

Understanding Seed Tuber Physiology for Commercial Benefit

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Studying seed tuber physiology has been an important part of the research at Cambridge University Farm and understanding of the potato crop as a whole is dependent on recognising that seed and ware production are inextricably linked. The potato seed tuber is a very different propagule from the true seed of most other crops. Variation in performance within and between seed lots has become an important consideration for a crop where value is increasingly associated with optimizing yield of a particular tuber size and quality rather than simply achieving a high total yield.

In spite of the complex morphology of the potato, advances in our understanding of the processes of tuber initiation, dormancy and the growth of sprouts, stems, stolons and tubers can enable continued improvement in crop production. The implications of current research at Cambridge University Farm into the relationship between interval from tuber initiation to replanting and the number of stems produced by a seed tuber is a clear example of how important seed physiology can be in practice.

The variable nature of the potato crop coupled with environmental variation has limited both understanding and full exploitation of the potato seed tuber. To make seed physiology matter more than it has in the past, both more exacting and more flexible integration of seed and ware production will be required but the potential is considerable. An example of this is seed grown in the UK and held unsprouted in cold store throughout the summer for autumn planting in Iberia. The resulting multi-stemmed plants are well suited for salad potato production. Similar opportunities of changing conventional practice to the advantage of particular crops exist worldwide. Other opportunities include more accurate achievement of target stem populations and more reliable production of crops where either very low or high tuber populations are required. New seed rate recommendations have been developed to account for seed age, seed size and the target tuber size required for a particular market.

Improved understanding of within-crop variation attributable to seed tubers may aid the production of more uniform crops and controlling variation could benefit the study of many other aspects of potato production as it enables the components of variation to be differentiated.

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