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PRIME LANDS--DEFINITIONAL AND POLICY PROBLEMS

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> "...the preservation of agricultural land is of paramount interest to the welfare of the state of California in that the preservation of such land, especially prime agricultural land, is critically important in order to assure and to maximize the food, fiber, open space and employment opportunities which are necessary for present and future generations of the state and the nation" (Warren, Section 67701).

As a proposed policy statement authored by an urban legislator, this quotation from proposed AB 15 seems to epitomize the increasingly popular cry to save or preserve prime agricultural land. Since prime connotates first in importance in terms of quality or value, intuitive support of such cries seems most appropriate.

Mature reflection suggests that efforts to save prime agricultural land must mean that market allocation is not achieving the objectives of such observers. This being the case, a substitute for market allocation must be developed, the assumption on which this paper is presented. The alternative is a public policy capable of implementation to insure that a specific resource such as prime agricultural land will be utilized so as to accomplish stated objectives. Simply stating as public policy that we shall save or preserve prime agricultural land is not capable of implementation; a positive action policy must be identified with specific applicability. At this juncture some very serious definitional difficulties as well as policy conflicts arise. Simply stated, prime in a nebulous sense may be universally acceptable; prime

in a specific policy implementation sense no longer is as universally acceptable, and in fact may not be acceptable to anything approaching a majority position.

The basic policy problem involved in the issue of prime lands centers on the inability or unwillingness to separate the scientific classification function from the policymaking function. If the word agriculture consistently follows prime, then it may be scientifically possible to define prime agricultural lands, i.e. those most appropriate for the production of agricultural commodities, and ignore the more generic definition of prime lands. Simply to define lands as prime, as in fact a number of scientists as well as urban observers tend to do, avoids the fact that land prime for agriculture is likewise apt to be prime for other societal uses. Thus the scientific responsibility is to identify and analyze as many of the alternatives as can be found while the policymaking responsibility is to select alternatives for specific parcels of land. Even with regard to agricultural land, however, we may have fallen into the trap of confusing classification or taxonomic approaches with policymaking as I have suggested elsewhere (Wood, p. 151).

Definitional Criteria

There appears to be an implicit assumption on the part of many observers that given the objective of preserving prime agricultural land, the criteria for defining such land are objectively identifiable and capable of uniform application. Unfortunately, this implied assumption seems to lead full circle in the sense that the selection of appropriate criteria depends upon the definition of prime, which depends

upon the criteria selected. The development of soil classification criteria has been a matter of interest and attention on the part of soil scientists and perhaps agronomists. Fenton gives an excellent and concise review of the development of land classification systems in the United States. The development of criteria for definitions of prime agricultural land now involves not only those traditionally concerned, but likewise economists, planners, engineers and for that matter, general consumers. As a result, there is no longer an easy consensus as to what the objective may be with regard to a classification system (House, pp. 2-3).

This expansion of interest is a relatively recent and continuing matter. For example, the LIM Task Force Report in November, 1974, listed nine criteria (see Fenton also) for prime agricultural land relating exclusively to soil-water-topographical characteristics. In an unpublished preliminary draft of a potential cropland study by SCS in May, 1976, additional characteristics were included such as the size of ownership unit, the size of tracts, and the extent to which the area was isolated. Even Fenton (p. 142) recognizes that energy utilization and its relationship to productivity may be an important consideration in soil classification.

The technical criteria as used in LIM provide either a range of values within or a specific value above or below which land will qualify as prime. Once so classified, the applicable value for that variable is lost for future policy decisions; the system is completely static. For example, a pH between 4.5 and 8.4 in the appropriate zone will qualify. However, in many agricultural operations over time, there may be

significant differences between soil that has a 4.6 pH and that with an 8.3 pH. The same lack of specification will apply to moisture, temperature, conductivity, erodibility, permeability, and texture. Unless measurements made for site specific classification are stored in a retrievable manner, aggregate designation as prime precludes flexibility for future decisions.

Another serious definitional problem evolves from the use of the word agriculture. From a public policy standpoint most observers are concerned with either agricultural products or perhaps more specifically food and fiber. Pragmatically, however, land is not used to produce food and fiber, but rather to produce crops which have different characteristics; these may depend upon whether the perspective is that of a market economist, a nutritionist, or a social psychologist. With several hundred commodities involved, it is obvious that agriculture is not homogeneous in this respect.

Furthermore, different commodities require a wide range of characteristics in terms of soil, climate and other conditions for effective production. Thus, a particular classification of land that is appropriate for the production of corn or soybeans may not be as appropriate for the production of rice or cotton. As a result, a national definition of prime agricultural land assumes some relationship to appropriate commodity production. Thus, land appropriate for the production of avocados in Southern California or blueberries in New England is presumed to be less significant to a national interest than is land for the production of corn in Iowa. While this may ultimately be the case, it is not at all clear at this stage that the classification

effort for prime agricultural land is licensed to make policy decisions as to which commodities should make up the total food supply; this would infer priorities in terms of continued commodity availability.

A basic economic contradiction arises. If one accepts the assumption that market allocation of land does not meet societal objectives for future food supply, dependence upon market allocation of commodities does not appear consistent. Ultimately non-market, i.e., public policy, allocations of commodities (food) and other land oriented economic activities would be a natural consequence.

Calories, Commodities, and Climate

A definition of criteria for prime agricultural land either assumes the inclusion of a variable relating to flexibility--the ability of a given parcel of land to be utilized for the production of a large number of differing commodities--or that some other prioritization system has been utilized. Such a system might well be the number of calories provided for human consumption or it might be some measure of the net additional energy produced over the energy required in the production process itself. In fact, one senses an increasing urban concern toward reserving commodity production for those in which caloric content of the final product for human consumption exceeds the caloric input in the production process. This is particularly true for energy from fossil fuels. This consideration has led many areas to seriously examine their position with regard to continuing food supply. The Commonwealth of Massachusetts, for example, has developed a report entitled, "Policy for Food and Agriculture," which attempts to deal with a number of policy issues (Congressional Record). Included in this document is a recom-

mendation for identification and mapping of prime farm land. From a definitional standpoint the question arises as to whether Massachusetts' prime farm land is the same as that envisioned for a U.S. definition under more general criteria.

Relativity and Local Interest

Definitions of prime, by their very nature, are relative to some defined population. Thus, prime from the standpoint of the total United States is apt to be considerably different than prime from the standpoint of the Commonwealth of Massachusetts or from the standpoint of a county or local community (although this difference is entirely ignored in the Secretary's Memorandum No. 1827, Supplement 1). The Government Code, State of California, defines prime lands for purposes of California. Land may be classified prime by meeting any one of five categories. Three of those categories are technical in nature.[1/] However, two of the classifications for prime land are economic, i.e. "land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than $200 per acre for three of the previous five years." Thus, from a policy standpoint the state of California presumably considers the economic contribution of agriculture as significant a factor as the technical definition of land categories that are able to produce food and fiber over time.[2/] A definition of prime land such as contained in the LIM project for the United States is not apt to be completely satisfactory for those states and/or communities that have other objectives in mind with regard to prime farm land preservation.

Much of the urban support for prime agricultural land preservation

may well stem from quite different factors than those which more traditional agricultural analysts examine. Recent increases in retail food prices may be a triggering mechanism. However, factors such as open space, aesthetic appearance, environmental quality and romantic notions seem implicit--particularly if achieved with minimal urban cost. The appeal of cattle grazing near residential areas may convert even marginal land into prime in the minds of urban residents. The agricultural findings and policies of the California Coastal Plan recommend preservation of thousands of acres on the basis of its importance to agriculture although such land is marginal in terms of animal carrying capacity and certainly not "prime" on any productivity rating.

A further conflict exists relating solely to land that may be technically Class I under the SCS classification system but located in an urban area. As Peterson and Yampolsky (pp. 13-15) observe, land in an urban area may be technically capable of agricultural production but be incompatible for practical purposes due to a variety of social, environmental, legal and economic reasons. This suggests the need for including definitional criteria beyond those presently utilized.

Alternative approaches

One alternative under consideration is to rely upon what amounts to a semantic cop-out. This alternative would simply eliminate the use of the word prime in any of the definitional approaches to land classification and rely on some substitute word that would not have some of the connotations currently attributed to the word prime.[3/] Unfortunately this approach does not solve the dilemma of classifying land areas that are of critical longrun national or local concern; it remains

static. The primary reasons are a failure to distinguish between identification, analysis and classification--essentially a scientific responsibility--and policymaking which is essentially allocative, and persistent inflexibility. While the word "prime" may well be one source of the present dilemma, criteria rather than names are at issue.

A second alternative is to rely on the technique currently used in the LIM project of identifying a prime land definition on technical criteria and relegating other significant portions of land area that are important for commodity production to a classification called unique. Two difficulties arise with this approach. The first is that since unique has no objective criteria, the inclusion of any land in this category is a policy decision. If such inclusion is specified by those developing classification and criteria measurement, the scientific and policymaking roles are intermixed. The second difficulty is the psychological impact--particularly on citizens of communities and regions--of having their farm land excluded from prime. While unique may have positive psychological values, these tend to diminish as awareness rises that any land not in the prime category is eligible for unique. Furthermore, under this system, inclusion of specific criteria for prime implies that commodity and/or caloric priorities have been included.

A third alternative explicitly recognizes the separation of scientific analysis from policy decisions and attempts to set up a series of criteria by which land may be classified (Wood). Under this proposed system any parcel of land can be evaluated for all significant variables, perhaps as many as 20 or 25, and given a cardinal number on a scale of 0 to 10 in such a manner[4/] that the values for each variable

are additive. If the total possible points from all variables is, say, 200, then the policymaker is in a position to define prime agricultural land as that land with a rating of over a given number such as 150 or 175.

A further advantage of this system is that with the use of computer sciences, a program can evolve in which particular values for any given variable can be specified in order to identify the amount of land that is capable of producing a given commodity with very specific requirements. A quite common cry in California, for example, is that we must preserve prime agricultural land in order to guarantee continued production of brussels sprouts; this production is limited to a very small portion of two counties on the California coast. Most of the land involved in such production is not technically prime land under current classification systems, except as it qualifies under the economic category in the California definition. However, under a matrix analysis if one or two variables such as temperature extremes or hours of sunlight and cooling fog are particularly significant, identification of that land susceptible to the production of brussels sprouts could quite easily be identified.

This classification system allows flexibility. Since specific values for each variable are retained, changes for any parcel can be made as circumstances alter. Changes in water availability, adjacent land uses or technology can be instantly included to reflect current conditions. Thus, the system does not become outdated for policy purposes. In this manner, the classification system shifts from completely static to partially dynamic.

As suggested above, the waters have been muddied considerably in the matter of attempting to define and inventory prime farm land or prime agricultural land in the United States. This confusion arises from a number of sources: the multidisciplinary perceptions of prime, the confusion between taxonomy and policymaking, and perhaps most importantly the fact that local and national objectives do not completely coincide. The seminar conducted by the United States Department of Agriculture at Airlie House in July, 1975, was an exceptional step in attempting to reconcile the problems with productive agricultural land in the United States. Unfortunately, for a variety of reasons, the followthrough from that seminar seems not to have been as productive as might have been hoped.

Not only are there institutional factors involved, but also vested interests on a geographic, political, and even professional basis. The non-market allocation of productive lands for future food and fiber supplies cannot be accomplished by either agricultural economists or soil scientists working in isolation. Furthermore, if a national definition of land classifications is the approach that seems politically feasible, then it seems appropriate for that definition to be sufficiently flexible to permit state and local entities to interpret within guidelines established at the national level.

At present, the state of California, for example, is using some of the traditional national definitions with some expansion. My concern is that the state of California, in its infinite (or infinitesimal, as the case may be) wisdom, may decide national guidelines and definitions for prime agricultural land are not sufficiently applicable, and develop its

own system as has so frequently happened in public policy in the past. The same sort of danger exists with regard to many areas of the United States with the possible exception of the Corn Belt for which the current approach to prime land definitions seems most appropriate.

As commonly used, prime seems also to be a function of time. Thus, a static definition will not pertain under all future conditions. Changing conditions--population, technology, weather--very likely will alter criteria for selecting optimum land allocations.

Conclusion and Recommendation

It seems appropriate for representatives of the legislative branches of government to call for preserving prime farm land; it may also be appropriate for top level members of the executive branches of government. However, it is not appropriate and in fact counter productive for similar appeals from the scientific community without clearly delineated criteria for definitional purposes. Therefore, much of the energy and resources currently devoted to advocacy should be redirected to developing a land classification system useful to policymakers. Such a system cannot be solely technical--from soil science and agronomy--but must also include aesthetic, economic, environmental and social variables. With such a system, the extra-market land allocation decisions can be made if politically feasible.

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1/ These technical categories include Classes I and II under the SCS Soil Classification System, 80 to 100 under the Storie Index, and one animal unit carrying capacity per acre.

2/ An interesting contradiction in that market allocations of commodities are used to provide a basis for replacing the market in the allocation of the major production input, land.

3/ For example, there was a tentative proposal in the 1976 Session of the California Legislature to substitute "commercial" for "prime."

4/ For additive purposes, undesirable variables can be ranked on an inverse scale of 10 to 0. Subjective variables--on an ordinal scale--can be converted to Cardinal numbers while cardinal values--pH, for example--can be included directly. In addition, proximity to urban services with excess capacity or other non-agricultural variables can be included.

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