

**Project Title** : Investigations of Biological Control Facilities of Potato Brown rot Disease Caused by *Ralstonia solanacearum* Using Endophytic Bacteria

**Start Date** : 2015

**Supporting Body** : GDAR

**Leader** : Neziha ARSLAN

**Co-researchers** : -

**Summary** : Potato playing an important role in human nutrition is widely grown all over the world. *Ralstonia solanacearum* causing potato brown rot disease is one of the most important pathogen of potato. The pathogen taking part in quarantine list of many countries has very limited distribution in Turkey. It has been detected up to now only in Balıkesir (Altınova), İzmir (Dikili) and Bolu. Legal and cultural precautions are taken to prevent the pathogen spread and no effective chemical control is present. Although all measures taken the pathogen may continue to spread. For this reason alternative control measures are necessary.

Biological control with its eco-friendly feature seems to be one of the most important alternatives. The use of endophytic bacteria is a new approach in recent years against plant diseases.

The purpose of the study is to investigate the opportunity of using endophytic bacteria promoting plant growth in biocontrol of *Ralstonia solanacearum* and colonization of the effective endophytes inside the plant.

In this study, healthy potato plant samples will be collected from the potato production areas of Odemis, Kiraz, Tire, Dikili, Beydag and Bergama in İzmir and Altınova in Balıkesir during blooming period and endophytic bacteria will be isolated from these samples. Isolated endophytic bacteria will be identified by morphological and biochemical techniques. Biocontrol and growth promoting abilities of endophytic bacteria would be tested *in vitro* conditions. According to *in vitro* test results, promising endophytic bacteria strains would be selected for further *in vivo* pot tests in order to evaluate of their biocontrol and plant growth promotion effects. Two endophytic bacteria, which were found the most successful will be selected for *in vivo* biocontrol and plant growth promotion, and pathogenic bacterium (*R. solanacearum*) will be monitored for the colonization and population dynamic in the plant tissues.

At the end of the study, in case of determination of effective endophytic bacteria against the quarantine pathogen with no effective control measures, an alternative solution will be achieved.