Should Fertilizer P be Banned from Lawn Fertilizer

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Should Fertilizer P use on Lawns be Regulated?

Two Sides to the Question

- Agronomic
- Environmental

Applying Fertilizer P when Soil P is Adequate

N-P_2O_5-K_2O Applied	Clipping Analysis		
	N	P	K
-----lb/M/yr-----		-----%-----	
4-0-0	4.15	0.44	2.87
4-1-0	4.22	0.43	2.95
4-0-3	4.24	0.45	2.97
4-1-3	4.02	0.44	2.95
LSD	NS	NS	NS

The Irony of Changing Soil Test Interpretations

Soil Test P Adequacy Level ppm	Percent of Lawns with Adequate P %
Pre-1994: 75 ppm	10 – 20%
Post-1994: 20 ppm	>90%

Lawn P and Lake Water Quality

- Lawn runoff water P load
  - Measurements vs. estimates
  - Lawn quality
  - Time frame
  - P sources

Lawn P and Lake Water Quality

- Significance of lawn P loadings
  - Relative contribution
  - Lake characteristics
    - Annual P load
    - Lake volume
    - Hydraulic residence time
    - Sediment P
    - Water N:P

Measurements vs. Estimates of Lawn Runoff P Loads

	Soluble Runoff		
P_2O_5	P	Volume	P Load
lb/m	mg/L	L	mg
0	1.5	3.6	5.4
0.5	1.9	1.7	3.2
0.8	2.6	1.4	3.6
1.3	2.3	1.4	3.2

Time Frame and Amount of Runoff

Years	Runoff		Runoff P	
	Total	Frozen Soil	Total	Frozen Soil
	--inches--		--lb/a/yr--	
1993/94	1.22	0.90	0.28	0.20
1994/96	1.18	0.97	0.39	0.35
1996/98	1.10	0.60	0.44	0.23
Mean	1.17	0.82	0.32	0.22

Turf Quality vs. Runoff

	Runoff	Runoff P
	inches	lb/a/yr
Fertilized	0.94	0.26
Not Fertilized	1.66	0.64

Potential Contributions of Turfgrass Tissue P to Runoff P

Turfgrass Clipping Status	Clipping Leachable P	Percent of runoff P
	--lb/acre--	--%--
Fresh	0.23	311
Air-dried	1.04	452
Frozen & dried	0.96	417

Lawn Quality Influences on the Effects of Fertilizer P on Runoff Water P Loads

Maintenance Level	Runoff Volume	Mean Soluble P	Runoff P Load
	--inch/acre--	--mg/L--	--lb/acre--
Low + P	0.84	0.92	0.176
Low – P	0.84	0.45	0.086
High + P	0.17	0.39	0.015
High – P	0.17	0.31	0.012

Conclusions

- Fertilizer P application vs. soil test
- Lawn runoff P vs. lake water quality
- Lawn maintenance vs. P regulation