High-throughput screening and identification of novel chemicals enhancing plant defense against pathogens/pests

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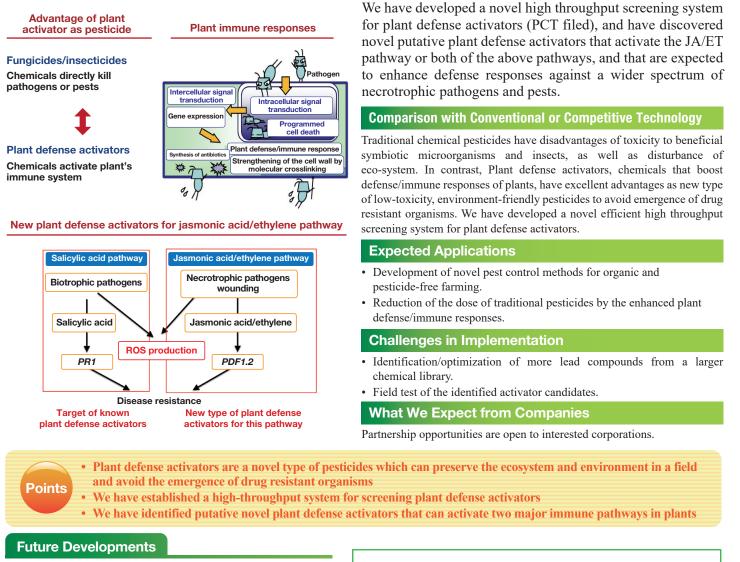
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Purpose of Research

Control of pests and diseases is a critical issue in crop production, since biotic factors cause economic losses of \$220 billion. Since traditional chemical pesticides have disadvantages such as the emergence of drug resistant organisms and the toxicity to beneficial symbiotic organisms and insects, i.e. possible disturbance of ecosystem, an entirely novel approach to protect crops from pathogens and pests is needed.

Plant defense activators, chemicals that boost defense/immune responses of plants, have excellent advantages as new type of low-toxicity pesticides which does not lead to emergence of drug resistant organisms. The plant immune system consists of two major pathways, involving salicylic acid (SA) and jasmonic acid (JA)/ethylene (ET). Only a few plant defense activators that activate only the SA pathway are available in the market, and these have only narrow application, mostly limited to rice pests.

Summary of Research



In vivo (whole plant) testing of the identified chemicals (secondary evaluation) is now going on. Select high-potency activator candidates (2015). Field test start (2016).

■ Intellectual Property: JP2013-510162 "Method for plant defense activators, plant defense activators, and method for enhancing immune responses"

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