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Original Article

## A definitive method for distinguishing cultivated onion from its weedy mimic, *Asphodelus fistulosus*, at multiple developmental stages

B R Ughade, V C Khilare, D M Sangale, G A Korhale, P Ingle, A E Tathe, R Patil, G D Khedkar 

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### Summary

The onion, *Allium cepa*, is an important vegetable crop around the world. Globally, India ranks second in onion production, but yields are often much lower than in many other onion producing countries. This study reports on one major contributing factor to low onion yields in India: the presence of a weedy mimic that is morphologically similar to onion until the onset of flowering. We used morphological and molecular methods to identify this mimic as *Asphodelus fistulosus*, an exotic weed not previously reported in India. Our study indicated that molecular markers derived from the *rbcl* and/or *matK* chloroplast genes in a DNA barcoding approach allow accurate identification of this weed using any tissue and even at early developmental stages. Our results also showed that visual examination of seed lots coupled with DNA barcoding analysis of samples of 5–10 individual seeds can be used to confirm identification. The ability to easily identify contaminating material before and during cultivation can allow farmers to minimise production losses and prevent further spreading of this weed.

### Supporting Information

Filename	Description
wre12337-sup-0001-FigS1.jpg image/jpg, 84.1 KB	<b>Figure S1</b> Herbarium specimen ( <i>Allium cepa</i> L.).
wre12337-sup-0002-FigS2.jpg image/jpg, 107.9 KB	<b>Figure S2</b> Herbarium specimen ( <i>Asphodelus fistulosus</i> L.).
wre12337-sup-0003-FigS3.jpg image/jpg, 90.7 KB	<b>Figure S3</b> Herbarium specimen ( <i>Asphodelus tenuifolius</i> Cav.).

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