



Managing sensitive lands and habitats in the Lee County DR/GR Area through the application of low-impact sustainable agricultural practices

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Agricultural Enterprising as a Management Tool

The use of farming systems and agricultural applications to manage sensitive lands is increasingly becoming a useful way that governments and municipalities achieve the objectives of producing food and fiber as well as conserving the environment without overspending scarce financial resources. Where lands have been managed by farmers in a manner that provides incentives to sustain the environment, there is evidence that longer term benefits are provided which have impacts beyond the boundaries of the managed property itself.

With historical support from the Florida Cooperative Extension Service including the spin-off benefits of applied research which has given rise to natural resources and conservation management best practices, traditional farming systems in Florida have evolved into modern concepts which utilize measures of sustainability in the pursuit of farm enterprising.

As a group, farmers, ranchers and newer agricultural enterprisers have emerged as the best available human resources to apply modern approaches in technology upon sensitive environments to yield products and services which are sustainable. The concepts upon which this argument is promulgated are offered in the definitions which follow.

Agriculture is an inclusive term which defines all activities pertaining to the nurture, development and production of plants and animals for food and fiber. This includes the actions within agricultural disciplines which when applied, are used for deriving environmental benefits from our natural resources through soil nutrient management techniques, the maintenance of native habitats, carbon sequestration from air as well as the additional derivation of multiple benefits from associated recreational activities.

Agricultural disciplines are those specialized activities of agriculture which emphasize selected enterprises. For example *the discipline of silviculture* is the art and science of controlling the establishment, growth, composition, health, and quality of forest to meet diverse needs and values of landowners, societies and cultures. Trees alter the environment in which we live by moderating climate, improving air quality, conserving water, and providing vital habitat to wildlife species. Climate control is obtained by moderating the effects of sun, wind, and rain. Radiant energy from the sun is absorbed or deflected by leaves on deciduous trees in the summer and is only filtered by branches of deciduous trees in winter.

Sustainable agriculture integrates three main goals – environmental health, economic profitability, and social and economic equity. Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, *stewardship of both natural and human resources* is of prime importance.

Stewardship of land and natural resources involves maintaining or enhancing this vital resource base for the long term.

Agricultural ecology is the study of agricultural ecosystems and their components as they function within themselves and in the context of the landscapes that contain them. Application of this knowledge can lead to development of more sustainable agricultural ecosystems in harmony with their larger ecosystem and eco-region.

Agricultural ecology as a land management strategy in the Lee County DR/GR Area

A primary goal is to understand agriculture from an ecological perspective – in terms of nutrient and energy dynamics, and interactions among animals and other organisms in agro-ecosystems – then integrate and balance that goal with farm/ranch business, community and consumer needs. Thus, an understanding of the definition of agriculture, its related disciplines, and general principle of sustainability as it applies to a particular ecosystem, are important concepts to contemplate in making the wise decision to engender a greater participation of farmers in the management of the Lee County DR/GR lands.

Sustainability indicators have the potential to turn the generic concept of sustainability into action. Proper action requires integration which will involve applying *sustainability indicators* found within the following approaches:

1. Rotational grazing management systems
2. Soil and water conservation measures
3. Water quality/wetlands management
4. Crop/landscape diversity maintenance

Rotational Grazing

Rotational grazing is the simple act of moving animals from one pasture or field to another on a rotational basis to reduce the impact of overgrazing on one particular area and on particular species of plant life. Tropical grasses and broadleaf weeds grow at excessive rates during the summer rainy season in Florida, requiring management intervention to keep growth spurts in check. Public land managers enact land stewardship programs where cattle farmers are provided with leases to manage grasses through grazing strategies. Recently, goats have been used to control the growth and spread of invasive species such as Brazilian Pepper where alternative control measures would have had significant monetary and environmental costs. Goats have also shown great potential in removing excess foliage and dry matter from Saw Palmetto palms which have the later effect of reducing fuel which causes wildfires.

Soil and Water Conservation

Soil conservation means reducing the amount of soil erosion and maintaining soil fertility. It relies on increasing the amount of water seeping into the soil, reducing the speed and amount of water running off, and keeping enough vegetation to protect the soil surface and to bind the soil together. For any form of land use to be sustainable, production must be combined with conservation of the resources it depends on.

Water conservation relies on trapping as much of this water as possible and storing it on the surface or allowing it to sink into the soil in order to raise the water-table and increase the soil-moisture level. More water can seep in if it is spread over a large area of soil rather than being concentrated into fast-running streams. Water-conservation efforts focus on stopping the water

from becoming concentrated in the first place by ensuring a protective cover of vegetation on the soil surface, slowing down the flow of running water and spreading the water out over a large area.

Water Quality/Wetlands

The greatest benefits of wetlands to maintaining and improving water quality are that they trap sediment, remove harmful amounts of nutrients (mostly nitrogen and phosphorus), and remove pesticides before they can enter streams. For all these reasons, there should be a strong effort to maintain or restore wetlands through stewardship programs which are low cost and low impact in the nature of the enterprise being practiced on the site.

Landscape Diversity

The pattern of habitats and species assemblages across a land area is called landscape diversity. This includes both plant and animal species incorporating insects, reptiles, amphibians, fish, mammals, herbs, grasses, shrubs and trees. As agricultural systems evolve and niche markets are identified which provide income for sustainable activities within the landscape, enterprises such as wildflower collection and seeding, butterfly larvae harvesting and host tree conservation have been established to address both these supply and demand extremes found within a system in equilibrium.

Summary

In order to achieve best conservation results in the Lee County DR/GR Area, farmers, conservationists and interest groups believe that the following actions are required.

Lee County decision-makers should:

1. Make the entire DR/GR Area more available to small farming operations by offering affordable tenure and land-lease term agreements with farmers and agricultural enterprisers.
2. Consider other 'conservation' land use besides 20/20 that accommodates small farming and natural resources interests.
3. Ensure that those who are allocated DR/GR land resources utilize sustainability indicators within the management system to be applied.
4. Educate county regulatory agencies to become aware of new farming and ranching systems which utilize low impact production measures but still warrant protections and incentives given to traditional agricultural production systems.

ERRATA SHEET
CPA 2008-06
IMPLEMENT DR/GR STUDY

Document:
Composite Recommendations.

Page:
Bottom of page 10.

The main text and the first numbered sub-paragraph under proposed Policy 30.1.4 was inadvertently left out of the Composite Recommendation. Staff and Dover - Kohl are in agreement on this proposed policy. The entire policy, including all of its numbered sub-paragraphs, is reproduced below:

POLICY 30.1.4: Table 1(b) contains industrial acreage in Southeast Lee County that reflects the acreage of limerock mining pits needed to meet local and regional demand through the year 2030. The parcel-based database of existing land uses that is described in Policy 1.7.6 will be updated at least every seven years to reflect additional data about limerock mining in Southeast Lee County, including mining acreage zoned (project acres and mining pit acreage), pit acreage with active mine operation permits, acreage actually mined, and acreage remaining to be mined. Current totals are based on data compiled in *Prospects for Southeast Lee County* for the year 2006. Future amendments will reflect any additional data that becomes available through routine monitoring reports and bathymetric surveys or other credible sources. The industrial acreage totals for Southeast Lee County that are found in Table 1(b) for Planning Community #18 will be used for the following purposes:

1. In accordance with Policies 1.1.1 and 1.7.6, new mine development orders and mine development order amendments may be issued provided that the industrial acreage totals in Table 1(b) are not exceeded. For purposes of this computation, the proposed additional limerock pit acreage, when added to the acreage of limerock pits already dug, cannot exceed the acreage limitation established in Table 1(b) for Planning Community #18.
2. Notwithstanding the limitations in Policy 2.2.2(3), the lack of available industrial acreage as provided in Table 1(b) will not preclude rezoning approvals to support new or expanded mines within the Future Limerock Mining areas (Map 14).
3. By monitoring the remaining acreage of land rezoned for mining but not yet mined, Lee County will have critical information to use in determining whether and to what extent the Future Limerock Mining areas in Map 14 may need to be expanded in the future to meet local and regional demands.

Acreage in Future Limerock Mining Overlay (Map 14)

With Mining Status And Staff Proposed Modifications

Code	Tract	Is Tract in Unincorporated DR/GR?	Approx. Acreage in Limerock Mining Overlay	Existing Limerock Pit Acreage in Overlay as of 2006	Mining Pits Already Approved in Overlay beyond 2006	Additional Possible Limerock Mining Acreage in Overlay (maximum)
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staff concurs with Dover Kohl recommendation on these areas:

C	Rinker Materials (n. of Alico)	yes	932	189	433	219
F	Youngquist Bros. (e. of Alico)	yes	878	0	878	0
G	Youngquist Bros. (w. of Alico)	yes	633	204	429	0
H	Florida Rock Greenmeadows	yes	2,525	949	1,258	96
I	Florida Rock (sw. addition)	yes	123	0	0	123
J	Florida Rock (nw. addition)	yes	155	0	0	155
K	Florida Rock (ne. addition)	yes	838	0	0	838
L	Bonita Aggregates	no	860	137	420	0
Sub Totals:			6,944	1,479	3,418	1,431

Source: Table J - Proposed Lee Plan Amendments for Southeast Lee County, May 2009

staff recommends adding these area:

M		yes	39	0	0	39
N		yes	76	0	0	76
O		yes	113	0	0	113
P		yes	137	0	0	137
Q		yes	34	0	0	34
R		yes	40	0	0	40
S		yes	134	0	0	134
Sub Totals:			573	0	0	573

staff recommends eliminating these area:

A	Bennett Trust/Fountains	yes	487	0	0	487
B	Tradeport (n. of Alico)	no	1,454	0	0	1,454
D	Rinker Materials (s. of Alico)	yes	335	0	0	335
E	Ginn/Alico Inc. (remainder)	yes	149	0	149	0
Sub Totals:			2,425	0	149	2,276

Source: Table J - Proposed Lee Plan Amendments for Southeast Lee County, May 2009

Dover Kohl recommended Future Limerock Mining Overlay Acreage

<i>Future Limerock Mining Overlay Acreage</i>	9,369	1,479	3,567	3,707
<i>Additional Acreage of Limerock Mining Needed</i>				821
<i>Surplus / Deficit Acreage</i>				2,886

Staff recommended Future Limerock Mining Overlay Acreage

<i>Future Limerock Mining Overlay Acreage</i>	7,517	1,479	3,418	2,004
<i>Additional Acreage of Limerock Mining Needed</i>				821
<i>Surplus / Deficit Acreage</i>				1,183