

Strip Cropping: Agronomic Measure of Soil and Moisture Conservation

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SUMMARY

Strip cropping is type of agronomical practice in which crops are grown/planted in the form of relatively narrow strips, across the land slope. The crop strips are always arranged in such a manner that they should always be separated by strips of close growing and erosion resistance crops. This is a most effective technique used for control of soil erosion in certain soil and topography. It is most efficient when followed with crop rotation in the area where terraces are not practically feasible due to small segments of different slope in that length of slope. Strip cropping system check the surface runoff and increases the time of opportunity for infiltration into the soil which facilitates to the rain water conservation. This technique is about two times more effective than contouring, but not registered greater effect on soil conservation as terracing and bunding. Generally this practice is adopted in those areas for soil conservation where length of slope is not too longer.

INTRODUCTION

The strip cropping system conserves the soil as well as encourages the infiltration in the soil due to following reasons

- The strips of row crops provides an obstruction to the flow path of surface runoff, which resulted into, increase the time of opportunity to the surface water to stand more time in between the rows. Due to this phenomenon, a large amount of water is infiltrated into the soil and runoff quantity is reduced significantly accordingly reduction in soil loss takes place.
- The crop root system makes the soil more porous, which resulted into more amount of water infiltration in the soil thereby reduction in runoff and soil loss.
- The additional intake path is available to water along the root of the plants, which create a similar effect on soil, and water conservation as discussed above.

Soil types, structure of soil, infiltration rate, porosity, erosion etc, are influences on the effectiveness of strip cropping. The soil, properties are greatly influenced on water intake capacity. From various, investigations, it has been observed that 2-3 times greater soil loss, in moderately heavy to heavy sub soil than light textured sub soil for same slope of land. The length of land slope and degree of slope has positive effect on soil loss. A soil having steep slope resulted into greater soil loss than the gentle sloped soil. The erosive power i.e. kinetic energy is increased due to increase in slope inclination as a result soil loss increased. Also effect of slope length increases the soil loss. The combined effects of both are more significant in contest of soil loss.



Types of Strip Cropping

Following are the general types of strip cropping systems.

Contour Strip Cropping

In this system, crops are grown in strip along the contour and across the natural land slope. The crops should be grown in a definite rotational sequence, but it is not necessary to follow all the crops must be in the rotation in the same field and in the same year. Generally rotational sequence helps to the checking the runoff and soil loss for, checking the flow of surface water. Contour strip cropping is adoptable on flat land across the slope instead of undulating land. Significant role of strip cropping system has been observed with respect to soil and water conservation, when it is combined with terracing. The strip width of crop is depends on the slope and topographical features of the area.

Buffer Strip Cropping

Grass or legume crop strips are laid between the contour strips crops in regular rotation. The strip width is generally varies as per site specific conditions. It maybe even or uneven but usually 2 to 4 m wide and are spaced at 10 to 20 m horizontal intervals. Mainly these are adopted on critical slopes of the field to protect the land from soil erosion.

Field Strip Cropping

It is similar to contour strip cropping with small changes; crop strips are laid parallel, across the land slope. They are not exactly laid on the contour line. The strip may be changed. This system is mostly used for irregular or undulating topography. In field strip cropping depressed areas should be left for grass waterways so that runoff water should be safely discharge through outlets.

Wind Strip Cropping

Without regard of the contour, the crop strip of uniform width is laid in the field at right angles to the direction of prevailing winds. These strips check the wind erosion rather than water erosion. This system is widely adopted for level or nearly level topography. Recommended strip widths for wind erosion as under;

Soil Type	Strip Width (M)
• Sandy soil	6.0
• Loamy soil	7.0
• Sandy soil	30.0
• Loam	75.0
• Silt loam	85.0
• Clay loam	105.0

Layout of Contour Strip Cropping

Followings steps are followed while laying the contour strip cropping;

- First decide the width of strip at narrower points. Minimum width should be 25 m.
- By establishing the points for locating contour line. This line will form lower bounding of the first strips..
- Locate the next point at 25 m. apart from the top bounding of first strip of the field along the steepest slope portion.
- Draw the contour line passing through the points up to field boundaries.
- Repeat the procedure until the complete field layout.

Width of Contour Strip

It depends on degree and length of land slope, allowable soil loss, arrangement of crop grown in ratio, cropping system, soil type, and maximum rainfall intensity size of farm and used farm equipments. I hilly region, where terracing is needed, width of strip is to be adjusted according to the vertical interval of terrace. As the slopes of land increases, horizontal interval decreases i.e. contour strip width is less and vice-versa. Steeper slope

soils require growing of dense crops. The approximate range of strip width, with respect to average land slope and soil type is presented in following table:

Table : Approximate Strip width Under Various Slope for Different soils.

Sr. No.	Type of soil	Strip width under various slope conditions (m)			
		Average percent land slope			
		2%	5%	8%	11%
1	Good Soil	51	42	33	25
2	Fair Soil	42	33	25	17
3	Poor Soil	33	25	17	17

Normally the width of buffer strip is kept 3 to 5 m in a permanent contour strip

CONCLUSION

The velocity of runoff is reduced due to an obstruction to the flow path flowing through row strips. The kinetic energy of the flowing runoff water is dissipated due to an obstruction created by the row crops that resulted into reduction in flow velocity. This promotes to deposition of soil particles suspended in the runoff, over the soil surface thus promoting conservation of soil and water in field.

REFERENCES

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