

RED LENTIL PRODUCTION IN SASKATCHEWAN: Y NOT 2K?

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Red lentil is the largest market class in global lentil production and consumption. Production of red lentil has increased dramatically in Saskatchewan in the past several years (more than 200,000 acres in 1999). Release of the ascochyta resistant cultivar CDC Redwing increased production and marketing opportunities, but this impact was minor in comparison to the effect of the introduction and production of the US variety Crimson. Crimson is preferred in many markets because it has plump shape and dark seed coat. These characteristics make it more suitable for splitting. It is also acceptable in whole form in some specific markets like Egypt.

Canada has quickly emerged as a major global supplier of red lentil. Reduced red lentil supplies in Turkey and Australia in the past two years has accelerated the development of this market. In fact, Turkey has started importing Canadian red lentil for splitting. Canada could quickly become the world's largest exporter of whole and split red lentil. To be competitive, Saskatchewan producers must be able to increase yield so that the red lentil crop becomes part of the crop rotation even during the low phase of the price cycle. We think that it is possible, through improvements in plant pathology, agronomy, and plant breeding to increase and maintain the yield of the red lentil crop at 2000 kg/ha – why not 2000 or why not 2K? The logic behind this statement, and a description of the ongoing research necessary to achieve this goal, are described below.

Canadian lentil production is dominated by the variety Laird, which is best adapted to the Dark Brown and Brown soil zones. It is late maturing, and becomes a high risk variety when grown outside of these soil zones. Early maturing small-seeded varieties like Eston are much more productive and much more reliable compared to Laird in seasons or in regions with above average precipitation. For example, in 1999, the yield of Eston lentil in Saskatchewan crop districts 2b, 3as, 3bn and 7a were estimated at more than 1500 lb/acre (Saskatchewan Agriculture and Food, 2000). We know from at least five years of extensive testing that CDC Milestone yields about 15% higher than Eston. The logical conclusion is that if CDC Milestone had red cotyledons and was grown in suitable areas with rainfall patterns similar to those that 20% of the crop districts experienced in 1999, the yield would be slightly above 2000 kg/ha. Is this level yield achievable and sustainable? A group of researchers (co-authors of this paper) are focusing on how to develop an agronomic system for red lentil production system that will sustain this yield

level. This goal is to use improvements in agronomy, plant pathology and breeding to achieve this goal.

The components of this project involve re-evaluation of the production system for red lentil. We know that in the south-west of Saskatchewan, the lentil crop is well-suited for early spring sowing, and that the main rainfall period is concentrated in June. Maximum productivity should occur if the crop flowers in early June. Lentil flowers in response to long daylength, so we know that it is possible to induce flowering in early June. The key to improving the system may lie in developing very early flowering lines, or in ensuring early spring growth through very early seeding or fall seeding with coated seed. This technology is under evaluation at Melfort, Saskatoon and Swift Current with the assistance of a research grant from ADF. Like cereal crops, many pulses of Mediterranean origin also have a range of winter hardiness. We will also attempt to use winter-hardy germplasm as part of this study to see if this type of germplasm will better suit the fall seeded conditions.

Another component under investigation through the same grant is the possibility of using early flowering breeding lines for late-seeded conditions in the Thin Black and Thick Black soil zones where early spring seeding is often not possible. Early maturing lentil cultivars from Saskatchewan and several extra-early cultivars from the Mediterranean production climates will be sown at seeding dates extending into mid-June. Temperatures should be high enough to maximize expression of stem length and the long days will promote early flowering. This system will be evaluated at Swift Current, Saskatoon and Melfort, beginning in the summer of 2000.

A third component of this strategy is to evaluate the agronomic factors that may be necessary to reduce production risk in the Black Soil zones. Some new red lentil cultivars like CDC Robin have some resistance to both ascochyta blight and anthracnose. In the black soil zone, it may be possible to reduce production risk and increase yield by growing early maturing red lentil in wide rows and using fungicides to control *Sclerotinia*. These strategies will be investigated starting in the summer of 2000 by researchers at Rosthern and Melfort.

If some components of this production strategy for red lentil are viable agronomic options, it should be possible to raise the average yield of red lentil in specific cropping zones to 2000 kg/ha. Yield levels should rise by reducing production risk and maximizing potential yield. If this can be achieved, Saskatchewan should become the world's most competitive supplier of red lentil. This scenario would also induce more rapid development of added value industries such as red lentil splitting for export to urban markets around the world.

References

Saskatchewan Agriculture and Food, 2000. 1999 Specialty Crop Report. Statistics Branch, Regina.