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Can we develop durable virus resistance in plants like tomato by loss-of-susceptibility?

Abstract:

The concept of "loss-of-susceptibility" to plant viruses as a result of loss of particular host factors of plants has been known and employed in crop resistance breeding. For example, eukaryotic translation initiation factor eIF4E family is considered as the "susceptibility factor" in most potyvirus infections, and when it is unavailable to the viruses, this often leads to failure of infection. However, reaching the full potential of the concept has been often hindered by its double-edged-sword nature: such host factors are often too important for the plant's system to be completely eliminated or knocked out conventionally. One key to resolving this dilemma is to mimic the natural durable resistance genes by genome-editing technique. In this talk, I will introduce the proof-of-concept for this key strategy previously shown by my team and my M2 stage theme on tomatoes (*Solanum lycopersicum*) elaborated based on this POC.

