



Tree in Farmers Field: A Winning Approach for Farming Community

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World population increasing day by day and demand for food along with land available for cultivation shows decreasing trends. Farmers are not able to fulfill the demand of food by monocropping and due to climate change farmers are facing difficulty as well. Inclusion of tree on farmlands provides better opportunities for not only assured income and diversified products but also minimizing risks and reduced the impact of climate change. Trees provide productive and protective benefits in farming lands which will help the farmers to address the problems of farming community.

Introduction

Many years have seen increasing focus on food security and efforts for sustainable income of farmers. A huge population is increasing the demand for food, whilst climate change is having a negative impact on agriculture in many parts of the world. At the same time there is recognition that the natural environment is fundamental to the delivery of ecosystem services. For agricultural production this means healthy soils, pollinating insects, climate regulation, and plentiful and clean water. But farming also has an impact on wider ecosystem services for society, including maintaining water quality, mitigating flooding, and supporting biodiversity. Whilst the environmental impacts of modern agriculture have often been criticized, technology has brought huge benefits. The development of sustainable agriculture depends on supporting and increasing production, whilst maintaining and improving the condition of the natural environment. A winning approach is required to fulfill these aims. While growing trees on farm is as old as settled cultivation but paradigm shift towards a new word derived called 'Agroforestry' which means practices developed by the farmers to cultivate trees on same piece of land management units as in agricultural crops and/or animals. Agroforestry have the capacity to support production and deliver benefits which make sense at a farm scale also delivering wider public good as well as maintaining and improving the condition of the natural environment. Planting trees on farms doesn't mean taking land out of food production to create a forest; it is about using trees so that they work for farm and farming system.

Important Benefits of Planting Trees on Farmland

Manage soil and reduce erosion: Soil erosion can reduce the long-term fertility of the soil by removing nutrient-rich topsoil and organic matter, and the risk of it occurring is higher where rainfall is more intense or strong winds are common. Planting trees along contours or areas known to be particularly windy can create natural barriers that protect soil and crops from the

full impact to strong winds or rain. Deep-rooting trees also help improve soil stability, while an increase organic matter from leaf litter can improve the soil's structure and reduce surface water run-off.

Shelter for crops: Dry springs and summers seasons can be disastrous for crops, causing poor germination, reduced growth rates and lower yields. Planting of trees in field can help to protect crops against drought by modifying the microclimate around the crop, reducing wind speeds which can remove moisture from the air. Trees can also help extend the growing season for grass, as the shelter they provide can raise soil temperatures in early spring and late autumn.

Drought and water conservation: Water is lost from pasture and crops through a combination of evaporation from the soil surface, and transpiration, as water vapour is lost from plants through leaf surfaces; trees modify the microclimate by reducing wind speeds and increasing daytime temperatures. Lower wind speeds increase the level of humidity around the plant surface slowing evapotranspiration water loss. The effect is that, although pasture and crops protected by shelter may use the same amount of water as non-sheltered crops, they will have increased photosynthesis rates and increased water use efficiency

Timber: Native woodland can produce timber for use on the farm or to diversify farm income. The first harvest of timber from new woodland is likely to be at around 15-20 years. Small diameter timber can be used for fencing or sold into bulk markets, whilst larger timber might be used for farm buildings or for sale to sawmill. Where there is a strong local demand, specialist uses such as thatching spars, birch for horse jumps, and willow for basket making, can also generate income.

Improve animal welfare: All farm animals are vulnerable to increased temperatures and for outdoor poultry and livestock, solar radiation, which affects feed intake, reproductive performance and susceptibility to disease. Trees on farmlands provide shelter to reducing exposure of animals in extreme weather as well as planting trees and hedges can also contribute to animal health and welfare.



Fig: Benefits of trees on farm lands

Greenhouse gas emissions: India along with whole worlds struggling for climate change due to Greenhouse gas emission. The planting of trees on farms, for whatever purpose, will have some benefit in capturing atmospheric carbon and offsetting these emissions.

Assured income and minimizing risks: Trees garden are a great environment for “tourist” activities such as cycling and running as well as a regular source of firewood, and if managed correctly, valuable timber. Silvoarable systems, which take advantage of the effects mentioned above by planting trees alongside crops, and silvopastoral systems, where trees are planted where livestock roam, can also provide diversified incomes. Not only can they provide alternative feed sources, they can also offer alternative crops such as fruits and nuts. Besides providing assured income it also helps to manage risk of sudden crop failure due to natural clematis

Conclusion

The tree on farmlands is vital to meet the challenges of climate change, while maximizing productive use of the land and supporting biodiversity. Planting trees and farming need not be viewed as competing land uses but complementary ones, working with the grain of nature to best effect. Trees planted in the right location provide shelter and shade for animals and crops, wind damage to crops is reduced and the efficiency of water irrigation is improved. Trees can also help to reduce surface water and nutrient runoff into rivers as well as providing an alternative and sustainable source of on-farm energy and timber.