

FIELD CROPS

The production of new varieties bred specifically for ND conditions provides income not only through increased yield, due to improved disease or pest resistance, but also an increased market value and expanded national and international markets.

Variety Development



In a typical year, new varieties released by North Dakota State University (NDSU) scientists generate an average of **\$15-20 million of new income annually**. This estimate is based on increased yield only. Currently, the biggest threat to the cereal industry is Fusarium head blight. The release of the **Alsen**, which has a high level of Fusarium head blight (FHB) resistance and higher quality, was estimated to provide an annual benefit of **\$100 million**. This is a conservative estimate in that it does not include any economic multiplier factors or any increased value because of improved grain quality. The new release, Steele ND, carries similar levels of FHB resistance, improved foliar disease resistance and improved quality.

Other examples are:

- Increased value of durum wheat due to higher yields and better quality
- High quality malting barley varieties (**Drummond** and **Conlin**) approved as malting barley cultivar
- High protein barley for livestock feed
- Oat variety with higher Beta-Glucan levels for improved human nutrition (Beta-Glucans reduce cancer risks).
- New flax variety, **Carter**, with high levels of Omega-3 fatty acid, important for human nutrition.
- New varieties of bean, potato, and soybean with improved disease, insect resistance and agronomic traits.



Field Peas as Feedlot Alternative

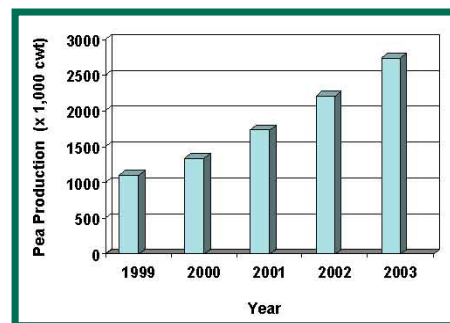
Research has demonstrated that pea is as digestible as corn in beef and sheep feedlot diets. Pea contain more protein and are equal to corn in energy value. **Pea: 22-26% protein Corn: 9.5-10% protein**

Research has primarily concentrated on digestibility of pea with no problems reported. Effect on weight gain is similar to corn as an energy source but better than corn as a protein source.

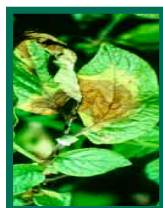
Pea production in North Dakota has increased by over **250 percent** over the last five years with plantings concentrated in the central and western regions of the state.

The advantage of producers growing pea are:

- pea gives disease control in crops following in the crop rotation,
- pea are legumes; therefore, nitrogen is returned to the soil,
- pea can be cultivated using conventional equipment.



Plant Disease Forecasting



Plant disease forecasting has resulted in a **\$21 million** increase in profit annually for wheat producers in North Dakota due to providing timely information on the need for application of fungicides for plant disease control.

The accurate forecasting of disease probability and insect infestations provides valuable economic and environmental benefits. The disease forecasting system was developed in conjunction with NDAWN (North Dakota Agricultural Weather Network), a climate monitoring system developed by the Soil Science Department at NDSU.

The website map produced by this system shows the degree of disease risk of wheat Tan Spot, Septoria Blotch, Leaf Rust and Fusarium head blight in different parts of North Dakota. The benefits of this system are:

- **Timely application:** With the weather information provided by NDAWN, accurate predictions of disease probability or insect infestation can be forecast enabling producers to apply fungicide when they have the most impact to reduce disease damage. In addition, it prevents under- or over-application which results in higher costs and/or reduced environmental threats to the land.
- **Yield increase:** Due to elimination or better management of disease, higher crop yields result. Researchers have shown an estimated 20 percent yield response on popular, commercially-grown cultivars.

This model is supported by grower groups and the ND Wheat Commission.

Web address: <http://www.ag.ndsu.nodak.edu/cropdisease/cropdisease.htm>

