The Santo Stefano di Sessanio local variety of *Lens culinaris* Medicus is grown by farmers belonging to a small community of the Abruzzo mountains, at an altitude ranging from 1,000 to 1,600 m a.s.l. Local Italian lentils are prized by consumers for their taste and cooking qualities, a typical example of niche market products able to fetch a relatively high price that makes their cultivation profitable even in marginal areas. The characterisation of S. Stefano di Sessanio local variety is fundamental to make this product identifiable with respect to both worldwide production and similar niche products.

For the above reported reasons, lentil seed samples were collected from local producers while commercial seed sample, purchased on the market, were utilized as controls. A total of 34 entries were compared, 30 local accessions and 4 controls. Morphological and agronomic characterization of lentil accession was conducted in Corfinio (AQ) and Calascio (AQ), respectively, during 2005.

In particular, AFLPs were used to calculate the Dice coefficient of genetic similarity between population pairs. The similarity matrix obtained was then used to produce a UPGMA dendrogram and Principal COORDinates Analysis. Furthermore the seed images acquired by flatbed scanner were elaborated by an image analysis system. Stepwise Linear Discriminant Analysis (LDA) on image analysis parameters were able to discriminate correctly the market lentils and each local varieties.

The results showed the existence of a significant group of local accessions very similar each other in terms of morphological, physiological and molecular traits. It is likely that they constitute the original, still well conserved nucleus of the local variety. Controls have shown different characteristics with respect to S. Stefano di Sessanio accessions. To safeguard and enhance the value of S. Stefano di Sessanio lentil, it is necessary to reach an agreement and to establish a Producer’s Consortium able to become the driving force for a future niche market, avoiding the spreading of alien lens varieties.