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## Editorial

### Agrometeorological Data Network and Management for Resilient Agriculture

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In recent times our planet earth has been subjected to a constant increase in air temperature. As our climate continues to heat up and the impacts of that warming grow more frequent and severe, farmers and farm communities around the world will be increasingly challenged. In the long list of potential problems from global warming, the risks to world agriculture stand out as among the most important. Most developing countries have less capacity to adapt than do their wealthier neighbors. Most are in warmer parts of the globe, where temperatures are already close to or beyond thresholds at which further warming will reduce agricultural output. Notwithstanding this aspect, intra-annual variability and decrease in total rainfall has caused effects on water availability to crops and periodic water crises. In this regard, physiological effects on the behavior and adaptation of crops to mitigate these adverse effects, are being carried out, actions such as genetic improvement, use of genes as latent (maize) to overcome heat and water stress, osmotic adjustment allowing a greater water difference from soil to leaves to enhance crop water absorption during critical values of stored water in the soil, stomatal sensitivity in order to suppress excessive loss due to transpiration of crops have been carried on for many scientists. Even regarding these improvement, climate and weather variability are the main restrictive factors in agricultural production and even in animal environment.

Even regarding scientific approach, the degree of success in the application of meteorological tools to agriculture is depending on several factors, viz., the level and exchange knowledge between agricultural research and outreach, agrometeorological services, agricultural organizations and cooperatives, in addition to farmers (end users). An important step in the better use of information from agrometeorological bulletins is the synergy with the agricultural outreach system, agricultural cooperatives so that farmers, stakeholders, can better use the determined recommendations, to prevent crop yield failure and mitigate water and climate alteration

crisis.

To better analyze and quantify the effect of climate on the production and development of crops, a meteorological station becomes a high priority task- An agrometeorological network can provide meteorological data and information useful for the planning processes of activities to support farming during crop development at different stages. Obviously, this agrometeorological network and its information are better evaluated and understood with support and sharing with information by satellite and radar data. The minimum meteorological information necessary for planning agricultural processes are: air temperature and humidity (daily, average and extremes), rainfall (daily, hourly and monthly totals) incident solar radiation (daily and hourly total), soil moisture (daily average value in the root development zone), soil temperature (daily average value in the root development zone) wind speed at 2 meters height (hourly and daily average values), soil heat flux. However, these data must be readily available and accessible to farmers, stakeholders, private or public agencies so that bulletins and reports can be prepared. For a better understand for the users and planning of the agriculture process and generation of reports crop and soil information must be added, the basic principle of an Agrometeorological Information System-AIS, in a scenario of variability and possible climate change scenarios, is as follows:

- To establish a reasonable Weather Station Network with online data collection.
- To encourage farmers, cooperatives, extension workers to provide information that will help them in decision-making processes in relation to agricultural activities.
- Issue alerts and warnings about the probability of occurrence of adverse weather conditions such as: frost, fire, flood, hail, drought, in order to allow for measures.

- Provide parameters for pest and disease control through application of agrochemicals.

The aggregation of meteorological factors in an agile and intelligent way that allows continuous monitoring of the actual agrometeorological conditions and projecting future agrometeorological conditions considering a warming scenario (increase in air temperature or water restrictions such as precipitation variability (projection of La-niña phenomenon, prediction of reduced precipitation etc) will for sure mitigate negative effects

of meteorological hazards on agricultures. Emphasizing that the climate is responsible for about 70 per cent of the reduction in agricultural production, the forecast climate scenario in setback (1 to 6 months) or future prediction allows give support to establish necessary measures to mitigate adverse effects or establish long-term adaptation of crops in climate scenarios. Farm advisories for response farming using local agrometeorological information will be of immense help for resilient agriculture through decreased danger and enhanced productivity.