



## SS05

### Global food and water sustainability - challenges for the third millenium

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The world population is growing faster than in the last century. Some countries have opened their commerce overseas. In particular, food commerce has been increased to satisfy increasing demands of their populations, resulting in a less controlled grow of food production, particularly food commodities. This higher demand of commodities has been partially satisfied by improving the production technology but also increasing cultivated areas, which result in the use of areas previously occupied by wild biota. Also cattle production has shifted to less favorable areas as an additional consequence of increased production of crops and soya. Modern agricultural practices make intensive use of agrochemicals to warrant both productivity and health of cultivars. On the other hand, cattle production uses veterinary drugs, accelerated grow systems (feed lot and similar), sometimes using non authorized anabolic products.

Within this framework, South America (SA) is probably the area showing the highest and fastest increase in food production, which result in almost uncontrolled augment of areas dedicated to the production of soya & crops. Particularly Brazil & Argentina but also Uruguay & Chile have strongly increased their national income from export of food commodities, in addition to a growing production of bio-fuels. The increase of international prices for soya and maize have been the main argument used for small and big farmers to increase the cultivated area, affecting native forest, spreading agrochemicals in the proximity of cities, controlling pests and weeds but also affecting non target organisms. In addition to SA, many other countries dedicated to the production of food commodities are also facing this problem, including China, USA & Europe. The increased cultivated area is only part of the problem, the second part is the intensive use of agrochemicals, which affect the biota of soil, water and surrounding forest. Modern agrochemicals are designed to reduce toxic effects on the environment; however, non-target organisms are affected by their intensive and extended use, even though low doses could be used. Moreover, the combined use of several agrochemicals represents a threat to the wild biota, which has been not enough studied yet.

Water scarcity and droughts have increased in number and intensity in several regions of the world and it is foreseen that these conditions will increase with climate change. The direct implications of global change on hydrological regime are certain. In Europe, the Mediterranean Basin is one of the most vulnerable to climate change and one of the most prominent 'hot spots' for changes in water availability due to human abstraction. It is foreseen (IPCC) that these changes will probably not be limited to catchments draining into the Mediterranean Sea, but will affect all Mediterranean-type regions worldwide. In some regions of Africa problems due to water scarcity and quality are having a serious negative impact on human health, and the situation is expected to become even more dramatic in the next future as a result of global changes. Similar problems, in different degrees of intensity, are already occurring and are also expected to increase in the next years in several other regions around the world. Therefore, water scarcity and quality is a major issue requiring more knowledge and solutions to face it urgently.

The session will discuss key issues concerning the effects of water scarcity on chemical water quality, as it relates to nutrients, organics and pollutants and on the effects on water supply and sanitation services, as well as water management practices. Also this session should bring additional discussion on the effects in biodiversity conservation and the services provided by ecosystems. The main goal of this session is to face scientist with these problems, which are particularly critical in developing countries and the Mediterranean area. Presentations on increased use of land for agriculture and biofuels and its consequences on wild biota and biodiversity at different part of the planet are expected as well as the problems associated with water scarcity in the freshwater ecosystems of the Mediterranean region. Particularly, the negative effect of deforestation and indiscriminate use of 'low toxic' agrochemicals on non-target species as well as the assessment to freshwater ecosystems under scarcity should be highlighted.