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Supporting Irrigation Strategy by functional soil maps

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Sustaining proper soil moisture is essentially important in agricultural management. However, irrigation can be really worth only, if sufficient emphasis is laid on soil conservation. Nationwide planning of irrigation needs spatially exhaustive, functional soil maps, which may support proper recommendations for the different areas.
The expected products for the support of the national irrigation strategy are nationwide functional soil maps, which reveal the pedological possibilities, conditions and circumstances of irrigation by the spatial modelling of the relevant functional features of the soil cover. The thematic maps are supposed to spatially model the productivity and irrigability of soils, as well as their relationships and vulnerability. The targeted spatial resolution expressed in grid size is 250 m.
Productivity is expressed by land quality for the agricultural areas of the country along various management forms (extensive, intensive, irrigated, non-irrigated). The production increase due to irrigation is estimated by the consideration of soils agricultural potential, where the anthropogenic management factors, which have effect on the efficiency of the production, are integrated in the form of scenarios in lack of the availability of proper, spatially exhaustive data.
Negative consequence of irrigation are taken into account in two forms:
(i) Estimation of salt accumulation hazard, secondary salinization.
Based on the original factors of salt accumulation, estimation algorithm is established for the salt content of soils providing their significance in the occurrence of salt affected soils. Using monitoring observation, the trend type changes in the depth and salt content of groundwater are also taken into consideration.
(ii) Estimation of soil compaction, structure degradation risk.
Vulnerability of soil compaction and structural degradation are closely related issues. Differential porosity changes (e.g. ratio of macropores) within a given soil group could be taken as primary indicator of structural degradation, while the changes in bulk density can indicate the susceptibility for compaction. Using profile and map-based soil physical databases, pedotransfer functions are elaborated for the correlations between descriptive soil parameters and indicators.
The newly compiled maps can help decision makers to improve land use management, taking soil conservation into consideration.

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