Key words: agro-physical metrology, frequency reflectometry, reflectometric probe, soil moisture, soil salinity

Summary

Measurement of salinity of the soil is thoroughly described in the literature, especially by authors dealing with the examination of physicochemical parameters of soil in areas threatened by drought. Soil salinity, treated as electrical conductivity of the soil solution, can’t be measured in a selective way. This follows from the fact that on the measurement has influence not only the salt content in the form of dissolved ions, but also soil moisture, temperature and texture. Thus, measurement of soil salinity, especially in field conditions require continued work on the methodology and measuring apparatus used. The ideal meter of soil salinity should be measured instantaneous values of all elements of significantly affecting the measurement result, at the same time and same place. The use of dielectric sensors working in the time and frequency domain reflectometry method, opened up new opportunities to integrate measurement sensors of humidity, electrical conductivity and soil temperature in one device. The article presents the electrical model of the FDR sensor designed to measure the salinity of soil as a partial derivative its electrical conductivity to relative real part of complex dielectric permittivity, working in the frequency range from 10–500 MHz. His innovation is to use a wide range of measuring frequency in order to identify factors influencing the soil salinity observed by changing the test frequency.