Developing Food Quality Autumn-Sown Legumes

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Introduction

The rationale for autumn-sown vs spring-sown pulses is similar to that of winter wheat vs spring wheat. Planting winter peas in the autumn will shift some field work to autumn and capture higher yield potential. Additionally, autumn-sown pulses will provide an alternative rotational crop, especially needed in the low rainfall areas where the winter wheat-fallow rotation predominates. Including pulse crops in a cereal-based cropping system is beneficial at least in part due to weed and disease cycles that are broken and all pulse crops, in symbiosis with rhizobium bacteria, are able to fix atmospheric nitrogen then available to the following cereal crops. There are a number of issues that must be addressed for the successful cultivation of autumn-sown pulse crops. These include attaining adequate levels of cold tolerance, effective and efficient weed control methods, and determining optimal planting methods.

Current Status

In 2009, revisions to the U.S. Standards for Whole Dry Peas and Split Peas were made that allow new and future winter dry pea releases to be marketed as smooth green or smooth yellow dry peas and preserves purity of class by grouping colored or distinctively mottled peas (e.g., traditional winter dry and maple peas), regardless of planting date. Due to these changes, we are emphasizing the development of food quality, autumn-sown peas – peas with clear seed coats, large seeds, white flowers and semi-dwarf, erect growth habit. We are also developing lentils which will conform to the small-to-medium green market classes and small kabuli chickpeas that can be planted in the autumn.

In order to develop varieties of autumn-sown peas and lentils that are adapted to areas other than those that we can easily test in, we have started sending segregating populations for evaluation and identification of types that are uniquely suited to given regions. We send bunch of F\textsubscript{2}s, to be planted in plots and then selected, to western Whitman County and Lincoln County Washington and to central Montana. Ultimately, this model will also be used for development of varieties of spring legumes.

The main segregating nurseries and preliminary yield trials are grown at the Spillman Farm. The advanced yield trials are typically planted at four locations: Spillman Farm, Dayton, WA, Garfield, WA and Genesee, ID. In 2013-2014, there are approximately 1200 entries in the winter pea nursery, 450 entries in the winter lentil nursery and 200 entries in the winter chickpea nursery. There are 30 entries in the advanced winter pea and 15 entries in the winter lentil yield trials. The WSU and MSU Variety Testing Programs each have yield trials with elite pea and lentil varieties planted at Dusty, WA and Moccasin, MT, respectively.

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