Phosphorus Transport Potential Due to Phosphorus Source Management - Part B (Table 2)

Phosphorus transport potential due to phosphorus source management is as follows:

- Fertility Index Value
- P Application Source and Rate
- Application Method
- Waste Water Application

Criteria

Fertility Index Value:

Existing soil P levels are included in the P Index and identified as the "fertility index". The "fertility index" is defined as Mehlich-3 extractable P, of a 0-15 cm (0-6 inches) depth soil sample, in ppm (parts per million) multiplied by 2 to convert to pounds per acre. The 0.025 multiplication factor was selected to provide a value range similar to those used for other parameters in the P Index.

Obtain soil samples by taking 15 to 20 small cores (for areas up to 40 acres) at random over the entire area to a depth of about 6 inches. Place the 15 to 20 plugs in a container, mix them thoroughly, and send approximately one pint of the mixed sample to the UF/IFAS Extension Soil Testing Laboratory (ESTL) or other qualified laboratory for analysis.

P Application Source and Rate:

The multiplication factors for the application of P vary based on the source (fertilizer, manure, compost, biosolids, or waste water). Fertilizer, manure, and compost have the multiplier 0.05. For biosolids the multiplier is lower (0.015) because of evidence that the Fe and Al content of biosolids will decrease the P availability in biosolids-amended soils. In contrast, P in water from municipal and lagoon effluents is mostly in a soluble form and therefore the multiplier is higher (0.10).

Application Method:

The application method is not a consideration for sites that have No Surface Outlet or where solids are incorporated immediately after application or injected (value 0). For all other sites, effluent applied via irrigation are typically applied frequently (weekly, bi-weekly) and in small amounts or where solids are incorporated within one day of application; therefore, the potential for P loss is low (value 2). In contrast, solids (fertilizers, compost, biosolids, manures) surface-applied and not incorporated would have a higher potential for loss, particularly through surface runoff (value 6). Incorporated solids within 5 days of application have a medium potential for loss (value 4).

Waste Water Application Volume:

Excessive volumes of water may exacerbate movement of P via downward or lateral leaching, depending on the landscape. The 0.20 multiplication factor was selected to provide a value range similar to those used for other parameters in the P Index.

RESULTING P INDEX

The P Index is obtained by multiplying the site and transport characteristics totals – Part A (Table 1) by the phosphorus source totals – Part B (Table 2). The results are interpreted according to guidelines in Table 3.

On sites with a LOW or MEDIUM vulnerability rating, it is possible to use a nitrogen-based budget to determine application rates. On sites with a HIGH or VERY HIGH vulnerability rating, it is necessary to use a phosphorus-based budget to determine application rates.

Assessing the P Index Results

The numerical result of the P Index has no absolute value, but is immediately translated into a qualitative rating (LOW, MEDIUM, HIGH, or VERY HIGH). For each qualitative rating a description is given for the level of concern that each specifically assessed field has for P loss potential (Table 3). Some general guidance is given for each qualitative level as to the intensity and type of remedial action or mitigation that would be necessary to reduce P loss risk.

Conservation Planning Notes

Since output from the P Index includes information that is specific to each of the site and transport characteristics – Part A (Table 1) and phosphorus source management – Part B (Table 2), the conservation planner can identify which characteristics/management have the greatest influence in determining the final vulnerability rating and may be targeted for remedial action. Table 14 may be used to record notes to explain, clarify, and/or define site characteristics and source management used to evaluate a site. Each factor can be revisited and planning changes made, thereby changing the resulting P Index. For example, terraces can be installed, thereby lowering soil erosion and the final P Index. Similarly, the P Index can be lowered by reducing the planned P application rate.

Table 14. Conservation Planning Notes.

Client Name:	County:	Date:
Planner:	Field(s):	Crop:
Site and Transport Characteristics	**Remarks**	
Soil Erosion		
Runoff Potential		
Leaching Potential		
Potential to Reach Water Body		
Phosphorus Source Management		
Fertility Index Value		
P Application Source and Rate		
P Application Method		
Waste Water Application		

GLOSSARY (as used in the P Index the following definitions apply)

No Surface Outlet – The combination of slope and permeability of the application site that will not discharge surface flow from that site in a 2 year – 24 hour rainfall event.

(This level of evaluating runoff is not intended to require calculation for the rainfall events but is intended to evaluate those sites that do not have external surface flows during most years. Where these sites occur, additional comments may need to be recorded on the back of form FL-CPA-41)

Compost – animal wastes and plant debris that has gone through the composting process.

Biosolids – Residuals, domestic wastewater residuals and/or septage as defined in Chapter 62-640 Florida Administrative Code. Biosolids include co-compost with a minimum of 50% biosolids.

Landform - Any physical, recognizable form or feature of the earth's surface, having a characteristic shape and produced by natural causes.

Examples of individual landforms and their definitions are:

Karst - Topography with sinkholes, caves, and underground drainage that is formed in limestone, gypsum, or other rocks by dissolution, and that is characterized by sinkholes, caves, and underground drainage.
Knoll - A small, low, rounded hill rising above adjacent landforms.

Subsurface Drainage – Lowering of the water table in order to improve vegetative growth, remove surface runoff from wet areas, or relieve artesian pressure. Subsurface drainage can be achieved by either using drainage tile or drainage ditches, typically spaced at regular intervals.

REFERENCES

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Florida Ecological Sciences Staff. 1999. Florida Agronomy Field Handbook, Chapter 6. USDA, NRCS, Gainesville, FL.

Florida Phosphorus Index Work Group. 2000. The Florida phosphorus index. http://efotg.nrcs.usda.gov/treemenuFS.aspx?Fips=12001&MenuName=menuFL.zip (The Florida Phosphorus Index sheets are located in Section IV of the Table of Contents under C.Tools.)

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