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## Growth, quality and pest infestation in tomato under protected cultivation in semi-arid region of Punjab

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### ABSTRACT

Studies on tomato plant growth, pest infestation, yield and quality were carried out for two consecutive years (2010-2012) under different poly-houses (PHs) and shade net-houses (SNHs). The replicates of SNH structures were covered separately by 35%, 50% and 75% green shade nets. Vigorous tomato plant growth was achieved under PHs and 35% SNHs with more stem diameters ranging from  $0.9 \pm 0.2$  to  $1.2 \pm 0.1$  cm with normal leaf area. Whereas, proliferated or tender plant growth with less stem diameters ( $0.6 \pm 0.1$  to  $0.7 \pm 0.2$  cm), leaf specific weight and more leaf area were found under 50 and 75% SNHs. Comparatively, more chlorophyll 'a' and 'b' ( $Chl_a$  and  $Chl_b$ ) levels and less carotenoid contents were recorded under 50 and 75% SNHs. Compared to open field, the colour values of tomato fruits indicated more redness under PHs and SNHs (in 35%) and also significantly more weight, fruit size, yield and good quality were achieved. Aphid and whiteflies were able to enter the SNHs, but not caused any serious infestation. Thus, PHs and SNHs (35%) were found fairly useful to create favourable microclimate for tomato plant growth and higher yield and also for minimization of pest infestation.

**Key words:** Poly-house, pest infestation, protected cultivation, shade-net, tomato.