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Selection for adult plant resistance against *Phoma lingam* in Rapeseed breeding revealed a novel resistance trait: APR37

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Rapeseed resistance against phoma stem canker (teleomorph *Leptosphaeria maculans*) is generally described by two different processes. At the cotyledon stage, single resistance genes (R-genes) can recognize specific *L. maculans* races carrying a corresponding avirulence gene and hence induce a highly efficient local plant defense. Many of these R-genes are known to also confer stem base resistance at later stages of plant development. Additionally, adult plants can express a more quantitative but race-nonspecific resistance at the stem base. The combination of both gives rise to high adult plant resistance, which is most important under field conditions to prevent yield losses. Also, some adult plant resistance traits seem to be more effective at the stem base and less at the cotyledon stage. To improve the resistance of rapeseed against phoma stem canker breeders at NPZ developed a phoma infection test system under semi-field conditions. This so called "Winkelmann-Test" was used for many years to select breeding lines with high monogenic, polygenic and/or multiple resistances at the stem base (adult plant resistance). As a result, the stem base resistance trait "APR37", that was originally derived from *B. rapa,* has been introduced into rapeseed hybrid varieties like *Napoli, Croquet and Kicke*r. Since "NP37" is genetically different from any known major phoma resistance (like Rlm7), it is considered to be a novel major resistance trait. At present, only few major resistances are available in market varieties that bears the risk of rapid selection of new pathotypes and thus loss of this resistance. Any new variability in plant resistance genes, as introduced by "APR37", helps to diminish this process and will make plant resistance more durable and improve yield stability. Development and characterization of this trait is presented.