

Role of farmer cooperatives for participatory learning and scaling conservation agriculture: a case of Haryana, India

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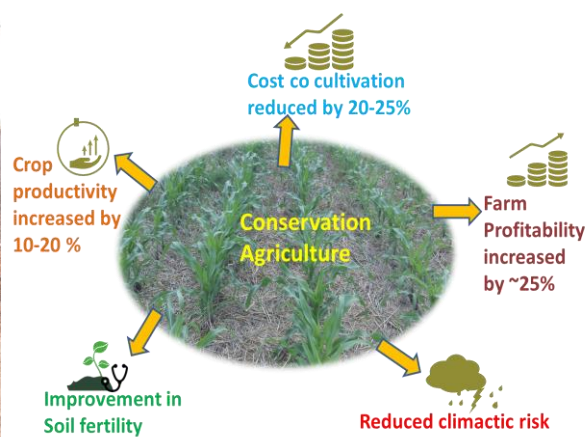
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Introduction

The farmers of north-western Indian states of Haryana and Punjab are known globally for their forward looking behavior, dedication and contributions in ushering Green Revolution (GR). Since the GR era, rice-wheat rotation has become a major production system in these states and contributing significantly in national food pool. However, continuous cultivation of this monotonous cropping system since last 5 decades poses the multiple challenges of declining ground water table and soil health, degrading natural resources with speedy climatic aberrations to the farmers. These challenges further intensified by the faulty practices such as, crop residue burning, traditional cultivation practices and application of fertilizers and water without considering the temporal and spatial variability. During the recent past, the climate has been very disloyal with increased aberration, intensive and untimely rainfall and reduced number of rainy days, resulted into reduced crop productivity and farm profitability.



To overcome these challenges, Climate smart agricultural practices (CSAPs) are being deployed for adapting to climatic risks while enhancing productivity and quality of environment in the prevailing RW rotation of IGP. Sustainable crop production may be achieved by bringing improvement in the crop and water productivity. The increase in the crop water productivity may be achieved by pursuing alternative crops and cropping systems, which are more friendly and efficient in utilizing natural resources.

Objectives

The aim of deploying CA based societies is to remove ill effects of climate and conventional agriculture practices and to create the knowledge hubs so that the farmers of nearby villages can share their problem and can get knowledge on the new tools and technologies

Methodology

Farmers participatory research on conservation agriculture (CA)/ climate smart agriculture (CSA) and extension system was devised with creation of Farmers' Society networked with research and developmental institutions in Haryana, India. Initiated in 2010 at grassroots, this aimed to promote conservation agriculture using philosophy of knowledge co-production where various stakeholders learned from each other. The aim of deploying CA based societies is to remove ill effects of climate and conventional agriculture practices and to create the knowledge hubs so that the farmers of nearby villages can share their problem and can get knowledge on the new tools and technologies. At society level, farmers' participatory research trials were conducted to enthuse and support fellow farmers demonstrating the new crops, cropping systems, tillage and crop establishment methods, precise water and nutrient management and also use of ICTs on their farms.

Results

Adoption of CA/CSA based technologies enable farmers to insulate the climate change impact such as terminal heat in wheat and mitigating adverse effect of untimely intense rains in wheat and maize crop. Availability of new seeders (Happy Seeder) for wheat sowing reduces the rice residue burning drastically in the region and helped in soil fertility improvement which resulted in higher system productivity (10-20%) and farm profitability (~25%) without deteriorating the environmental quality and natural resources. Through societies acts as custom hiring centers and visiting platforms where thousands of stakeholders visited to get newer knowledge and policies adapted to the specific agro-ecosystem. Providing knowledge on precise water, nutrient, herbicide and pesticide management practices opening the new avenues for business creation to the small holders in the region.

Conclusion

Results showed that conservation agriculture/climate smart agriculture practices were found more adapted to climate risks rather than conventional practices. Different CSA practices offers opportunities to address the issues of crop adaptability with projected climate change in RW rotation for high and stable productivity and profitability while improving the natural resources (water and energy) as well as reducing environmental footprints.