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# Soil and water Conservation Engineering

Presented By-

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# ESTIMATION OF EROSIVITY FROM RAINFALL DATA

1. **EI<sub>30</sub> index method**
2. **KE > 25 index method**



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# **EI<sub>30</sub> Index Method** **(Wischmeir,1965)**

- 1. Product of K.E of the storm and 30-min maximum rainfall intensity provides a best estimate of soil loss.**
- 2. The highest average rainfall intensity in any 30-min period during the storm may be computed from the recording type rain gauge chart or mass curve.**



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# $EI_{30}$ Index Method (Wischmeier, 1965)

$$EI_{30} = \sum KE \times I_{30(\max)}$$

$$KE = 210.3 + 89 \log_{10} I$$

Where,

**KE** = Kinetic energy of rainfall (metric tonnes per ha per cm of rain)

**I** = Rainfall intensity (cm/hr)

**$I_{30(\max)}$**  = Maximum avg. r.f. intensity in any 30 min. period of the storm (cm/hr)

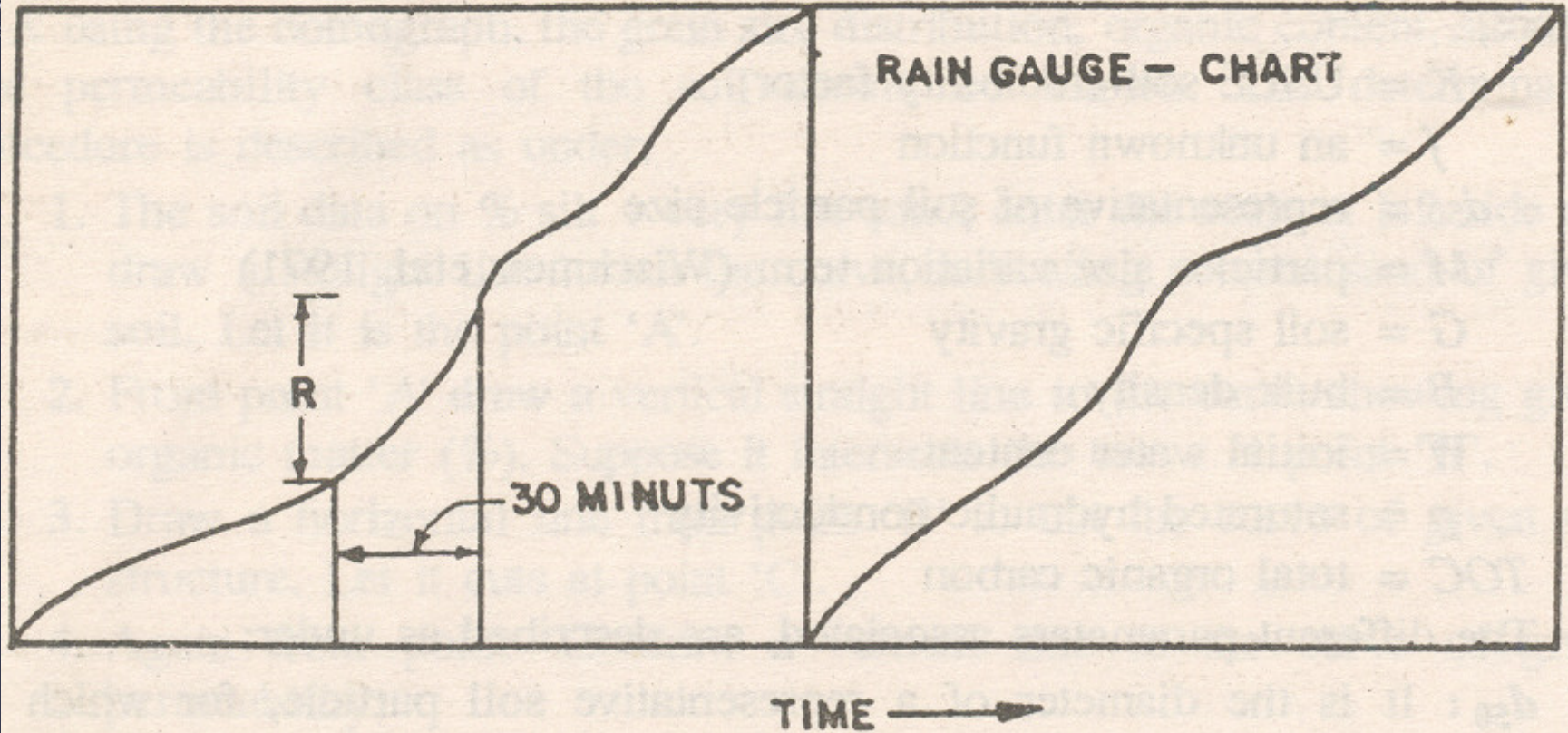


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# EI<sub>30</sub> Index Method

(30-minute rainfall intensity)







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# EI<sub>30</sub> Index Method

(30-minute rainfall intensity)

<i>Intensity (inch/h)</i>		<i>Amount (inch)</i>	<i>Energy*(ft. tons/acre)</i>	<i>Total (Col. 2 x Col. 3)</i>
(1)		(2)	(3)	(4)
Range	Average			
0-1	0.5	2.0	816	1632
1-2	1.5	1.50	974	1463
2-3	2.5	0.75	1048	786
> 3	3.5	0.40	1096	438
		4.65		4319 ft. tons/ acre



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# K.E. >25 INDEX METHOD(Hudson)

**For computing rainfall erosivity of tropical storms.**

**Estimation procedure is same as the  $EI_{30}$  index method.**

**Erosion takes place only at the threshold value of rainfall intensity.**

**From experiment, it was obtained that rainfall intensity less than 25mm/hr are not able to detach the soil particles .**

**Only those rainfall intensities, which are greater than 25mm/hr are considered.**



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# K.E. >25 INDEX METHOD(Hudson)

## 2. K.E. > 25 index method :

<i>Intensity (cm)</i>		<i>Amount (cm)</i>	<i>Energy* (m. tonnes/ha cm)</i>	<i>Total (Col. 2 x Col. 3)</i>
(1)		(2)	(3)	(4)
Range	Average			
0-3	1.5	2.5	2.19	* *
3-6	4.5	4.15	268.4	1114
6-9	7.5	2.35	288.2	677
> 9	10.5	5.25	301.2	1581
				3372 m tonnes per ha.





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# Thank You