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RAINFALL BELTS AND LAND CLASSES IN TEXAS

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Rainfall Belts and Land Classes in Texas

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Understanding land capability classes and classification is difficult because many complex interrelated factors are involved. Some of these factors may be simplified by applying elementary principles.

Climate has a great influence on land classes. In Texas, average annual rainfall varies from 8 inches in the extreme west to 58 inches in the east. Because of this variation, the State is divided into four zones that relate the eight land capability classes to these rainfall belts.

Insufficient Rainfall

Zone 1 (less than 16 inches average annual rainfall) has insufficient rainfall for dryland farming. Soils in this area are classified into Classes VI, VII or VIII land, depending on other factors such as texture, slope, depth or stoniness. Climate, especially rainfall, is the major limiting factor. The most desirable agricultural soil in this area is Class VI. Its best use under normal conditions is as rangeland.

Zone 2 (16 to 24 inches average annual rainfall) has sufficient rainfall to support dryland production of certain agricultural crops. Normal rainfall is insufficient to obtain maximum yields from more capable soils. Climate is the major limiting factor, but to a lesser degree than in Zone 1. Land Classes III, IV, V, VI, VII and VIII are represented. Some of the medium-textured soils along the stream banks are classified as Class II land, since they receive additional moisture.

Average Rainfall

Zone 3 (24 to 32 inches average annual rainfall) is partially limited by climate but not as much as Zones 1 and 2. Rainfall is inadequate for maximum returns on some soils but it is not considered the dominant limiting factor in determining land class. Other factors such as slope, depth, permeability and erosion should be considered. Land Classes II, III, IV, V, VI, VII and VIII are represented in Zone 3.

Zone 4 (more than 32 inches average annual rainfall) has sufficient rainfall for growing most crops. Here, as in other parts of the State, rainfall is poorly distributed during some years, and severe drouths occur. Generally, factors like those listed for Zone 3 are more influential than climate in determining land class. The most favorable agricultural soils are Class I. All eight classes are represented in Zone 4. Soils with adequate to excess moisture sometimes produce unfavorable soil-water-plant relationships, placing them in a lower land class.

Classification of irrigated soil removes climate as a limiting factor. Each soil is evaluated on its own merits under an optimum moisture regime. In this case, land classes are determined by other factors.

Hazards

Land classes express interpretations reflecting the hazards and limitations of land for agricultural use. Understanding these hazards and limitations is essential in determining the proper land class.

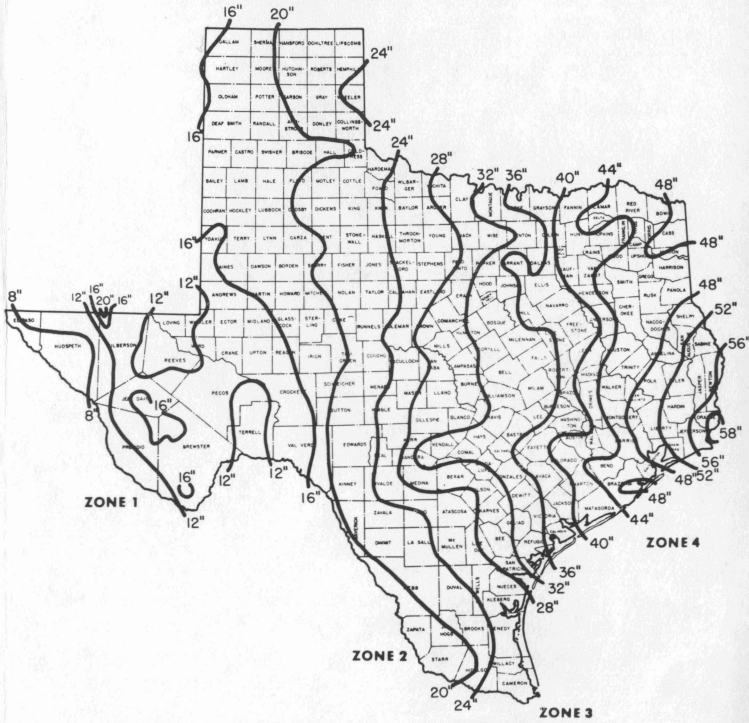
Hazard is associated with anything that may damage or destroy the soil and its crop-producing capacity. A good example of hazard is wind and water erosion. When soil is bare for some time in certain cropping systems, wind and water take their toll.

Limitation pertains to land use restriction and selection of the kind of agriculture the land will support economically under natural conditions. Thus erosion, as discussed above, may be a hazard in early stages and a limitation in later stages because of land damage and subsequent reduction of crop yields.

Climate is not a soil characteristic, but an integral part of land use and often a major limitation in crop production. Land capability classes, therefore, are based on hazards and limitations as interpreted from the soil and its environment.

Land classes I through IV are suitable for cultivation and for pasture, range, forestry and wildlife. Land classes V through VII are suited for permanent vegetation such as pasture, range, forestry and wildlife. Class VIII land may be used for recreation and wildlife.

This chart showing lines of equal average annual rainfall was developed from the U. S. Weather Bureau mean annual precipitation map, using data from 143 cooperative Texas weather stations.



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