

Centre County Soil Survey Report Soil Use and Management

Crops and Pasture

In the following pages the capability classification is explained, and yields are given for specified crops. The principal crops grown in the county are, corn, wheat, oats, and hay. Some peas, sweet corn, and beans are grown for canning, and some potatoes are also grown.

Capability grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or engineering. In the capability system, all kinds of soil are grouped at three levels; the capability class, subclass, and unit. These levels are discussed in the following paragraphs.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, woodland, or wildlife habitat.

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife habitat.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture, woodland, or wildlife habitat.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife habitat, water supply, or esthetic purposes.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, IIe. The letter e shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by w, s, and c, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, woodland, wildlife habitat, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management and to have similar productivity and other responses to management. Thus, the capability unit is

a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4. or IIIe-6. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

In Centre County, the soils are classified only at the capability class and subclass levels. The management needs for crops and pasture are discussed in the descriptions of the mapping units in the section "Descriptions of the Soils."

The mapping unit description mentions the conservation practices needed to control erosion, to reduce runoff, and to retain soil nutrients. It also tells of artificial drainage practices needed to increase the suitability for crops.

Conservation practices that help to control erosion and reduce runoff are stripcropping, contour farming, cover cropping, and using grass crops and diversions.

Drainage practices that increase the suitability for crops and allow tillage use earlier in spring are surface field drains, surface main and lateral drains, subsurface drains, diversions, and sod waterways.

Estimated yields

Table 2 shows estimates of yields of the principal crops grown in Centre County. The estimates are averages for a period of 10 years or more. It is estimated that yields will increase 10 to 25 percent by 1985 as a result of development of new varieties and improvements in the technology of production. Yields increased 2 percent per year in Pennsylvania during the 1960's. Yield estimates given in table 2 are those to be expected under intensive management.

Intensive management for cultivated crops consists of providing surface and internal drainage for optimum growing conditions where natural drainage is restricted; applying lime, phosphate, potash, nitrogen, and other elements according to crop needs indicated by soil tests; returning all crop residue to the soil and, if low residue crops are grown, supplying organic matter by growing cover crops and by applying manure or other organic material; minimizing tillage by limiting seedbed preparation to that needed for crop production, by avoiding tillage when the soils are wet, by delaying spring tillage until planting time, and by leaving fall plowed fields rough during winter; adequately controlling weeds and insects; selecting crop variety and seed quality and considering plant population for a specified soil or location; keeping erosion within tolerated limits; and keeping field operations timely.

Intensive management for hay and pasture crops consists of providing surface and internal drainage for optimum growing conditions; applying lime and fertilizer at seeding time according to crop needs and the needs indicated by soil tests and also applying topdressing as needed; reseeding and reestablishing stands regularly; selecting grass-legume stands of high quality, and considering crop variety for specified soil and location; keeping haymaking operations timely; and deferring and rotating grazing as needed.