Lab -6 Soil and water Conservation / Practical

 3th stage Soil and water Dep.

**Support practice factor ( P ):**

Is the ratio of runoff and soil loss from a treatment tilled on the contour to the runoff and the soil loss from the same treatment tilled uphill – down hill for the period of the record at location.

The following factors were considered before assigning P-value to contouring practice: (ridge height, storm severity and grading).

When grade is sufficiently flat along the tillage marks much of sediment eroded from the ridges separating the furrow is deposited in the furrows.

**Effect of ridge higher**

The produced ridges during of different heights.

The heights are classify as:

1. Very low
2. Low
3. Moderate
4. High
5. Very high

Data show that the greatest effectiveness of contouring were generally from plots having high ridges. Conversely data showed the least effectiveness of contouring.

 **How to obtain the contouring (P) under base condition depending on:**

1. (Pmb)
2. (Sc) land slope for which Pb which is desired
3. (Sm) the land slope at which contouring has its greatest effectiveness.
4. (Se ) the land slope above which contouring become in effective.

**Pb = a ( Sm – Sc )b + Pmb Sm > Sc**

**Pb = c ( Sc – Sm )d + Pmb Sc ≥ Sm**

**Pb = 1.0 Sc ≥ Se**

(a,b,c,d,Sm,Seb and Pmb) are constant.(Table)

Seb → Se

**Se = Seb [3.72 / Qk ]0.857**

Qk = compute runoff in (inch)

1 inch = 2.54 cm

Qk =

P= rainfall depth (mm)

S=

C.N = f (land use, treatment, condition ,hydrological soil group and soil moisture content)

S= difference between rain fall and runoff

|  |  |
| --- | --- |
| Ridge high(inches) | Parameters |
| Value  | Class | A | b | c | D | Sm% | Seb% | Pmb | Pz |
| 0.5- 2 | Very low | 24.120 | 4 | 10.36 | 1.5 | 5 | 11 | 0.85 | 0.50 |
| 2-3 | Low | 27.201 | 4 | 13.31 | 1.5 | 6 | 15 | 0.65 | 0.30 |
| 3-4 | Moderate | 23.132 | 4 | 12.26 | 1.5 | 7 | 20 | 0.45 | 0.15 |
| 4-6 | High | 18.051 | 4 | 10.24 | 1.5 | 8 | 26 | 0.27 | 0.08 |
| > 6.0 | Very high | 22.225 | 4 | 6.83 | 1.5 | 8 | 36 | 0.05 | 0.05 |

Pm= Pmb [Qk / 3.72 ]

Finally the contouring P-factor can be calculate from:

**P = 1-**

Note: For Se < Sm use actual slope steepness but for slope steeper.

**Sc =**

**The calculation (P) from above equation can be symbolized by (Po) which is applicable for on-grade contouring.**

**P- value for off-grade contouring can be calculate from:**

**Pg= Po+(1- Po)(**

Pg= contouring P- factor for off-grade contouring

Po= P contouring P-factor for on-grade contouring

sf = grade along the furrow

sl = land steepness

**Note**: in calculation of P – factor the land slope steepness is expressed as (sineθ ) of the slope angle of the land .

**Sine θ =** we use Sine θ for this subject(slope)

**tan θ =**