damages occur (in lakes and estuaries) must be evaluated to determine if nonpoint pollution control is worthwhile. If it is, the most cost-effective practices should then be implemented. The Soil Conservation Service and the Agricultural Stabilization and Conservation Service are implementing a number of programs to protect specific bodies of water. In some cases, these practices have exclusively dealt with controlling nutrient inputs to receiving waters, with very little emphasis on erosion control in regions where soils are not highly erodible. Manure and fertilizer management are often key practices in such projects.

My main concern in writing this letter was to stress where the state-of-the-art is for evaluating water quality with models. Pollutants are lost from the field, barnyard, or feedlot, and management practices must be implemented at that level to control pollution. Field-scale models estimate losses of nitrogen, P, pesticides, and other pollutants at the micro-scale. The pollutants are delivered to a waterway and transported downstream. Mathematical models of watersheds tie these processes together and estimate pollutant losses at the watershed outlet. The larger the watershed to be modeled, the more complicated is the model and less reliable are the results. This is the proper strategy, though, for addressing water quality problems in a well-defined region with mathematical models. While many of the simulation models developed for agricultural nonpoint pollution analysis are causal models (see DeCoursey's article in *JSWC*, September-October 1985), the RFF model is an empirical model which transforms a set of input variables into output without describing the processes taking place. Where such models are used for "big-picture" analyses, dramatic changes in the input parameters are very likely to provide unsatisfactory estimates of the outputs.

In conclusion, I think the emphasis of the authors' work on achieving national standards for a gross measure such as total P is an error. By ignoring (1) the localized nature of almost all significant water quality problems (due to damages occurring where the water impounds), (2) the regional differences which lead to varying effects on impoundments from pollutants, and (3) the forms of nutrients which are likely to impact water quality, the findings are not credible and serve to antagonize other water quality professionals. The RFF model does not adequately describe the chemical processes at the appropriate space and time scales to be used for establishing water quality standards that can be implemented at a meaningful level. Therefore, it cannot be used to determine if specific policies, such as X-percent reduction in erosion, will lead to significant improvements in water quality. What the RFF model does offer is a method for screening river systems which contribute to pollution damages and for quantifying the loadings of pollutants in those rivers which may contribute to downstream damages. Then cropland erosion control and many other practices can be considered if the potential regional benefits exceed the expected costs.

Bradley M. Crowder
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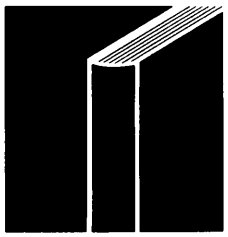
"Pen Points" is a forum for comment on published material or land and water management issues in general. Readers are invited to express their views in a letter to the editor. Letters are judged on their clarity and pertinence. Long letters may be shortened.—Editor.



World Resources 1986: An Assessment of the Resource Base that Supports the Global Economy. The World Resources Institute and the International Institute for Environment and Development. 368 pp., illus., tbls., maps, apps., index, 1986. Basic Books Inc., New York, New York 10022. $32.95, cloth; $16.95, paper.

This source book and data base has been carefully compiled and researched using the resources of these two international, policy research institutes, with additional support from other financial supporters. The scale of the operation is evident by the acknowledgements, which list more than 100 contributors and 19 chapter authors in addition to the 9 project staff.

This is the inaugural volume of an annual series. Subsequent years will follow the same format and cover the same main topics, but will cover more detail in certain subject areas. For example, the 1986 population section focused on fertility and mortality, while the 1987 volume will take a close look at health and nutrition.

The presentation is excellent, with a good table of contents, index, and careful cross-referencing. A visual color dcode is used to link the data tables at the end of the book with the corresponding text. This useful device is marred by changing the chapter numbers so that, for example, Food and Agriculture is Chapter 4 in the text but becomes Chapter 5 in the tables. More than half the book is in the form of tables and diagrams. These are liberally used in the main text, which has 161 tables, figures, maps and boxes. These are reinforced with 111 pages of data tables, many giving environmental statistics for 146 countries.

The subject matter has been defined very broadly. In part 1, the "Emerging Agenda" of environmental issues is presented as the environment and human health, tropical deforestation, the atmosphere as a shared resource, soil degradation, relating population and resources, and Africa. This is followed by detailed chapter reviews on population, human settlement, food and agriculture, forests and rangelands, wildlife and habitat, energy, freshwater, oceans and coasts, atmosphere and climate, policies and institutions, and multiple pollutants and forest decline.

Chapter 4, Food and Agriculture, is sound and useful on most aspects of the resource base, including increasing the productivity of cropland, agriculture production and consumption, world food trade, and food aid, because these subjects are well documented. The section focusing on erosion is less satisfactory because, as the compilers point out, "erosion is notoriously site-specific so hard numbers are impossible to come by." The compilers have therefore been forced to rely on very general data, much of it of unknown reliability, in compiling tables of estimated annual soil erosion in selected river basins and cropland soil erosion in selected countries. The compilers are aware of the deficiency and are seeking additional sources of information for later editions. Data is presented on the extent of desertification, and it may be that the lack of any precise and meaningful definition of the term leads to the equally vague and unhelpful data that is presented.

Apart from these weaknesses, the report does an excellent job, and achieves its objective of providing a previously unavailable data base for policymakers and environmental managers. It is not intended as a reference book for the field conservationist, but one which should be in every library.—*NORMAN W. HUDSON, Silsoe Associates, Ampthill, Bedford, England.*

General

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11. I certify that the statements made by me above are correct and complete.—*Walter N. Peechatka, Executive Vice-president, Soil Conservation Society of America.*