SOLUTION

Q.1.) How can crop production be boosted using technology? Give a High-Level algorithm

ANS.1 We will make an app ‘crop booster’ by using technology such as Machine Learning and deep learning. This app will be capable of real time identification of crops, weeds, diseases and pest damage and nutrient deficiency symptoms etc. The algorithm that would be followed is as follows,

1.Collect the database of information of the following parameters ph. level of soil, climate, nutrient content of soil, pests, weeds, type of crop, region where crop is planted, equipment/method used and also the photos of diseased as well as healthy crop and different soil samples.

2.Through our app the user will be able to click pictures of crops and our application will compare it with the most suitable, resembling picture from data set using deep learning. It would then provide information about the crop by analysing the picture.

3. We will suggest fertilizers/pesticides/weedicides and methods according to the analysis done by the app with the help of machine learning. Some modern machines and equipment's should be suggested to farmers which is best for their crop.

4. Based on the findings and the amount of crop that would be produced in their respective fields, they should be provided loans at low interest rates.

5. Also drones can be used for identification of fully grown and immature crops. They can be used for soil monitoring also.

Q2. How do you plan to integrate illiterate farmers into your solutions?

ANS.2

We plan to integrate illiterate farmers in our solution by providing them basic knowledge about handling mobile phones. Henceforth we will provide them helpline number(toll-free) so that they can contact agricultural experts easily. Local consultants should visit farmers regularly with our app so that they can test the crop in real-time and provide preventive measures to the farmers on the spot. We can build local consulting centres for farmers in every village/district where farmers can take their soil samples for testing ph level and crop sample to detect if it is infected by any disease/eaten by pests.

Q3. How can Machine Learning and Artificial Intelligence be used to control the crop’s Minimum Support Price and help the farmers? Give a rough model.

Machine Learning can be used to identify patterns in the previous MSP’s i.e. how the MSP got affected due to certain conditions and then as per the present conditions can predict the price.Also, with the help of Artificial Intelligence we can study any other external factors like politics, natural calamity, sudden boom or depression in country’s economy ,consumption and production of a certain commodity in a particular area, country’s imports and exports etc. The combined results can then be used to predict the MSP.

Q4. How can this rough model be implemented on a National Scale?

ANS.4 We plan to implement this model on national scale by building one central laboratory for 2 to 3 combined villages where testing can be done as well as prediction can be done and then best suitable treatment could be advised. Farmers which are capable enough to purchase and use smartphones will click images of their field. they should provide information about ph. of soil, time when seeds were sown, weather conditions so that quick evaluation of the crop can be done while sitting at home. By following either of the above two steps farmers will be advised to adopt a methodology which is suitable for their crop. Also, information / regular updates on when to sow seeds, harvest the crops, and which type of crops are suitable for their region can be broadcasted through radio, television, newspapers and messaging. We could also organize workshops on regular basis in the central laboratories on emerging technology in field of crop production, how to cultivate the crops to get maximum profits, awareness about eco-friendly fertilizers. Farmers which are not capable of purchasing modern tools and equipment's should be provided loan by the banks at low interest rates.