Classification of crops is the compulsory step for advanced applications in precision agriculture as each crop has different phenology. It is often difficult to discriminate crops using single multi-spectral data. This obstacle is overcome by using multi-temporal or time series satellite images. Depending on the number of crops of interest, increasing number of images are needed.

Satellites such as Landsat 8 has 16 day global coverage while its resolution is 30 meters. On the other hand satellites which are aimed to be used in agriculture have higher resolutions (SPOT-6/7: Pan/MS 1.5/6 meters, RapidEye: 6 meters, Sentinel-2: 10 meters). These satellites could be used for detailed analyses. However, there are not enough data sets for high resolution satellites for time series training data construction.

In this study, Time Series obtained from Landsat 8 is applied to SPOT-6/7 and Göktürk-2 satellites. This study focuses on classification of Wheat, Corn and Cotton in Harran Plains, Southeastern Turkey. Spectral Angle Mapper (SAM) and Dynamic Time Warping Methods (DTW) methods are utilized. All images are radiometrically corrected and interpolated. Results show that cross satellite time series classification could be used with high accuracy.