



Crop Rotation and Its Impacts on Soil Health Sustainability

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The Green Revolution Technology increased the production substantially in terms of quantity but failed to achieve the quality of traditional agriculture in terms of food and fodder. The technology includes high yielding seeds, irrigation and chemical inputs (fertilizers & pesticides, insecticides, herbicides, etc.) without adding organic matter in field. Thus it became most cost-ineffective technology as well as gradually decreasing soil productivity.

Principles of Crop Rotation

1. The crops with tap roots (deep rooted) should be followed by those, which have fibrous (shallow) root system. This helps in proper and uniform use of nutrients from the soil.
2. The leguminous crops should be grown before non-leguminous crops because legumes fix atmospheric nitrogen into soil and add more organic matter to the soil.
3. More exhaustive crops should be followed by less exhaustive crops because crops like potato, sugarcane, maize etc., need more inputs such as better tillage, more fertilizers, greater number of irrigations etc.
4. Selection of the crop should be demand based.
5. The crop of the same family should not be grown in succession because they act as alternate hosts for insect pests and diseases.
6. An ideal crop rotation is one, which provides maximum employment to the farm family and labour and permits efficient use of machines and equipments and ensures timely agricultural operations simultaneously maintaining soil productivity.
7. The selection of the crops should be problem based *i.e.*
 - a) One sloppy land, which are prone to erosion, an alternate cropping of erosion promoting and erosion resisting crops like legumes should be adopted.
 - b) In low-lying and flood prone area, the crops, which can tolerate water stagnation, should be selected.
 - c) Under dry farming the crops, which can tolerate the drought, should be selected.
 - d) The selection of crops should suit farmer's financial conditions.
 - e) The crop selected should also suit the soil and climatic conditions. (Chandrasekharan *et al.*, 2010).

Advantages of Crop Rotation

- ❖ Crop rotation helps in maintaining of soil fertility, organic matter content and recycling of plant nutrients.
- ❖ All crops do not require the plant nutrients in the same proportion. If different crops are grown in rotation, the fertility of land is utilized more evenly and effectively.
- ❖ Restorative crops like heavy foliage crops and green manure crops included in rotation increase the nitrogen and organic matter content of the soil.

- ❖ Helps in control of specific weeds like bermuda grass, cyprus (sedges) and *Trianthema portulacastrum*.
- ❖ Avoids accumulation of toxins and maintains physical properties of soil.
- ❖ Controls certain soil borne pests and disease.
- ❖ Reduces the pressure of work due to different farm operations in a stipulated period of time.

Conclusion

Crop rotations clearly enhance soil microbial biomass and activity, which are now considered a pillar of soil health, and it appears from some researcher's study that rotations also facilitate microbes in supplying more soil nitrogen to crops.

References

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