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AGRICULTURE, NATURAL RESOURCES AND CAPITAL GROWTH

A BIBLIOGRAPHY

by George A. Pavelis

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AGRICULTURE, NATURAL RESOURCES AND CAPITAL GROWTH

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by George A. Pavelis*

Coverage and Organization

This extensive bibliography includes about 350 different formal publications or easily accessible other references. All are recommended for understanding the measurement, significance and contribution of natural resource capital accumulation to the growth and development of agriculture in the United States. There is no effort to include only the relatively recent or so-called up-to-date material. Doing so would erroneously leave out some of the most valuable literature bearing on capital growth in agriculture. Moreover, dates of publication of research and other information documents, such as Census reports, often belie their true substance, from an historical as well as other viewpoints.

Irrigation, drainage and conservation assets (IDC) are the main components of natural resource capital covered. But we also include some key references on flood protection, environmental controls, energy topics, and agricultural research. These subjects and associated policy issues also impinge on agricultural growth and development, either conjunctively or competitively with the IDC assets and the more ordinary forms of capital like land, buildings and farm equipment. For completeness natural resource capital must be studied in the context of agricultural growth and capital accumulation in general.

In many respects the most useful work bearing on natural resource capital accumulation in agriculture is the pathbreaking analysis of Tostlebe (1954) on the growth of physical capital (real estate, equipment, inventories) in agriculture from 1870-1950. There is also the Towne-Rasmussen review (1960) of gross farm product and investment in the nineteenth century. Significantly, both of these studies were completed in the U. S. Department of Agriculture, for the National Bureau of Economic Research. This private Bureau and later the Brookings Institution (Denison, 1974) have sponsored much of the basic economic research on growth and productivity in the United States. Their reports are included in the sections on growth and productivity for the economy as a whole and for the farm sector.

Concerning organization, the 350 separate items are classed into eleven specialized lists, but only the first seven groups are true subject-matter separations. They involve: capital and investment in general, economic growth and productivity (separated for the economy as a whole versus agriculture), general aspects of land use and resource development policy, mathematical/statistical

*Citations were standardized with the editorial assistance of Lila J. Walker, senior editor (retired). Economics, Statistics, and Cooperatives Services, USDA. The full bibliography was typed by Linda R. Stallard, Natural Resource Economics Division.

techniques and evaluation methodologies, and some representative survey studies of natural resource investment. The seventh list is for the literature useful in developing capital stocks of specialized irrigation equipment and on-farm irrigation water supply facilities, a hitherto neglected area of agricultural research.

This overall classification was not entirely clearcut of course, but worked very well. Doubts on the best placement of some items were resolved by repeating them in the competing categories. A few reports considered to have exceptional methodological or empirical value, such as Ward's 1976 monograph on capital measurement, may appear in several categories.

The last four lists are for governmental publications and reports, arranged according to the issuing Departments and their member agencies. Three executive Departments (Agriculture, Commerce and Interior) have produced nearly all the research, statistical and other Federal information bearing on capital accumulation in agriculture. Publications of universities, experiment stations and various State government units can be found under the appropriate subject areas. The 'general government' or last category contains Congressional as well as some useful international references.

Commentary on the USDA Literature

Some special remarks are in order concerning the Department of Agriculture material (100 items). The USDA section includes individually authored or agency authored official Department publications. But the list also includes pertinent items published outside of the Department--in various professional journals, cooperative USDA/State Experiment Station bulletins, and other media--if the authors were Department of Agriculture employees or were known to have conducted their work with Department support. Most of the USDA items appear again within the major subject-matter classes. Those which do not are not less useful; by and large they contain important statistical information not readily lendable to the particular breakdown employed.

The two-way treatment of USDA materials in effect makes this working paper two complete bibliographies on natural resource capital in agriculture. One covers the subject in general and the other the U. S. Department of Agriculture's particular contributions toward the understanding of such a broad and important subject.

The diversity and rather surprising balance of the 100 Department of Agriculture contributions to the literature on natural resource capital can be seen in the itemized summary below. The internal and external items each divide quite clearly into three pre-identified kinds of publications.

<u>Breakdown of 100 publications having USDA authors or support</u>	<u>Number and percent</u>
Numbered Departmental publications	22
Numbered Agency publications	20
Unnumbered--committee and miscellaneous items	<u>12</u>
 <u>Subtotal</u> , Internal USDA Publications	 <u>54</u>
Cooperative State or other research bulletins	21
Journal articles and conference papers	20
Books, chapters, dissertations, etc.	<u>5</u>
 <u>Subtotal</u> , External 'USDA' Publications	 <u>46</u>

This very simple tabulation verifies the importance of conducting literature searches and evaluating contributions by looking more carefully at the different dissemination modes, particularly cooperative publications, than at the originating institutions. In the case of natural resource economics, for example, U. S. Department of Agriculture contributions would be seriously distorted and grossly under-determined by concentrating on examining official USDA publications.

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