J Plant Pathol Microbiol 2016, 7:5(Suppl)
http://dx.doi.org/10.4172/2157-7471.C1.003

Seed setting and productivity enhancement in sunflower (*Helianthus annuus* L.) by manipulating source and sink ratio using plant growth regulators, varying plant densities and nitrogen levels

Nagarathna T K, Gayithri M, Shadakshari Y G, Murali K, Puttarangaswamy K T and **Punith H V**
University of Agricultural Sciences, Bangalore, India

The major production constraints in sunflower are poor seed filling and seed set, lack of uniformity in open pollinated varieties leading to production instability, excessive vegetative growth and lack of photosynthetic activity at the time of seed filling and improper translocation of photosynthates. To improve the productivity, translocation of photosynthates from vegetative organs to seed is very important. To achieve higher yield, two sets of experiments were conducted in the field in two seasons to study the influence of source and sink manipulations on crop growth and yield in sunflower hybrid, KBSH-44. In the first set of experiment, source size and sink capacity was manipulated by applying plant growth regulators, growth retardant, higher dose of nitrogen with micronutrients and source size was reduced by defoliation. In the other set, the source size was manipulated by different nitrogen levels, application of growth regulator mixture and defoliation with two plant densities. Manipulation of sink capacity by spraying 240 ppm TIBA with 120 ppm NAA and 0.2% boron improved the rate of translocation which in turn increased the productivity by 33% to 36%. Due to more biomass and yield, harvest index was also increased by 32%. Cycocel (3000 ppm) at ray floret stage increased the seed yield followed by spraying of 150 ppm BA at ray floret stage. These hormones play a major role in increasing translocation of photosynthates from source to sink especially during seed filling period. Further, increase in source size by applying 200% nitrogen combined with growth regulator mixture by maintaining recommended plant density, productivity can be increased up to 10-15%. Results from this study indicate that, seed development in sunflower is source limited which can be improved when the available source size increases. Nitrogen fertilization has a substantial influence on sunflower seed yield and high yielding sunflower hybrids have more nitrogen requirement to enhance the yield.

nagarathnavijay@rediffmail.com

Putative xylanaseavtivity of *Pseudomonas syringae*pv. *actinidiae(Psa)*

Rasika Subasinghe
University of Waikato, New Zealand

Actual invasion strategies and mobility of the *Pseudomonas syringae*pv. *actinidiae (Psa)* pathogen in the kiwi fruit plant remain inconclusive. *Psa*, indicated a significant level of xylanase activity especially when the pathogen was cultured on minimal media supplemented with 5% ground kiwifruit tissue. Further studies of in-planta activity of *Psa* xylanse were conducted with 20 mature Hort 16 A kiwifruit plants; 10 plants uninfected and 10 plants infected with *Psa*. When disease symptoms appeared in the inoculated plants, both infected and non infected shoots were harvested. *Psa* was re-isolated from infected plants and duplex PCRs were conducted to confirm that symptoms were due to *Psa* infection. Remazol Brilliant Blue (RBB) and 3,5-Dinitrosalicylic acid (DNSA) assays were conducted on ground kiwifruit stem pieces to ascertain putative xylanase activity. RBB assay indicated xylanase activity in infected kiwifruit stem pieces and the RBB asssy on non-infected kiwifruit pieces did not indicate xylanase activity. DNSA assays did not produce a detectable xylanase activity in the infected tissues. Therefore, further RBB assays were conducted to ascertain whether the xylanaseactivty in infected tissues was due to enzymatic activity. Strength tests were conducted on infected and non-infected kiwifruit shoots 4 weeks after the innoculation to determine the difference in stength of kiwifruit shoots. The average strength per mm thickness of non-infected kiwifruit xylem was significantly higher than that of infected xylem. Experimental results using *Psa*-infected kiwi fruit plants clearly indicate a putative xylanase activity and the observed reduction of strength of the kiwifruit xylem is consistant with the presence of a xylanase activity.

rs208@students.waikato.ac.nz