

My comments to the ms n. 1714 are:

1. In the last 15 years, parthenocarpy has been obtained via genetic alterations of several signal transduction pathways. In tomato, parthenocarpy has been obtained via genetic engineering not only via auxin synthesis, but also via other genetic alterations, for example of either auxin or gibberellin signal transduction pathways. In my opinion, a more complete presentation of the literature is needed. In this regard, the ms states that “*all DefH9-iaaM transgenic tomato plants analyzed to date lack commercial viability, primarily due to the production of a predominance of malformations that occur in their resultant fruit structure.*”. In fact, fruit malformations were observed only in very few genetic backgrounds (e.g. UC82). In most tomato genetic backgrounds the fruit was of equivalent quality to wild type (= not transgenic). As far as I know, the lack of commerciality is due mainly to intellectual property problems and to the fact that the fruit is OGM.
2. On the same issue (i.e. how to improve parthenocarpy conferred via the DefH9-iaaM transgene), the ms states that : “*These are focusing on the alteration of the promoter of a DefH9-iaaM transgene toward a downregulated range that can work within a range of expressivity of parthenocarpy versus “Pickelhauben” phenotype and G x E temperature dependence*”. In fact, the DefH9-RI-iaam gene has resolved the problem of fruit malformations in the UC82 genetic background, and yet it does not represent an alteration of the promoter. In fact, it is a DefH9-iaaM gene containing a modification of the 5’UTR of the encoded transcript/mRNA that causes downregulation at the post-transcriptional level. Promoter downregulation has been used in another type of transgene used to confer parthenocarpy, namely the transgene based on the rolB gene.
3. The main message of the ms is that “*a higher daily relative humidity before flower emergence and a minimum temperature at night during flower emergence contributes to an increased expressivity of parthenocarpy*” in the species used in the investigation. As mentioned in the ms, parthenocarpy obtained via traditional genetics often shows a variable expressivity of the trait (e.g. some tomato parthenocarpic mutants). Temperature is certainly one of the major environmental factors affecting the expressivity of parthenocarpy.
4. The manuscript suggests that the reported finding might assist the discovery of novel parthenocarpic genes. Clearly transcript profiling has been used to identify novel parthenocarpic genes. Perhaps the information provided in the ms might be helpful. However, other approaches have been used in other species.

Note: Anonymous Reviewer