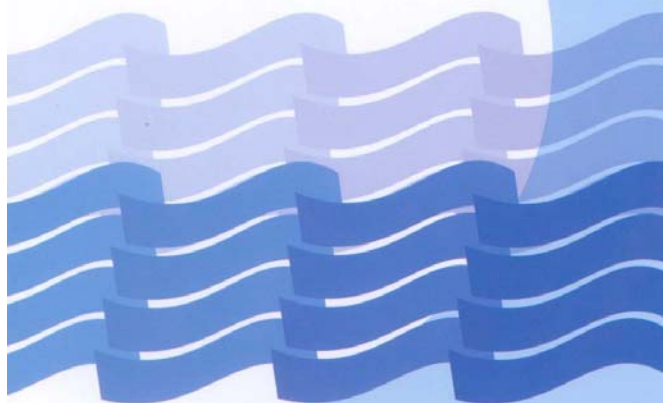


نفوذ و حرکت آب در خاک (از دیدگاه آبخیزداری)



"

"

()

.....

.....

.....

%

%

() HORTON

() Gray

- 1- Surface runoff
- 2- Infiltration
- 3- Percolation
- 4- Water Repellent

()

(/ / /)

/

()

:

/		
/		$\frac{1}{4}$
/		$\frac{1}{16}$
		$\frac{1}{1000}$

0.002 0.02

:

- 1- Silt
- 2- Clay
- 1- Saturation moisture

Phreatophytes Riparian

() Robinson

(Haloxylon)

()

()

() Doneen

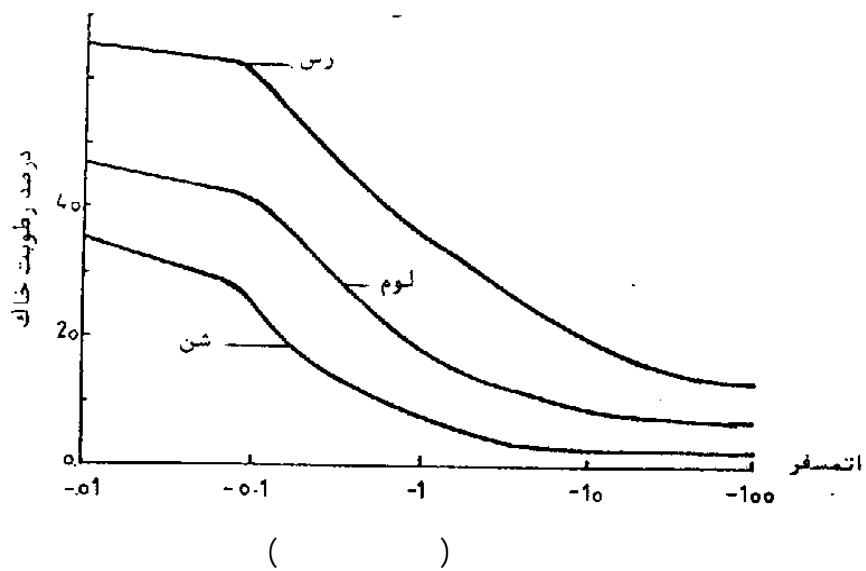
/ /

() Colman

$\frac{1}{3}$
/

/

) () (



() Doneen .

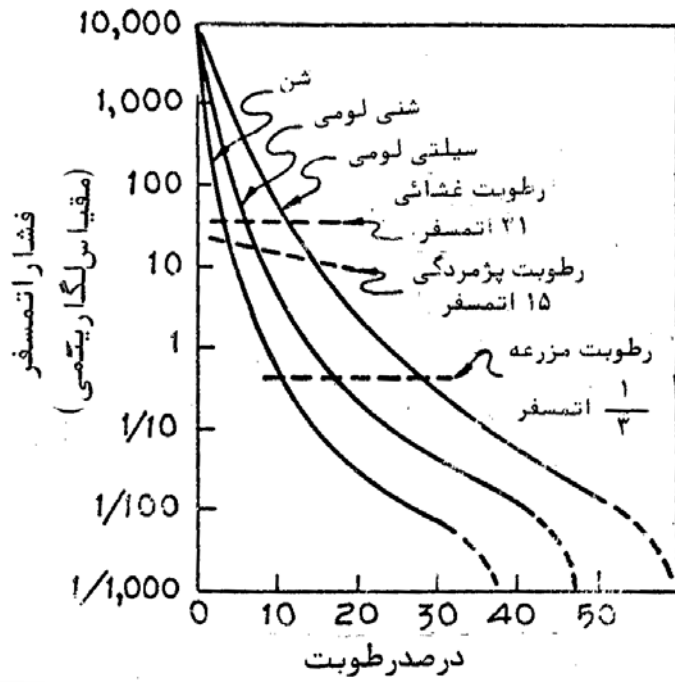
1- Wilting Point

()



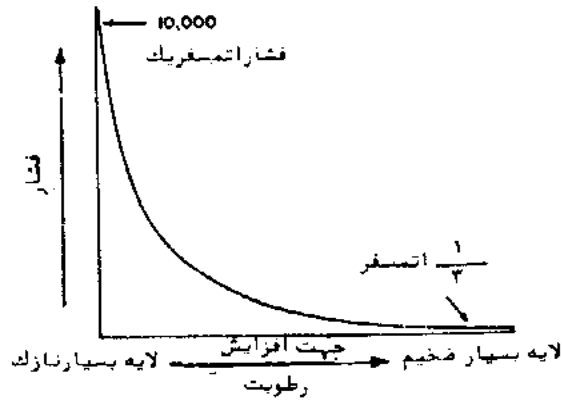
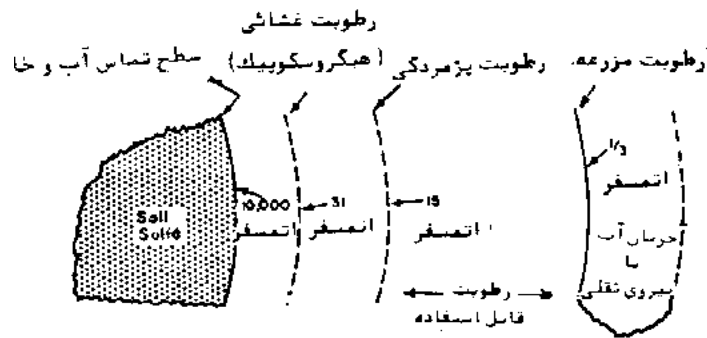
()

- 1- Hygroscopic moisture
- 2- Adhesion
- 3- Cohesion



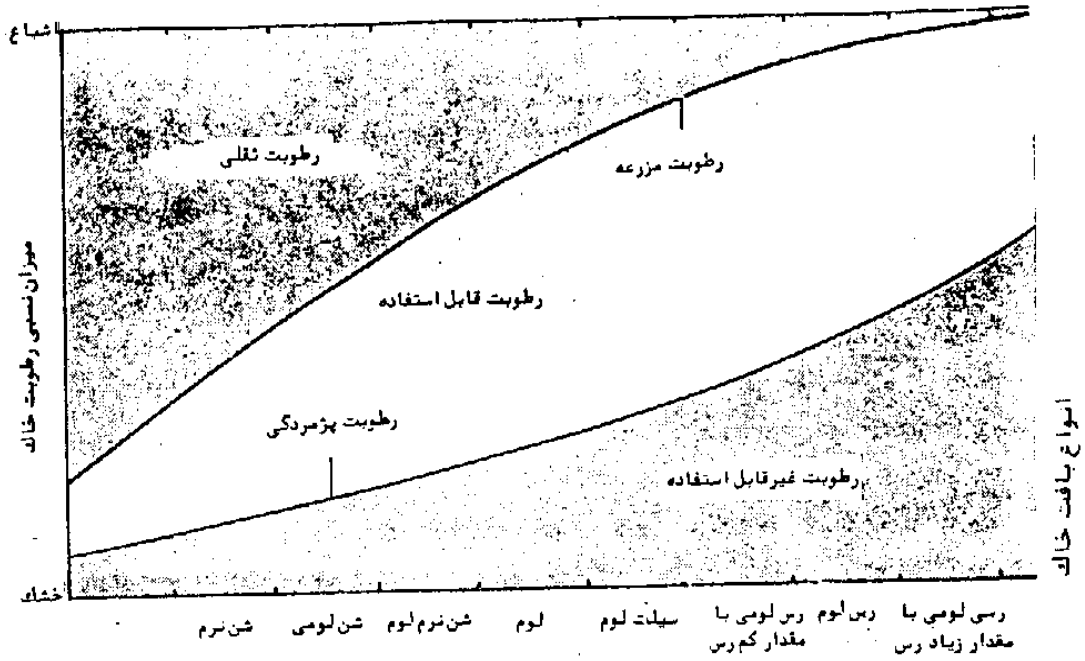
(Film)

) () Brady



لایه بسیار ضخیم جهت افزایش رطوبت لایه بسیار نازک

()



$$\frac{1}{3}$$

)

()

(

1- Available moisture

() Doneen

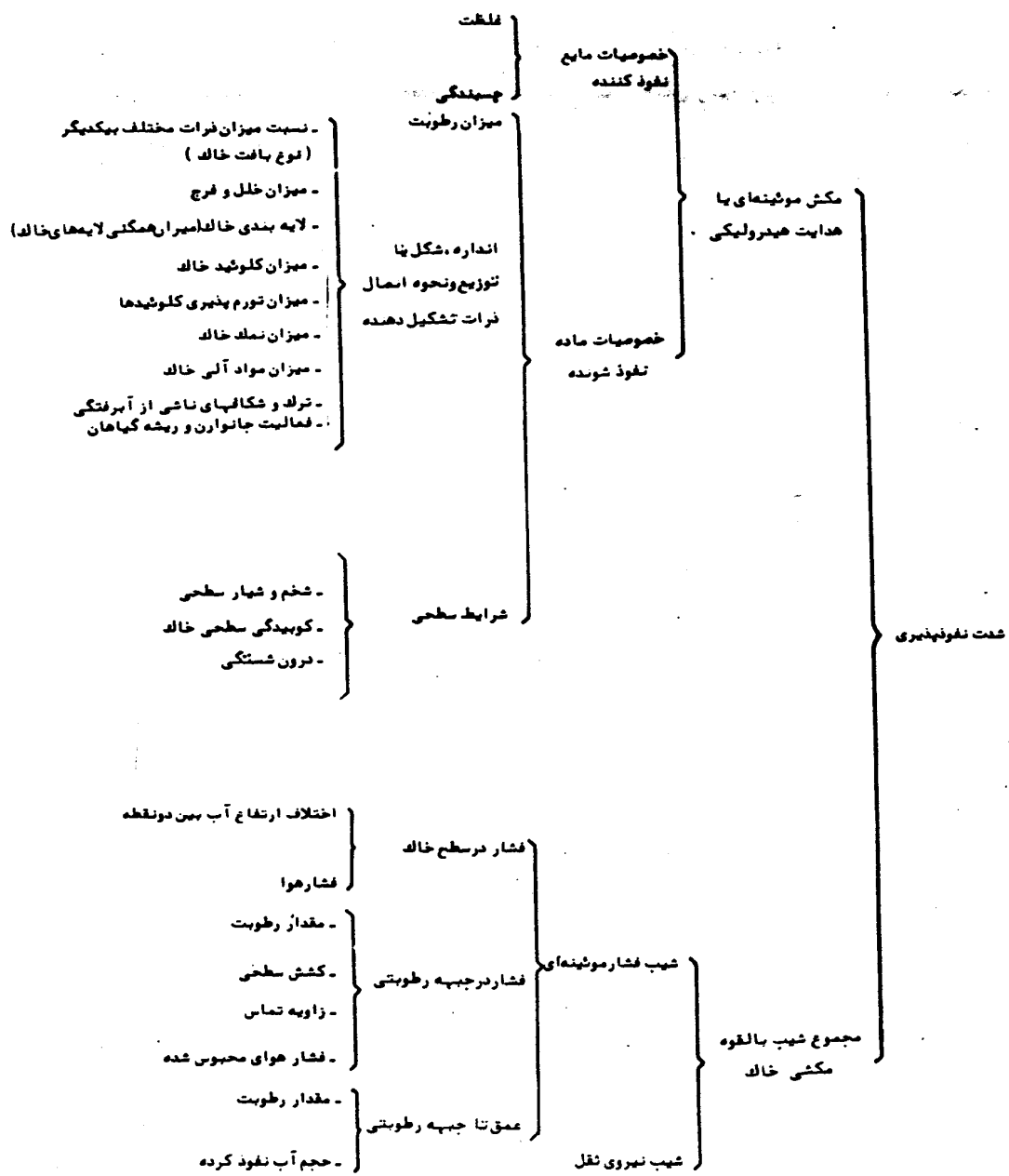
/	/	/	/	/	/	
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)

(

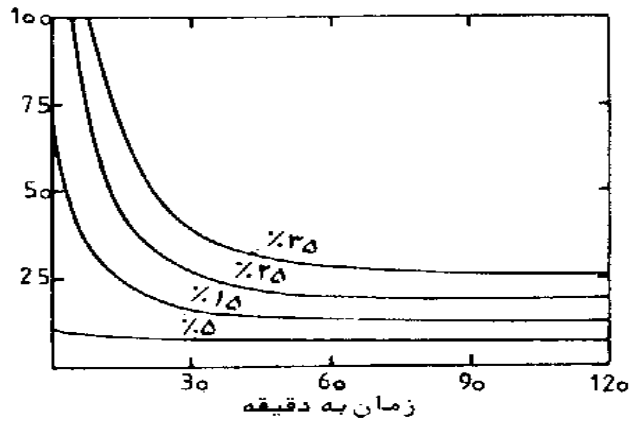
- 1- Furrowing
- 2- Pitting



() Gray .

()

$$\frac{1}{3}$$



Sevier lake

:

() Wood Ward

() Taylor

$$Q = Ct^a$$

()

:

=Q
=C
=a
=t

(t)

Q

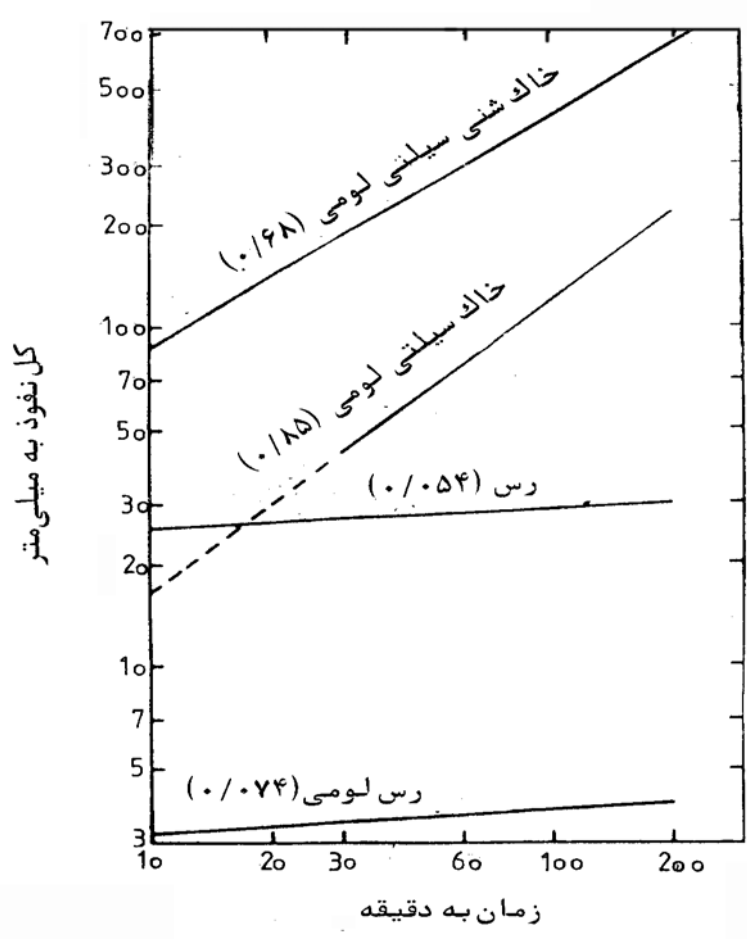
$\frac{1}{2}$ a

C

(a)

/ / a

() Tylor .



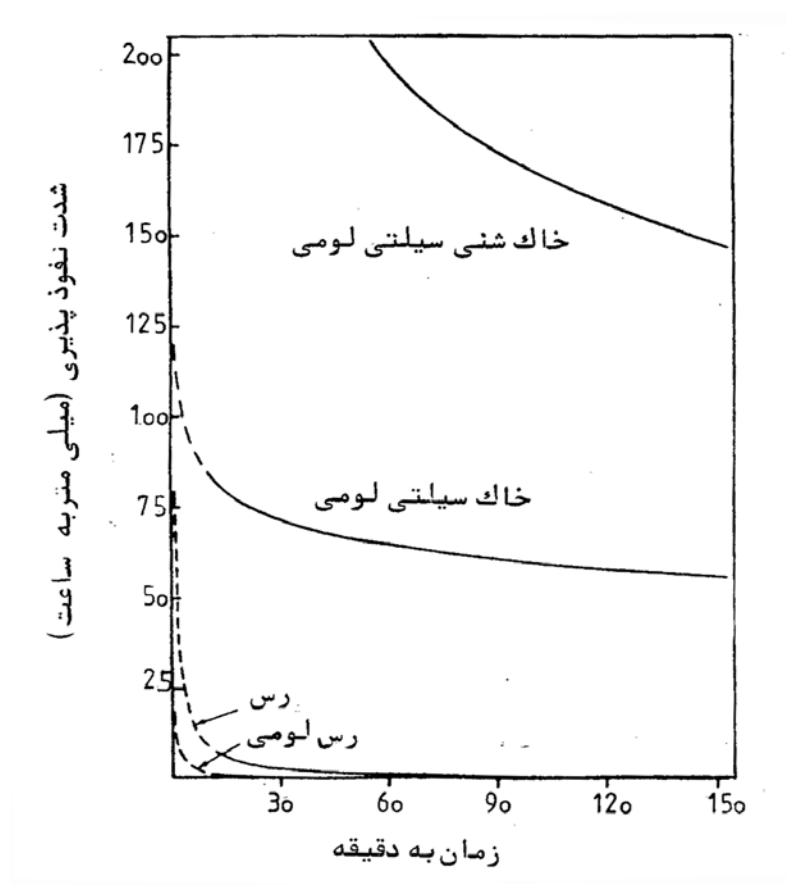
Taylor

:

()

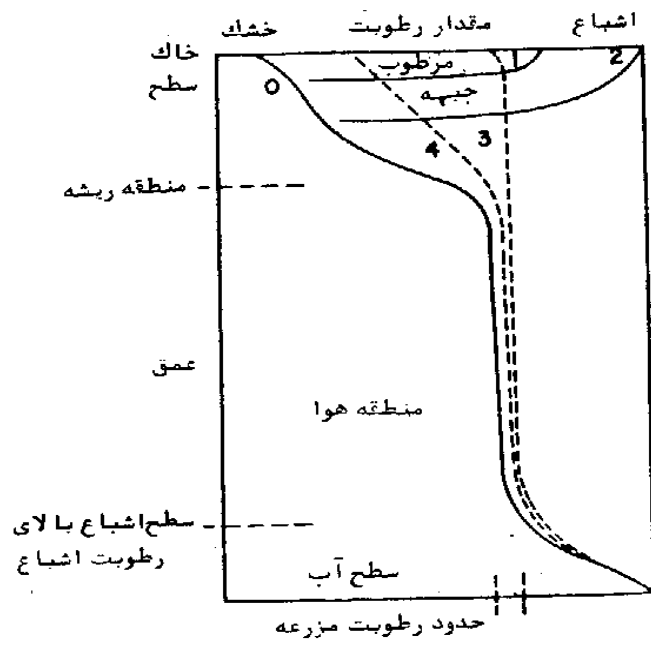
()

() Khanje Morel Seytoux



()

()



()

()

()

()

()

)

(

(Darcy)

() Nelson Corey

$$Q = K(\theta) dH / dz$$

z

:

=Q

= $K(\theta)$

= θ

dH / dz

=H

=Z

- 1- Transmissivity
- 2- Hydraulic Conductivity

() Hibert

()

()

() cassidy hjelmfelt

() horton

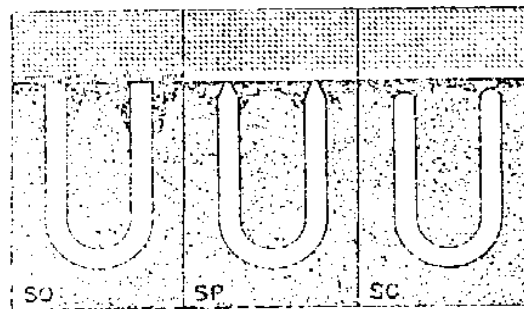
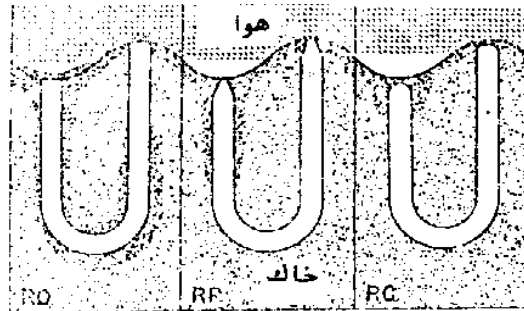
() Wilson

1- moisture gradient

() Dixon

() .

منطقه تماس هوا و خاک



U

()

Dixon

() dixon

$$Ro > Ro \approx So > Rc \approx Sp > Sc$$

=Sp

=Rc

=So

=RP

=Ro

=Se

:

() Nutter Hewlet

()

- 1- Rough open
- 2- Rough partly open
- 3- Smooth open
- 4- Rough closed
- 5- Smooth Partly Open
- 6- Smooth closed

() Leopold Dunne

() Branson

:

)

(

() Gifford

Pinyobn-junipet

()

: () Branson
()

)

(

- 2- Interception
- 3- Depressuib storage

() insley

() Gifford

() Lnsley

(/ /)

/ / F FA F

F

F

FA

F

F

- 1- Rainfall simulator
- 2- F Type Nuzzle

(×)

.)

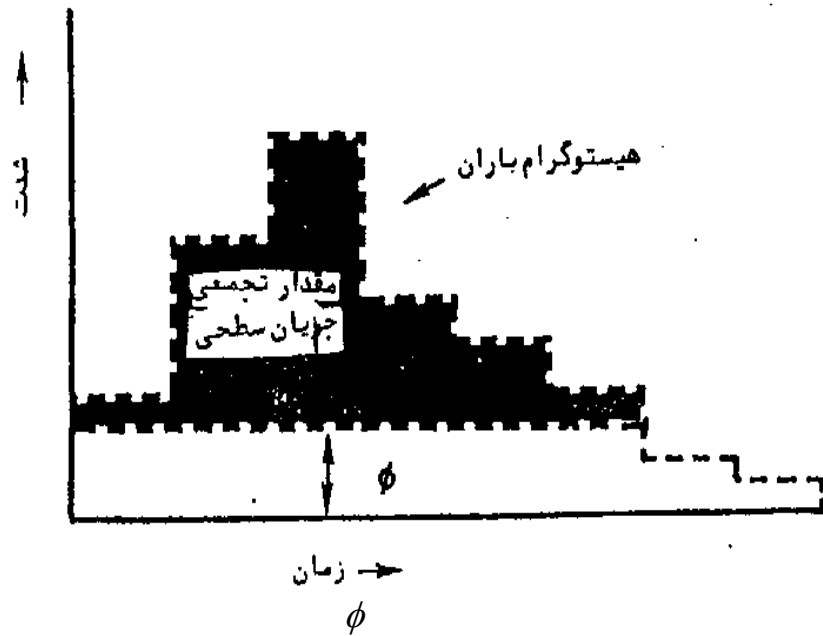
() Benton

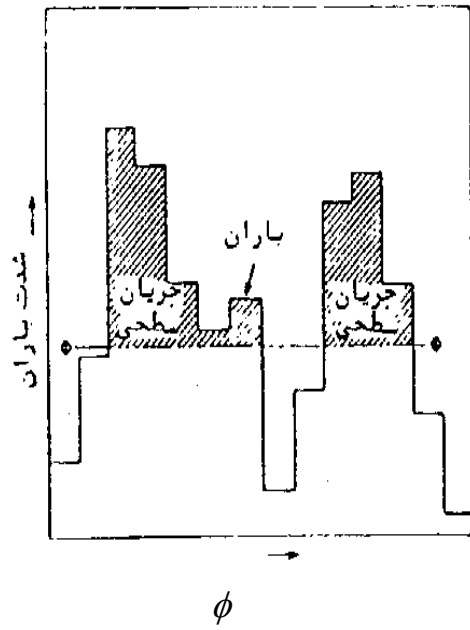
1- Soil Retention

2 Stanford Watershed Model

() Clark Bruce .(Linsley)

ϕ ϕ () Cassidy Hjelmfelt
 ϕ
() .





Thiessen

ϕ

ϕ

ϕ

ϕ

W

Wilson .

.()

W

:

$$w = \frac{f}{t} = \frac{1}{t} p - (Q + S)$$

=W

=t

t

=F

t

=P

t

=Q

t

=S

ϕ

W

ϕ

W

W

W

:

:

/ ϕ

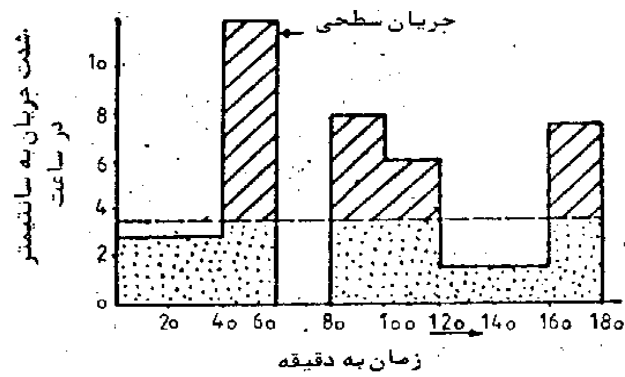
/ / /

/ /

W

:

()



$$(12 - 3/5) \times \frac{20}{60} + (8 - 3/5) \times \frac{20}{60} + 0000 + (7/5 - 3/5) \times \frac{20}{60}$$

$$= (0 + 0 + 8/5 + 000000 + 4) \times \frac{20}{60} = 6/5$$

$$w = (2/8 \times \frac{20}{60}) + (2/8 \times \frac{20}{60}) + (12 \times \frac{20}{60}) + 0000 = 14$$

$$W = \frac{p - Q}{T} = \frac{14 - 6/5}{3} = 2/5$$

ϕ :

/ / /

/ /

/

/

:

ϕ

$$\phi = 0$$

:

$$P_e = \frac{50(2/5 - 2/5) + (7/5 - 0) + 0000 + (1/5 - 0)}{50}$$

$$\phi = 2/5$$

$$P_e = \frac{50(2/5 - 2/5) + (7/5 - 2 = 5) + 0000 + (1/5 - 2/5)}{50}$$

$$= \frac{[0 + 50 + 0000 + 0]}{50} = 30/5$$

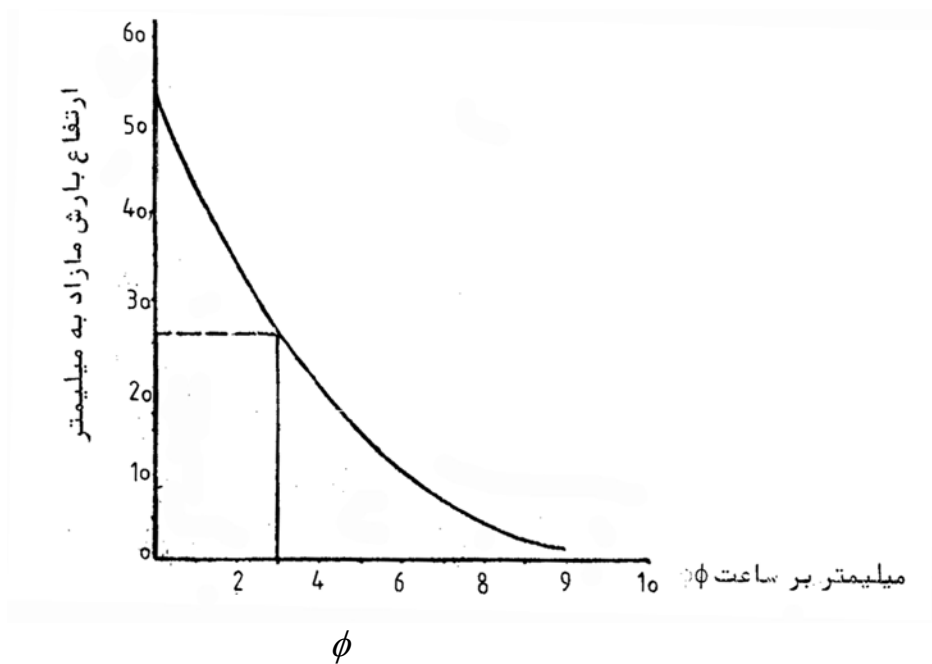
$$\phi = 5$$

$$P_e = 15$$

()

ϕ

$$P_e = \frac{10(7/5 - 6/25) + (11/25 - 6/25) + (10 - 6/25) + 0]}{10} = 10$$



$$P_e = \frac{25/(7/5 - 4) + (11/25 - 4) + (5 - 4) + (10 - 4)(6/25 - 4]}{25} 20/25$$

/

			ϕ	
$0/2 \times 10 = 2/0$	/	/	/	
$0/5 \times 20/25 = 10/125$	/	/	/	
$0/2 \times 45/5 = 13/65$	/	/	/	
/				

/ / / / / / / :

ϕ

) |Dixon

() .

()

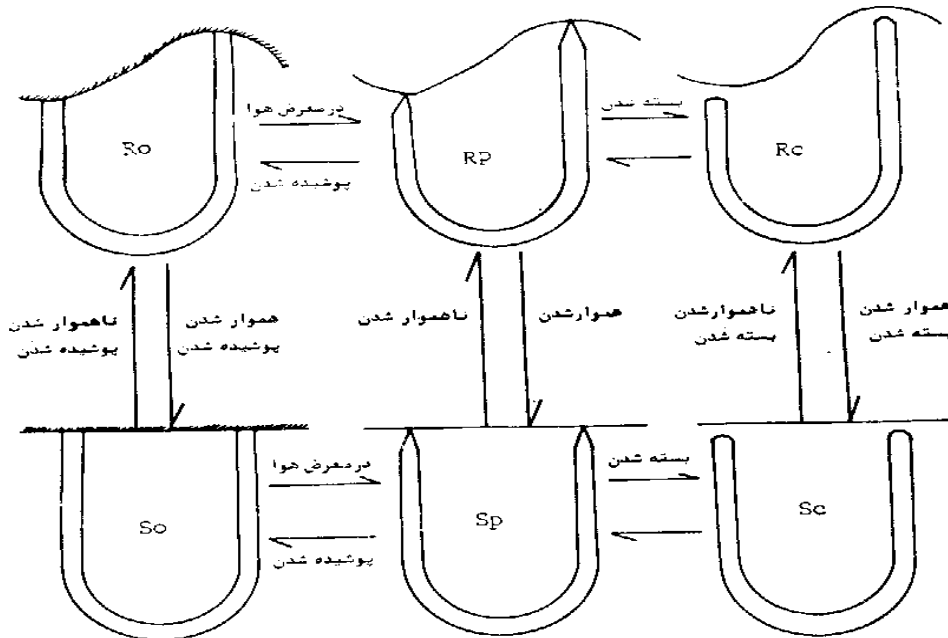
Dixon

Dixon

()

()

()



()

() Dixon

Dixon

()

Branson

dixon

()

:

() Trimble Weitzman

Minnesota

() Arend

:

:

-

-

-

-

() Johnson

() Packer

() / () Gaiser

() Kittedredge

()

() Trimble Weitzman

() Wooley Pearse

(Grasses)

Pitter

Pit

- ¹ - Partial calcium Salt of Vinylacete metallic Acid
- ² - Ammonium Lignin Sulfonate and Wood Sugars
- ³ - Ferric Ammonium organic Complex

٨ - مراجع و ماخذ :

- 1- Branson, F.A., G.F.Gifford, K.G. Renard, R.F. Hadly. 1981. Range and Hydrology 2nd Edittion Kenball/ Hunt Publishing Company.
- 2- Bruce, P. and R.H. Clark. 1969. Introduction & Hydrometeorolgy .
- 3- Dixon, R.M. 1975. Infiltration control through soil surface management. P.543-567. In : Proc, A.S.C.E. symp. Watershed management, Utah, St. University, Logan, August 11-13 : 543-567.
- 4- Dunne, T.and L.B. Leopold, 1978. Water in Environmental planning freeman and Company.
- 5- Flohn, H. 1969. climate and weather.
- 6- Gifford, B., Renard and Hadly . society for Range management 1987, 2nd Edition Rangland Hydrology .
- 7- Gifford, G.E., and R.H. Hawkins, 1978. A Preliminanry approach towards hydrologic modeling of rangeland grazing management systems, P.279-283. In : Proc . First internal. Range land Congr., Denver, colo, Aug. 14-18.
- 8- Gray, D.M., D.I. Norun, and J.M. Murray. 1969. Infiltration Characteristics of prairie soils . Paper presented at Amer. Soc. Range Manage Annual Meeting (Calgary, Alberta). 16P.
- 9- Horton, R.E. 1933. The role of infiltration in the hydrologic cycle. Trans. Amer. Geophys. Union . 14:460.
- 10- Linsley, R.k. and J.B.Franzini. Water Resources Engineering , 1981, 3rd Edition.
- 11- Linsley, R.K. and M.A. Kohler and J.L.H. Paul Hus. 1982. Hydrology for Engineers.
- 12- Morel - Seytoux, H.J., and J.Khanji, 1974. Derivation of equation of infiltration . Water Resource. Res. 10(4):795 - 800.
- 13- National Symposium on soil Erosion and sedimentation By Water, 1977.

Proceeding of ASAE Publication 4-77.

- 14- Packer, P.E. 1951. An approach to watershed protection Criteria. J.For. 49(9): 639-644.
- 15- Pearse, C.K. and S.B. Wooley. 1936. The influence of range plant cover on the rate of absorption of surface water by soils. J. Forest. 34 : 844-847.
- 16- Satterland, D.R. 1972. Wildland Watershed Management.
- 17- Schwob, G.O., R.K. Frevert, T.W. Edminster, and K.K. Barnes, 1981. Soil and water Conservation Engineering, 8rd. Edition.
- 18- Taylor, Sterling, A. 1961. Water forman.Twenty - Third faculty Honor lecture : Utah State University , Logan, Utah. 29P.
- 19- Watershed Management on Rang and Forest Lands.
- 20- White, R.W. 1982. Editor in clif sedimentation Proplems in river basins.
- 21- Woodward,, howell, 1943. Infiltration - Capacities of some plant - soil complexes on utah range watershed - Lands. Amer. Geophys. Union Trans. 24:468-475.

۹- نشریات منتشر شده از کمیته فنی شماره ۱۴-۲ (آبخیزداری)

- ۱- فهرست خدمات مرحله شناسایی طرحهای حفاظت خاک و آبخیزداری شماره ۲۵-الف
- ۲- فهرست خدمات مرحله توجیهی طرحهای حفاظت خاک و آبخیزداری شماره ۲۶-الف
- ۳- دستور العمل مطالعات فیزیوگرافی در حوزه های آبخیز شماره ۴۹-الف
- ۴- دستور العمل کاربرد روشهای شماره منحنی SCS و منطقی Rational Method در حوزه های آبخیز شماره ۷۳-الف