

CONCLUSIONS (Resolution)

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1. The Symposium brought out very clearly that with the increasing population in the arid and semi-arid Zones water will become the most limiting factor for further development of welfare in these regions. In the future this valuable resource should be handled more carefully, especially for irrigation. Water saving irrigation systems therefore have to be improved by agricultural and hydrotechnical research. In rainfed semi-arid regions more information and research is needed about available water for the crop during the growing season.
2. Due to the scarceness of fresh water purification processes, such as desalinization etc., need more attention and recycling of water will be a very important research item for the re-use of irrigation water.
3. Irrigation does not only mean the simple application of water, but includes various complex problems. The correct use of this tool in the field of plant production demands more knowledge about the influence of water on the physical, chemical and biological properties of soils.

More research is needed to ensure:

- that the correct type of irrigation is used for a given crop,
 - that water is applied in such a way as to minimize soil erosion,
 - that timing of irrigation is developed to prevent plant stress at critical points in crop production,
 - that the quality of irrigation water is known in order to assure that leaching of harmful salt concentration is achieved and to design adequate drainage systems.
4. In order to control the salinization and alkalization of soils, ground waters and surface waters (irrigations waters) the following aspects are of major importance:
 - Proper survey of saline and alkali areas with particular regard to the potential salinity and alkalinity of irrigated soils, or soils to be irrigated.
 - Control of salt balance in order to prevent toxic salt accumulation.
 - Study of effects of fertilizers on the salt balance in irrigated soils and optimal patterns for the types and dosages of fertilizers.
 - Interactions between irrigated water, soils and plants with particular regard to the salt tolerance problems and to physics, surface chemistry, mineralogy and minor element conditions in soils.
 5. A further challenge to agricultural chemists is the development of adequate and more efficient methods in the use of fertilizers combined with irrigation. This requires an improvement of soil fertility methods on the basis of long-term fertilizer-irrigation experiments in which an adequate supply of micro-nutrients is included.
 6. In order to achieve maximal water and nutrient efficiency of salt tolerant plants, it is also an imperative for the agricultural chemist to cooperate with the breeder.
 7. The economics of fertilizer use must also be a major objective of research. Fertilizers are a major factor in increasing yields and profitability. The results of this research – preferably based on long-term-experiments – should not only evaluate the physical response but also the economic returns.