

## New Applications for Barley - An Economical and Healthy Food Ingredient



Hulless barley does not have an attached husk to the kernel (similar to wheat).

Consequently, the grain threshes free during the harvesting process.

Hulless barley is less prone to damage than naked oats and, like wheat, does not require polishing to remove trichomes (hairs) on the kernel.

Hulless barley is more nutritious than traditional covered barley.

Development of hulless barley with high value-added traits such as increased grain protein and beta-glucan levels could provide new opportunities for growers and the food industry.

### Special Starch Properties

Barley contains two types of starch:

**AMYLOPECTIN** - Long, highly branched glucose polymer with higher viscosities

**AMYLOSE** - Forms helical structures; can be resistant to enzyme degradation

Three main groups of barley types have been identified:

**1. LOW AMYLOSE** (or 'waxy') with 0 - 10% amylose content:

- 'Mealy', white, uniform endosperm texture suitable for:

> pearling, milling and baking

- Higher beta-glucan content suitable for:

> fibre-rich food products; lowering blood cholesterol, increased satiety and weight control; unique properties for fat substitutes and thickeners in the baking and confectionary industries

**2. NORMAL AMYLOSE** with approximately 25% amylose content - Traditional malting and feed types

**3. HIGH AMYLOSE** with greater than 35% amylose content:

- Functional foods enriched with non-starch polysaccharides and resistant starch

- Important contributors to human health:

> diabetes management, heart disease, obesity, colon and rectal cancers and constipation

### Current Product Development for Food Barley

#### Pearled Barley

- Applications in soups and casseroles, soy sauce and paste, shochu and as a rice extender
  - Significantly improved processing efficiency over traditional covered varieties
  - Potential marketing advantage in the lucrative Japanese shochu market

#### Flat Bread (50% 'waxy' barley flour incorporated)

- Application as an adjunct to wheat flour
- Nine times greater beta-glucan than the 100% wheat control
- Twice as much total dietary fibre and lower GI

#### Flaked/Rolled Barley

- Application in breakfast cereals, porridge, health food bars, breads and biscuits
  - Improved flake colour and physical stability compared to oat flakes
  - High soluble fibre

#### White Salted Noodles

- Sensory evaluation results showed that hulless barley adjuncts produced noodles with acceptable texture, taste and colour

#### Pasta

- Sensory hardness test indicated the 5% addition of WI3693 produced pasta with acceptable texture with a darker colour

