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Unit 4 – Topic 2

Parboiling – advantages and disadvantages

Parboiling

Parboiling is a hydrothermal treatment followed by drying before milling for the production of milled parboiled grain. Parboiling of paddy has been known in the orient for centuries. Nearly 50 per cent of the paddy produced in India at present is parboiled.

In general, the three major steps in parboiling, i.e. soaking, steaming and drying and have a great influence on the final characteristics and quality of parboiled rice.

Parboiling is the latest premilling treatment which improves the quality of rice. The traditional parboiling process in India is carried out in different ways.

Paddy
↓
Cleaning
↓
Soaking in water (8 h)
↓
Draining
↓
Steaming (20 minutes)
↓
Aerating (3h) and heaping (3h)
↓
Tempering (1h)
↓
Sun drying (2-4 h)
↓
Dried paddy (14% moisture)

Improved parboiling method of CFTRI, Mysore, India (Batch)

Paddy
↓
Cleaning
↓
Soaking in hot water for 3 h (70 ^{0} C)
↓
Draining the water
↓
Steaming
↓
Shade drying (2-4 h)
↓
Dried paddy (15 % moisture)

Advantages of parboiling

1. The process imparts a hard texture and a smooth surface finish to the grain as a result which the brokens in the milled rice is minimized. While 90 % of the parboiled grains may remain unbroken; the brokens in raw rice could be as high as 50 %. The reduction in broken rice results in an increase of 3-5 per cent in the total yield of rice.
2. Insects find it more difficult to bite and eat their way through the hard and smooth surface of parboiled rice.
3. The loss of solids in the gruel during cooking is also less in parboiled than in raw rice.
4. Milled parboiled rice contains more of B-vitamins than milled raw rice.
5. Loss of B-vitamins is less in parboiled rice, during washing and cooking, compared to that in raw rice.
6. The cooking quality is different from that of raw rice. Parboiled rice is non-sticky and non-glutinous.
7. The parboiled paddy on milling produces a bran higher in oil content (about 25-30 % oil) compared to raw rice bran (about 10-20 % oil).
8. Parboiled rice bran is relatively stabilized compared to raw rice.

Disadvantages

1. It develops a relatively darker colour compared to raw rice.
2. The traditional parboiled process produces and undesirable smell.
3. Parboiled rice takes more time to cook to the same degree of softness than raw rice.
4. Because of long soaking in traditional process, mycotoxins may develop in parboiled rice and cause health hazards.
5. Heat treatment during parboiling destroys some natural antioxidants and hence parboiled rice develops more rancidity than raw rice during storage.
6. Shelled parboiled rice requires more power for polishing.
7. Parboiled paddy may choke the polisher because of the higher oil content of the bran.
8. Parboiling process requires and additional investment of capital.