Industrialization of the Agriculture which happened during the World war (Around 1940) has started the spike on the global temperature, which till date has not stopped. Their lies some of the key proponents of Global Warming, which is Industrialized agriculture to increase Yield per hectare. For global hunger index to be low across the world and for adequacy ratio to be uniform across all nutrients, we need a sustainable Food production system. This can be achieved by building a Sustainable Crop management system which majorly covers Crop diversification and natural farming methods.

**Challenges in industrialization of agriculture**

Some of the challenges in current agriculture system which has a devastating effect on climate change directly or indirectly:

1. **Stubble burning:**

One of the most common practice followed in farming is stubble burning where tonnes of rice straws are burned to remove the wastage and weed required for next cultivation. This has adverse effects on climate, contributing majorly in high AQI index. It also degrades the soil fertility by destroying the friendly organisms required to maintain the nutrients and moisture in soil

1. **High usage of pesticides and fertilizers:**

To protect their crops, farmers tend to make extensive use of harmful pesticides and fertilizers which degrades the soil quality and negatively impacts health of consumers.

1. **Irrigation using fresh ground water:**

This has been a cause of concern for most of the states in India. Using fresh ground water for irrigation has depleted the water level to an extent which is close to a drought like situation in many places.

If the world continues practicing these agricultures techniques, within next two decades, there will be scarcity of water, clean air, and fertile soil. Due to non-availability of all these resources, farming would be near to impossible, and the world would be moving towards situation of hunger. To avoid this situation, our team is building an AI based platform to provide a sustainable solution for the above problem- Crop Diversification for Zero Hunger

**How Crop Diversification will be a solution to these problems?**

Crop diversification allows farmers to produce variety of crops in a given area by substituting staple crops like wheat and rice with other products that helps in retaining the soil nutrients and are not water-intensive crop. This would help in mitigating the negative impact of problems discussed above.

Paddy harvesting leads to tones of rice straws which becomes a major challenge for farmers to remove this waste so that the field is ready for next cultivation. Substituting the major proportion of rice production with other nutritious crops (like millets, soyabean, maize) will resolve the issue of stubble burning to great extent.

Furthermore, growing millets are highly nutritious for the soil and does not guzzle water like paddy. This will gradually reduce the usage of pesticides as well as ground water. Adding to this, growing fruits, millets etc helps rainwater to perforate and contributes in retention of ground water which is not possible in case of paddy due to its cultivation methods.

**Our solution: AI based crop recommender system (based on IBM Watson Studio).**

The AI based crop recommender system that we propose here would allow farmers to grow alternative climate-friendly crops under the same climatic and soil conditions without having to undergo any economic or financial loss.

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