Wants and Needs of the Processor.
Presented by Kerry Larson - McCain Foods USA, Plover, WI - Agronomist

What’s on the potato processing horizon?
Some think growing processing potatoes is pretty rocky.
Some think growing processing potatoes is pretty good.

What do you need to do to grow processing potatoes?

Let’s get to know your customer - McCain Foods.
• Five potato processing facilities in the United States include Easton, ME; Plover, WI; Clark, SD; Burley, ID and Othello, WA.
• Nine potato processing facilities in North America. Four plants are in Canada at Florenceville, NB; Grand Falls, NB, Borden, PEI and Portage la Prairie, MA.
• Twenty-nine potato processing facilities around the world including the continents of Europe, South America and Australia.
• McCain USA headquarters is located in Oak Brook, IL.

Plover factory is part of McCain Foods USA.
• Plover processes over 10 million hundredweight per year.
• It uses approximately 25% of the Wisconsin crop each year.
• It produces primarily high quality food service products which is a shift from the previous company’s primary production of retail products.
• There have been $16,000,000 in processing upgrades invested at the Plover plant in the past year.

What does a grower need to do to meet McCain’s requirements?
A process potato grower must meet a basic grade of U.S. No. 2 for Processing. Some modifications have been added to the grade under the contract.

What kind of potatoes do we use?
Primarily we use Russet Burbanks. Its top attribute is its long term storability which is unmatched by any other processing variety. It also has nice white flesh, high solid matter and is preferred by our customers for flavor. We also use Ranger Russet on a limited basis directly from the field early in the fall. Shepody is used as an early variety in years when early harvest potatoes are needed.

What attributes does the ideal potato possess?
• Size needs have shifted from retail products to food service products at the Plover factory. Food service products require long fry lengths. Longer fries are processed from larger raw than have generally been used here in the past several years. The factory would ideally like to have 30% or more ten ounce tubers or larger and less than 5% one and seven eighths inches or three ounces minimum size.
• Bruising is a chronic problem. That's the bad news. The good news is bruising is an
area you can influence as a grower. Bruises can be defined as mechanical injury types like shatter bruise, cuts, skinning, surface checking and pressure bruise. The second type is internal bruising which is the type referred to as black spot bruise. Black spot bruise is the type that bruise free test are based upon. Bruised potatoes provide entry points for storage diseases like Pythium Leak, Bacterial Soft rot, Pink Rot, Late Blight and Fusarium Dry Rot in addition to being a point for tuber moisture loss.

- **Specific Gravity**, when used for potatoes, is a measuring system that is used to determine the amount of solid matter. Solid matter has profound affects on texture and yield. Our customers want there fries to fill certain size containers and satisfy their customers desire for good food value. Specific gravities of 1.080 to 1.085 are the best range for processing potatoes into food service quality products. Specific gravities from 1.079 down to 1.072 satisfy our need for mid to lower specification products. Specific gravities above 1.085 result in increased breakage during processing. Specific gravities of below 1.072 result in oily poor textured products that cannot maintain texture or crispness requirements of food service customers.

- **Fry Color** is influence by field conditions as much by storage conditions. Sugar build up and Sugar ends are a problem in many lots of potatoes. McCain’s has set a contract limit of 10% or less in the No.3 color range on the USDA French fry color chart. Unfortunately some of our production runs cannot be accomplished with raw meeting the 10% limit so we would like to see less than 1% sugar ends.

- **Good shape** can make or break a production run. I have often been told by people outside processing circles that poor shaped potatoes can be trimmed to make usable material unfortunately the truth of the matter is poor shape results in poor cutting, short fries and lots of waste that has limited use in byproducts. Poor shape and other defects like second growth influence the percentage of No. 1’s delivered under our contract. Lower percentage of US No. 1’s cost the grower money and the processor gets a poor quality packout with reduced recovery.

- **Internal Defects** such as internal discoloration’s and Net Necrosis are defects that often go unseen until they make it to the processing line. Internal brown spot, brown center and stem end discoloration have been a common problem. Net Necrosis is a growing concern because it often doesn’t express tuber symptoms until it has been in storage for several months. It is associated with leafroll virus and is transmitted by green peach aphids. Some crop scientist have pointed out that spray for blight control has also suppressed naturally occurring fungal pathogens of aphid that limit population growth. The result has been more leafroll infections and a higher incidence of Net Necrosis.

- **Storability** is always a concern. Much of what is done in the field and during delivery has an influence on how well potatoes store. Stress conditions predispose potatoes to sugar build ups before and after storage. Potatoes that have been stressed don’t suberize or condition as well as other potatoes. Rough handling can leave openings for rots such as Pythium Leak, Bacterial Soft Rot, Pink Rot, Late Blight, and Fusarium dry rot. We try for shrink or weight losses of less than 6.5% and quality losses of less than 2.5% each year in our storage’s. Good storage sanitation and maintenance of storage buildings & equipment aid in improving storability.
Quick Summary:

Grade
> 30 % - 10 ounce
< 5 % - Undersize - 1 7/8 inches diameter
> 90 % - Usable Material
= 1.082 -Specific Gravity (21.2% solids - USDA)
> 70 % - US No 1.
> 80 % - Bruise Free
< 1 % - Soft rot / pink eye etc.
< 1 % - Serious internal defects
< 1 % - Sugar ends - Color of 40 Photovolt system.

Storage
< 6.5 % - Annual raw storage shrink loss.
< 2.5 % - Quality loss.

McCain’s is committed to agricultural support through Field Department Manager, Field Representatives, and an Agronomist. In addition to our agricultural staff we provide a more agricultural information in the form of a Newsletter named McCain Partners 4 time per year. We have a world wide staff of Agronomists, Researchers, and Field Staff as a resource for answering tough questions. We are interested in knowing more about all aspects of potato growing in Wisconsin. We want to know more about cultivation, fertilization, planting, pest & disease control, irrigation, harvesting, storage and the results. CropMET can help growers and McCain understand Wisconsin potato growing more thoroughly. Best growing practices can be identified and applied to improve production practices.

What does McCain Foods USA need to do to be competitive and successful - Production of high quality products at the lowest cost.
This page intentionally left blank.