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Part III

Accounting Measures of Capital Consumption for Other Parts of the Economic System

Chapter 6

Capital Consumption in Agriculture

DEPRECIATON AND DEPLETION

LITTLE information is available on the depreciation accounts kept by farmers. It is indeed doubtful if farmers make any formal effort to estimate and record depreciation charges. "American farmers are notoriously poor accountants. Relatively few make any attempt at more than the simplest kind of records and those kept usually relate to their financial transactions, to crop yields or to livestock production." [1]

Consequently, for estimates of consumption of farm capital we must have recourse to the available related statistics: inventories at decennial census dates and annual expenditures on durable goods as estimated from various sources. Estimates of depreciation based on these statistics have been prepared by the Bureau of Agricultural Economics of the U. S. Department of Agriculture. Slightly modified (see the note to Ch. 6), they appear in Table 17. The estimates are accounting measures, computed on the assumption that farmers would have followed usual accounting practices. The Department of Agriculture includes among depreciation charges repairs which in other industries are usually treated separately as 'maintenance expense'. The depletion figures are estimated from cor-

1 Andrew Boss, Farm Cost Accounting in the United States, *Proceedings of the Second International Conference of Agricultural Economists, 1930* (1930), p. 940.

Table 17

Accounting Measures of Capital Consumption, 1919–1935

Fixed Business Assets of Farmers (*Unit: $1,000,000*)

	DEPRECIATION	DEPLETION	DEPRECIATION AND DEPLETION
1919	993	17	1,010
1920	1,059	14	1,073
1921	937	9	946
1922	866	10	876
1923	854	11	865
1924	872	12	884
1925	919	13	932
1926	912	12	924
1927	917	12	929
1928	917	12	929
1929	936	12	948
1930	915	10	925
1931	866	7	873
1932	827	5	832
1933	782	7	789
1934	810	5	815
1935	800	6	806

responding figures for corporations engaged in forestry and farming, and relate almost entirely to depletion of forest reserves.

The depreciation estimates are large. In 1919 depreciation of farm property was over 40 per cent of depreciation charges of all business concerns, excluding unincorporated farming. By 1929 the ratio had been cut in half but was still substantial. On farm property, depreciation charges tended slightly downward; mining was the only other industrial group of which this was true. But the magnitude and trend of the depreciation figures relating to farm property must be interpreted with care. The Department of Agriculture estimates are derived chiefly from the change in the inventory value of capital goods and the amount of annual purchases between 1920 and 1930. The inventory values are those reported in the Census of Agriculture and are rather ambiguous. It is not certain

whether they represent the original cost (less depreciation), the reproduction cost (less depreciation), or the current market value. The 1920 census values probably exceeded original cost more than did the 1930 census values. As a consequence, the estimates may overstate the depreciation as it would be computed by usual accounting procedures; and the secular movement may be distorted, the average rate of growth being lower than that of the figures derived by regular accounting methods.

An important capital asset, the soil, is not covered by the depletion charges. An estimate made for the National Resources Board indicates an average annual loss of 322 million tons of organic matter and a net loss of 222 million tons, over half of which is due to leaching or erosion. It is estimated that 35 million acres have been rendered useless for farming, that the top soil has been nearly or quite removed from another 125 million acres, and that depletion of still another 100 million acres has commenced.[2] Depletion of this type is commonly ignored because of the extremely slow rate at which it occurs, and the consequent difficulty of measuring it. Another reason may be the belief that soil depletion is sufficiently well accounted for on a maintenance basis: the practice of using fertilizer, rotating crops, and letting land lie fallow often seems to be adequate to conserve the useful properties of the soil. But the accuracy of the maintenance basis of accounting is as questionable here as in other industries.

GROSS DECLINE IN WORK ANIMALS AND DAIRY COWS

The depreciation figures in Table 17 make no allowance for any gross declines in the fixed capital goods represented by work animals and dairy cows. These goods may be carried on an inventory basis, no attempt being made to distinguish between accretion and decretion. For more accurate accounting of changes in number and age, however, a distinction might be made, and in the National Bureau study of gross capital

[2] See the National Resources Board, *Report,* December 1, 1934, pp. 15–17.

Table 18

Gross Decrease in Value of Work Animals and Dairy Cows on Farms, 1919–1935

Current Prices [1] (*Unit: $1,000,000*)

	HORSES		MULES		DAIRY CATTLE	TOTAL
	Death losses	Sold (net)	Death losses	Sold (net)	Death losses plus net sales	Death losses plus net sales
1919	124.4	121.0	42.9	0.6	306.8	595.7
1920	110.8	45.7	40.8	−6.6	283.5	474.2
1921	91.9	21.6	32.3	−5.1	206.4	347.1
1922	80.9	14.4	27.8	−11.5	187.8	299.4
1923	75.1	14.6	27.6	−12.6	196.1	300.8
1924	70.5	11.7	28.2	−13.2	186.6	283.8
1925	68.4	1.7	27.5	−12.7	217.0	301.9
1926	66.0	10.9	26.1	−7.5	246.1	341.6
1927	64.7	5.4	25.3	−5.2	293.8	384.0
1928	65.3	4.4	26.0	−7.1	353.0	441.6
1929	64.2	4.7	26.0	−8.6	348.4	434.7
1930	57.2	8.2	23.4	−8.9	272.0	351.9
1931	48.6	6.6	22.0	−8.8	174.8	243.2
1932	44.4	−1.8	18.7	−7.8	128.9	182.4
1933	48.7	−9.7	21.4	−8.8	92.5	144.1
1934	57.2	−14.8	28.6	−10.7	142.4	202.7
1935	72.0	−18.3	32.5	−9.4	195.9	272.7

[1] For details of the computations see Table VI, Appendix B.

formation Dr. Kuznets found it worth while to do so.[3] To complement his estimate of gross capital formation in this part of the economy, corresponding estimates of capital consumption are presented in Table 18. The measures are derived from the difference between the net change in number and Dr. Kuznets' estimates of increase arising from birth, multiplied by a price factor. The difference represents capital consumption on a retirement rather than a depreciation basis. It was possible, for horses and mules, to distinguish two components of this difference: decreases arising from (1) deaths, (2) sales (less purchases) to non-farmers. (The second component

[3] *Commodity Flow and Capital Formation,* Table V–9.

should, of course, appear as a capital addition elsewhere in the economy.) The gross decrease in number in a given year was multiplied by the average farm price prevailing during the year to yield an estimate in current prices, one suited to our concept of capital consumption. Since the estimates are not in terms of original cost they are not ordinary accounting measures.

Note: ESTIMATE OF FARM DEPRECIATION [4]

The source of the basic data on farm depreciation is the Bureau of Agricultural Economics. The figures for buildings and for equipment are available separately. Property rented from non-operators is excluded.

Depreciation on buildings and fence 'for production' was used as estimated by the Department of Agriculture. Depreciation on property rented from non-operators was included in the estimate of depreciation on real estate held by corporations and individuals (Ch. 4).

Depreciation and repairs on farm machinery (including one-half of depreciation on automobiles) were corrected for a slight under-reporting of farm machinery in the *Census of Agriculture.* A step-up ratio (1.037), derived from the number of farms reporting value of machinery in 1930 (87.9 per cent), and value of machinery on farms under 50 acres, was used. The farms not reporting value of machinery were assumed to be farms under 50 acres.

The method used by the Department is described briefly as follows (*Crops and Markets,* August 1934, p. 316, Table 6, note 2):

"Depreciation of farm buildings and farm equipment is based upon the value of buildings and farm equipment according to the 1919 and 1929 census, the amount spent for replacements on buildings and machinery and price changes for farm machinery and building materials."

O. C. Stine gives more detail for farm machinery (letter to the National Bureau, July 12, 1934):

"The depreciation of farm machinery is not determined by applying a flat depreciation rate to the value of farm machinery. It is based upon the amount of machinery on farms, the price of farm machinery currently and the replacements of farm machinery. If no change in the inventory value of farm machinery occurs over a period of years, the allowance for depreciation

[4] The Bureau of Agricultural Economics has under way several investigations of capital outlay, depreciation charges, changes in inventories, and related items. Upon their completion revised estimates will be available.

should equal the amount spent for new machinery. Our estimates of depreciation of farm machinery have been estimated so that expenditures over a period of years equal depreciation plus or minus any changes in the values of inventories . . . The rate of depreciation is not constant for all years. From 1919 to date the rate has varied from 19.1 per cent to 23.5 per cent with an average for the period of 21 per cent. This rate seems unusually high but it is because the inventory value is not the value of replacements of farm machinery but is the value of machinery in its various stages of depreciation."

Only buildings and equipment used in production are included; and of these, rented buildings are omitted (*Crops and Markets,* April 1933, p. 145, Table 6, note 2). Fences are included with buildings.

The Department's estimates make no allowance for depreciation of work animals and orchards or for soil erosion.[5]

[5] The income tax regulations make provision for depreciation on livestock purchased for draft, dairy, or breeding purposes, and for orchards (see *Regulations 86,* Art. 23 (a)-11, 23 (e)-5, and 23 (l)-10; and *Bulletin 'F',* pp. 22–3).