

21st Annual IAOM
MEA District Conference
November 22-25, 2009
Cape Town – South Africa

الغريير للأغذية
Al Ghurair Foods



Oats & Its Milling

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Oats

- Oats are grown throughout the temperate zones. They have a lower summer heat requirement & greater tolerance of rain than other cereals like wheat, rye or barley, so are particularly important in areas with cool, wet summers



Oats

- Oats are used as a crop for grazing by ruminants in many countries; they respond favorably to fertilization & have high dry matter yields, oats pasture frequently is used for grazing cattle from late fall until early spring. This forage is used mainly for growing & finishing steers & heifers, but some is used for making hay & grain production



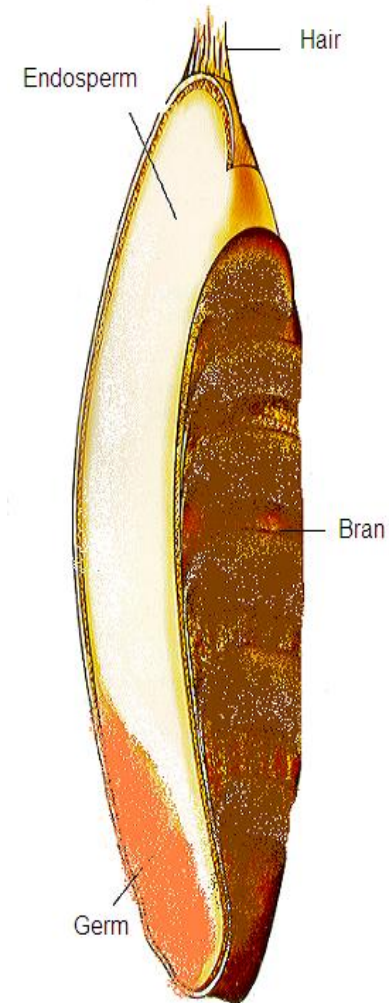
Raw Oat Typical Specification

- Moisture: 13.5%
- Test Weight: 55 kg/hl
- Husk Content: 26%
- Refraction: 4%

Nutritional Value

Nutritional Value per 100 g

- Energy: 1,628 kJ (389 kcal)
- Carbohydrate: 65 g
- Dietary Fiber: 11 g
- Fat: 7 g
- Protein: 17 g
- Iron: 5 mg
- Magnesium: 177 mg



Clipped Oats

- Clipped Oats are oats from which the beards have been removed by passing them over a revolving screen
- This process produces a shorter, plumper looking grain, which packs better and weighs more to the bushel
- The cut ends may be seen, and if the hand is put deep into the sack the clipped beards may be found adhering to it on removal
- If such oats are clean and sound, the process does not detract from their value as a food

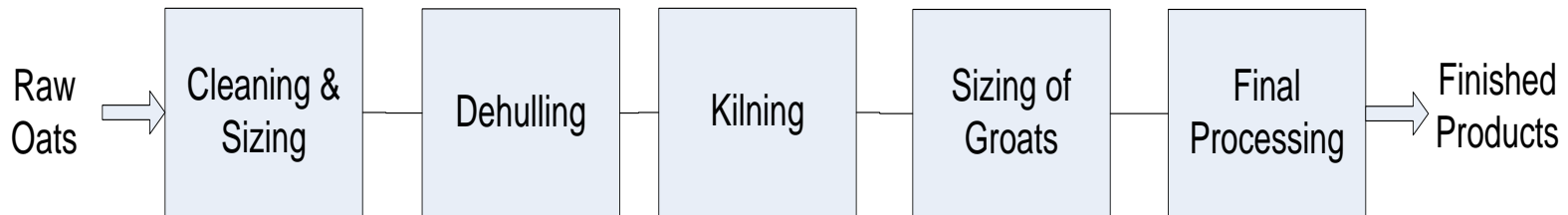
Benefits

- Lowering cholesterol
- Lowering blood pressure
- Healthy nervous system
- Anti cancerous
- Helps in bowel function
- Helps in controlling weight



Processing

- Oat processing is relatively a simple process:
 - Cleaning & Sizing
 - Dehulling
 - Kilning (Heat Treatment)
 - Sizing of Groats
 - Final Processing

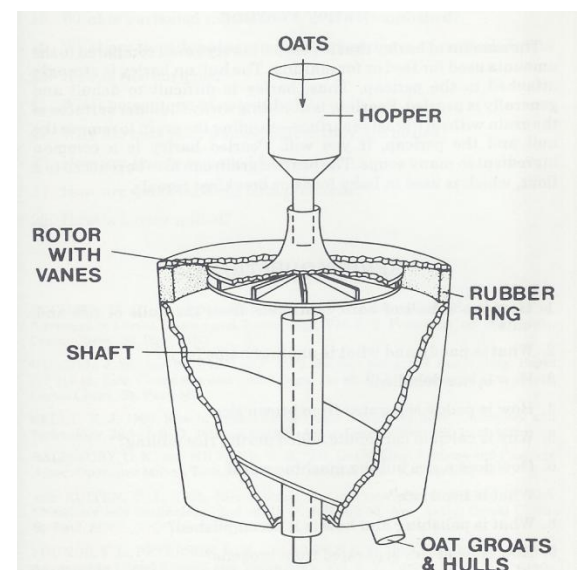


Cleaning & Sizing

- Upon delivery to the milling plant, chaff, rocks, other grains, & other foreign material are removed from the oats
- Up to 8% goes out in cleaning & sizing

Dehulling

- Separation of the outer hull from the inner oat groat is effected by means of centripetal acceleration
- Oats are fed by gravity onto the center of a traditional horizontally spinning stone which accelerates them towards the outer ring
- Groat & hull are separated on impact with this ring
- The lighter oat hulls are then aspirated away while the denser oat groats are taken to the next step of processing
- Oat hulls can be used as feed, processed further into insoluble oat fiber, or used as a biomass fuel
- Up to 26% goes out in dehulling



Kilning (Heat Treatment)

- The unsized oat groats will then pass through a heat & moisture treatment to balance moisture, but mainly to stabilize the groat
- Oat groats are high in fat (lipids) & once exposed from their protective hull, enzymatic (lipase) activity begins to break down the fat into free fatty acids, ultimately causing an off flavor or rancidity
- Oats will begin to show signs of enzymatic rancidity within 4 days of being dehulled & not stabilized
- This process is primarily done in food grade plants, not in feed grade plants
- An oat groat is not considered a raw oat groat if it has gone through this process: the heat has disrupted the germ, & the oat groat will not sprout

Sizing of Groats

- Many whole oat groats are broken during the dehulling process, leaving the following types of groats to be sized & separated for further processing
- Whole oat groats, coarse steel cut groats, steel cut groats & fine steel cut groats
- Groats are sized & separated using screens, shakers & indent screens
- After the whole oat groats are separated, the remaining broken groats get sized again into the 3 groups (coarse, regular, fine), & then stored
- The term steel cut is referred to all sized or cut groats. When there are not enough broken to size for further processing, then whole oat groats get sent to a cutting unit with steel blades that will evenly cut the groats into the three sizes as discussed earlier
- Up to 68% goes out during sizing



Final Processing

- Three methods are used to make the finished product :
 - Flaking
 - Oat Bran Milling
 - Whole Flour Milling

Flaking

- This process uses two large smooth or corrugated rolls spinning at the same speed in opposite directions at a controlled distance
- Oat flakes, also known as rolled oats, have many different sizes, thicknesses & other characteristics depending on the size of oat groat passed between the rolls
- Typically the three sizes of steel cut oats are used to make instant, baby & quick rolled oats, whereas whole oat groats are used to make regular, medium & thick rolled oats
- Oat flakes range from a thickness of 0.36 mm to 1.00 mm



Oat Bran Milling

- This process takes the oat groats through several roll stands that flatten & separate the bran from the flour (endosperm)
- The two separate products (flour & bran) get sifted through a gyrating sifter screen to further separate them
- The final products are oat bran & debranned oat flour

Whole Flour Milling

- This process takes oat groats straight to a grinding unit & then over sifter screens to separate the coarse flour & final whole oat flour
- The coarser flour gets sent back to the grinding unit until it's ground fine enough to be whole oat flour

End Uses

- Animal feed
- Oat groats
- Rolled oats
- Steel cut oats
- Oat cereals
- Oatmeal
- Oat flour
- Oat bran

