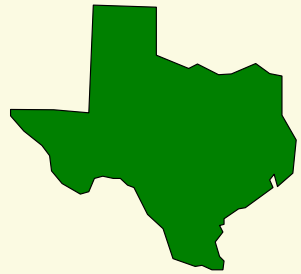
Texas Phosphorus Assessment Tool
Phosphorus Index (PI) Revised 7-05

Certified Nutrient Management Specialist Training Course

Phosphorus Index (PI)

- First developed by USDA-ARS with several research scientists
- Used as screening tool to rank vulnerability of fields as sources of P loss in surface runoff
- Accounts for and ranks transport and source factors controlling P loss in surface runoff

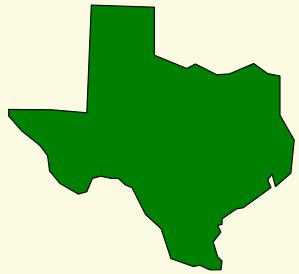
Texas PI
Site characteristics



- The index was modified by NRCS and TCE to establish a PI for East Texas and another PI for West Texas
- Site characteristics fall into two main categories:
  - source factors
  - transport factors

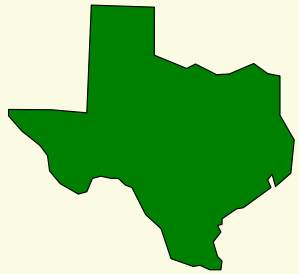
Texas PI

Site characteristics



- 8 by 5 matrix that relates site characteristics with range of values
- Specific data for site characteristics easily collected and interpreted in field
- Producer provides soil test results

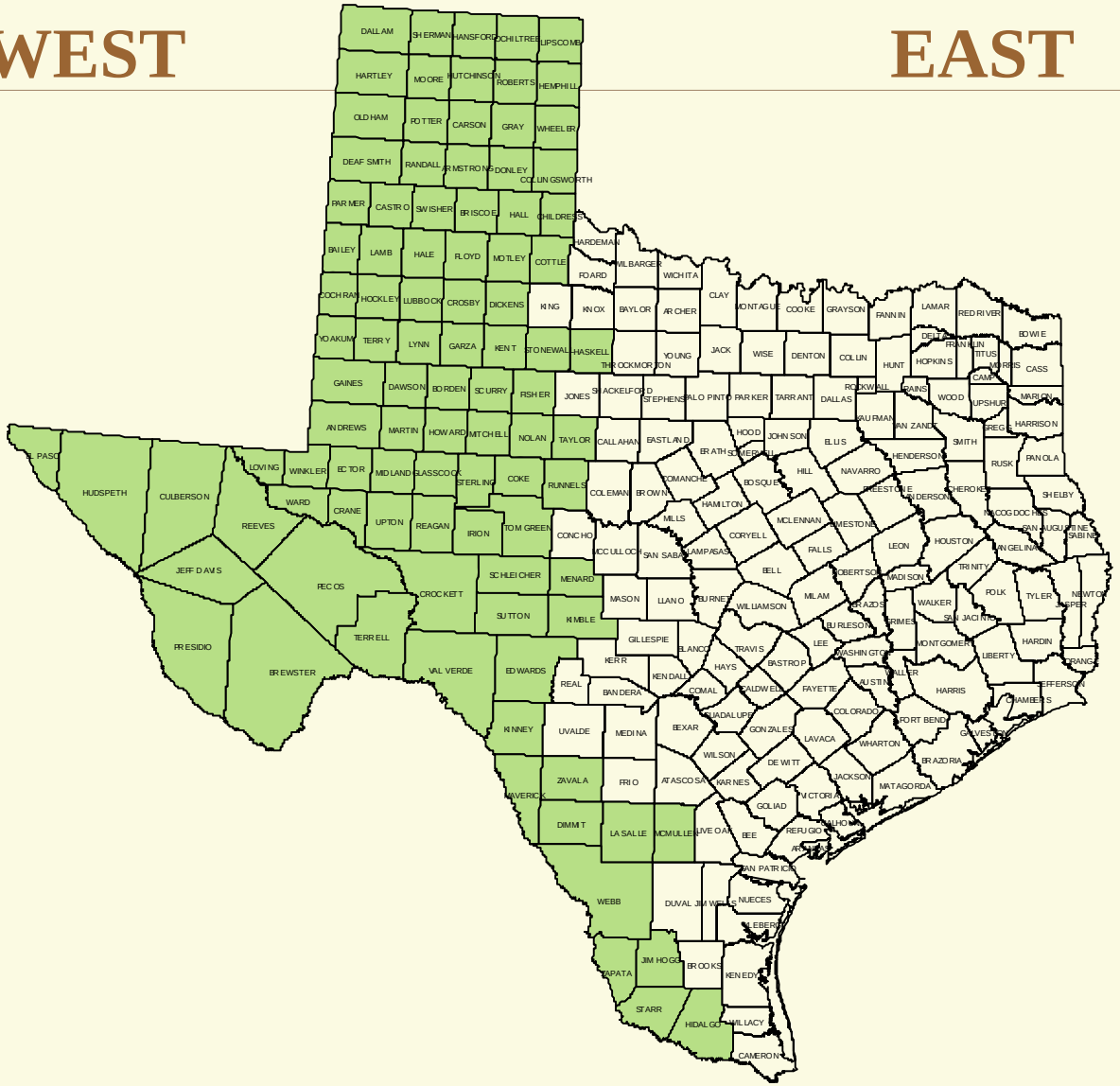
Texas PI
Site characteristics



- 8 site characteristics are:
  - Soil test P rating
  - Fertilizer P (P_2O_5) application rate
  - Organic P (P_2O_5) application rate
  - P fertilizer application method & timing
  - Organic P source application method & timing
  - Proximity of application to named stream or lake
  - Runoff class
  - Soil Erosion

WEST

EAST


DALLAM
SHERMAN
HANSFORD
OCHILTREE
LIPSCOMB
HARTLEY
MOORE
HUTCHINSON
ROBERTS
HEMPHILL
OLDHAM
POTTER
CARSON
GRAY
WHEELER
DEAF SMITH
RANDALL
ARMSTRONG
DONLEY
COLLINGSWORTH
PARMER
CASTRO
SWISHER
BRISCOE
HALL
CHILDRESS
HARDEMAN
BAILEY
LAMB
HALE
FLOYD
MOTLEY
COTTLE
FOARD
WILBARGER
WICHITA
CLAY
COCHRAN
HOCKLEY
LUBBOCK
CROSBY
DICKENS
KING
KNOX
BAYLOR
ARCHER
MONTAGUE
COOKE
GRAYSON
FANNIN
LAMAR
RED RIVER
YOAKUM
TERRY
LYNN
GARZA
KENT
STONEWALL
HASKELL
THROCKMORTON
YOUNG
JACK
WISE
DENTON
COLLIN
HUNT
HOPKINS
DELTA
FRANKLIN
TITUS
MORRIS
CASS
GAINES
DAWSON
BORDEN
SCURRY
FISHER
JONES
SHACKELFORD
STEPHENS
PALO PINTO
PARKER
TARRANT
DALLAS
ROCKWALL
RAINS
WOOD
UPSHUR
MARION
ANDREWS
MARTIN
HOWARD
MITCHELL
NOLAN
TAYLOR
CALLAHAN
EASTLAND
HOOD
JOHNSON
ELLIS
HENDERSON
SMITH
RUSK
PANOLA
HARRISON
GREGG
UPSHUR
VAN ZANDT
EL PASO
HUDSPETH
CULBERSON
LOVING
WINKLER
ECTOR
MIDLAND
GLASSCOCK
STERLING
COKE
RUNNELS
COLEMAN
BROWN
COMANCHE
BOSQUE
HILL
NAVARRO
FREESTONE
ANDERSON
CHEROKEE
SHELBY
WARD
CRANE
UPTON
REAGAN
IRION
TOM GREEN
CONCHO
MILLS
HAMILTON
MCLENNAN
LIMESTONE
CORYELL
FALLS
LEON
HOUSTON
SAN AUGUSTINE
SABINE
SAN JACINTO
TRINITY
POLK
TYLER
NEWTON
JASPER
MADISON
ROBERTSON
BELL
LAMPASAS
SAN SABA
MCCULLOCH
REEVES
JEFF DAVIS
PRESIDIO
BREWSTER
PECOS
CROCKETT
SCHLEICHER
MENARD
SUTTON
KIMBLE
MASON
LLANO
BURNET
WILLIAMSON
MILAM
BRAZOS
BURLESON
WALKER
PRAIRIE
MONTGOMERY
HARDIN
LIBERTY
ORANGE
JEFFERSON
CHAMBERS
GALVESTON
TERRELL
VAL VERDE
EDWARDS
GILLESPIE
KERR
REAL
BANDERA
KENDALL
COMAL
BLANCO
TRAVIS
HAYS
CALDWELL
FAYETTE
LEE
WASHINGTON
BASTROP
AUSTIN
HARRIS
FORT BEND
COLORADO
WHARTON
BRAZORIA
MATAGORDA
JACKSON
VICTORIA
GOLIAD
REFUGIO
ARANSAS
SAN PATRICIO
KINNEY
UVALDE
MEDINA
BEXAR
GONZALES
LAVACA
WILSON
DE WITT
KARNES
ATASCOSA
ZAVALA
FRIO
MAVERICK
DIMMIT
LA SALLE
MCMULLEN
LIVE OAK
BEE
WEBB
DUVAL
JIM WELLS
NUECES
KLEBERG
JIM HOGG
BROOKS
KENEDY
ZAPATA
STARR
HIDALGO
WILLACY
CAMERON

PHOSPHORUS INDEX WORKSHEET for East Texas

Client Name:			**Field(s):**		**Date:**	
Planner:			**Location:**		**Crop:**	
Impaired Watershed:			**Runoff Curve No.:**		**Slope (%):**	

Site Characteristic						**Sub Total**
Soil Test P Level	N/A	Very Low - Low	Moderate	High	Very High	
	0	**1**	**2**	**4**	**8**	
Phosphorus Fertilizer (P_2O_5) Application Rate	None Applied	1-40 lbs/ac P_2O_5	41-90 lbs/ac P_2O_5	91-150 lbs/ac P_2O_5	>150 lbs/ac P_2O_5	
	0	**0.75**	**1.5**	**3**	**6**	
Organic Phosphorus (P_2O_5) Application Rate	None Applied	1-40 lbs/ac P_2O_5	41-90 lbs/ac P_2O_5	91-150 lbs/ac P_2O_5	>150 lbs/ac P_2O_5	
	0	**0.75**	**1.5**	**3**	**6**	

Phosphorus Fertilizer Application Method and Timing	None Applied	Placed Deeper than 2 in. or broadcast	Surface applied 12/1 - 2/15	Surface applied 2/16 - 4/15 or 6/16 - 11/30	Surface Applied 4/16 - 6/15	
	0	**0.5**	**1**	**2**	**4**	
Organic Phosphorus Source Application Method and Timing	None Applied	Placed Deeper than 2 in. or broadcast	Surface applied 12/1 - 2/15	Surface applied 2/16 - 4/15 or 6/16 - 11/30	Surface Applied 4/16 - 6/15	
	0	**0.5**	**1**	**2**	**4**	
Proximity of Nearest Field Edge to Named Stream or Lake	Very Low >2000 feet	Low 1000 - 1999 feet	Medium 500 - 999 feet	High 100 - 499 feet	Very High <100 feet	
	0	**1.25**	**2.5**	**5**	**10**	

Runoff Class (Runoff Class Table)	Negligible	Very Low or Low	Moderate	High	Very High	
	0	**1**	**2**	**4**	**8**	
Soil Erosion (All Sources)	Very Low <1 t/ac	Low 1-3 t/ac	Medium 3-5 t/ac	High 5-10 t/ac	Very High >10 t/ac	
	0	**1.5**	**3**	**6**	**12**	
				Total Index Points:		
			P Runoff Potential:			

Critical P Level in top 6" of soil: **ppm**

Phosphorus Index Classification

Index Pts.	P Runoff Potential
<12	Very Low - Low
12 - 22.75	Medium
23 - 32	High
> 32	Very High

Table 4 - Partial Listing of Curve Numbers 1/

Cover Type	Hydrologic Condition 2/	Soil Hydrologic Group			
		A	B	C	D
Pasture	poor	68	79	86	89
	fair	49	69	79	84
	good	39	61	74	80
Hayland not grazed		30	58	71	78
Fallow - bare soil		77	86	91	94
Fallow w/crop residue (CR)	poor	76	85	90	93
	good	74	83	88	90
Row Crop - Straight Row	poor	72	81	88	91
	good	67	78	85	89
Row Crop - Straight Row + CR	poor	71	80	87	90
	good	64	75	82	85

Runoff Class Based on Field Slope and Runoff Curve Number

	Runoff Curve Number				
Slope %	<50	50 - 60	60 - 70	70 - 80	> 80
< 1	N	N	N	N	M
1 to 2	N	N	VL	L	M
>2 to 4	N	N	L	M	H
>4 to 8	N	VL	M	H	VH
>8 to 16	VL	L	M	VH	VH
> 16	VL	L	H	VH	VH

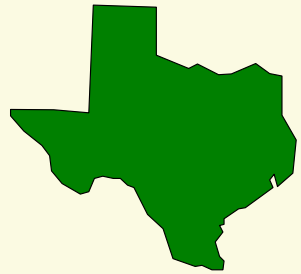
Refer to Texas NRCS Engineering Technical Note - Hydrology, No. 210-18-TX5, *Estimating Runoff for Conservation Practices* - 10/90 for information on runoff curve numbers.

Estimating Runoff for Conservation Practices - 10/90 for information on runoff curve numbers.

N = Negligible, VL = Very Low, L = Low, M = Moderate, H = High, VH = Very High

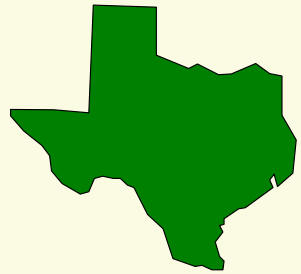
Texas P I

Uses



- As a screening tool for field staffs, planners, and ag. producers to rank the vulnerability of fields as sources of P loss in runoff.

Texas P I



Uses

- In combination with the planning process, the P index results will lead to different land treatment alternatives based on the vulnerability of each field to P loss