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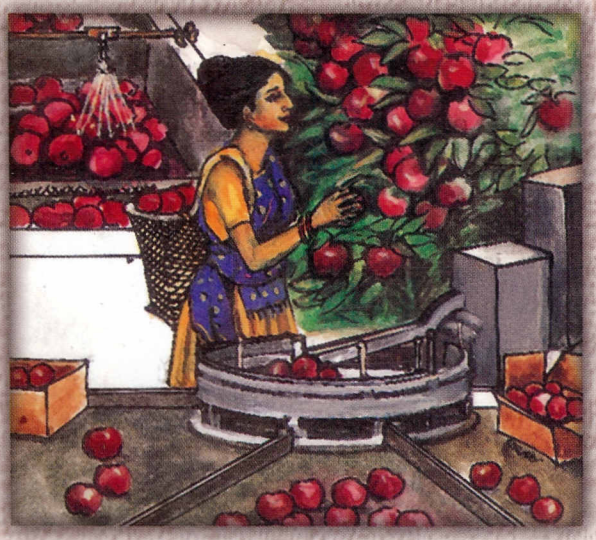

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CONTENTS

438 SRIVASTAVA, JC. 1985. **Harnessing technology for eliminating the drudgery of rural women engaged in rice production, processing and utilization**. *Women in rice farming. Proceedings of a conference on Women in Rice Farming Systems*. (IRRI, Manila: 1983: 26-30 September). Brookfield, Vermont, USA: Gower Publishing, p. 405-418; 15 ref.

The paper discusses the extensive role of women in rice processing in India: parboiling, pounding and dehusking and preparing rice products for home consumption and sale. It also presents examples of appropriate technologies which can both raise overall productivity and improve the economic conditions of the rural poor. It is concluded that technological research in India has indicated a vast potential for improving the entire post-harvest activities to derive optimum output, value adding, quality improvement of end product and byproducts, law cost of production and environment protection. Wherever provided, appropriate technology produces a better response to development. Agro-based industries need to make an integrated and concentrated effort to upgrade the linked technologies compatible with available agro-materials. The social cost-benefit accrues with the use of by-products and wastes at the source of their availability. Such an approach may also help to check the diminishing village industries.

439 THAYUMANAVAN, B; SADASIVAM, S. 1984. **Physicochemical basis for the preferential uses of certain rice varieties**. *Qualitas Plantarum Plant Foods for Human Nutrition*, 34: 4, 253-259; 15 ref.

Tests of 9 varieties showed that IR20, Ponni, Bhavani and IR50, which are preferred for cooking, had greater grain surface areas, higher water uptakes at 96°C, greater cooked volumes, softer gel consistency and greater elongation ratios than the other varieties. The varieties ASD1 and ASD7, used for making *idli* and *dosai*, had lower protein contents, medium alkali scores and higher percentages of total soluble starch and amylopectin than the other varieties. IR8 and CO25, used for making flakes, had hard gel consistencies, higher alkali digestibility values, lower soluble amylose contents and higher contents of hot-water-soluble reducing sugars than the other varieties.

SOYBEANS

Drying

440 GLEASON, JE; SELLECK, VK. 1990. **Development of a small scale soya processing business in Sri Lanka**. *Sri Lankan Journal of Agricultural Sciences*, 27, 66-78; 5 ref.

Evidence suggests that the most effective method of integrating soya into the daily diet of Sri Lankans is to offer the public processed soya foods. Processing of soya can be a profitable enterprise for small-scale entrepreneurs. This paper presents a case study of the establishment of a small-scale soya processing company in Kandy, Sri Lanka. The business proved to be highly profitable, giving an internal rate of return of 30%, not including the cost of family labour. The major problems associated with development of the business were financial management, accounting and marketing. Training in these business skills should be provided by any agency which promotes development of small-scale businesses.

441 JASWANT SINGH; BARGALE, PC. 1990. **Effect of hydro-thermal treatment on mechanical oil expression from soybean**. *Journal of Food Science and Technology Mysore*, 27: 2, 86-88; 6 ref.

Effect of various hydrothermal treatments on oil recovery from soyabeans is described. Analysis of data revealed that boiling of soyabean splits and whole soyabeans with water for 30 min followed by sun-drying to about 7% moisture content (wet basis) gave the maximum oil recovery of 82.40 and 84.72% in 3 pass pressing with specific energy consumption of 0.370 and 0.503 kWh/kg of feed, respectively, when compared with other treatments.

442 MISHRA, HN; MUKHERJEE, RK. 1992. **Effect of temperature and surface area on drying of dehulled and water-blanched soybeans**. *Journal of Food Science and Technology - Mysore*, 29: 5, 318-319.

Surface area of the blanched soybean splits (dhals) increased two folds by flaking, thereby reducing the drying time by half. Mechanical drying was found to be better than sun-drying. The rate of drying seemed to increase with temperature. Mechanical drying at 60°C for 4 h for unflaked sample and for 2 h for flaked sample were found suitable for the drying of dehulled and blanched soybeans for milling.

443 SETH, KK; NIRANKAR-NATH. 1988. **A simple blanch-dry process for lipoxygenase inactivation in soybean cotyledons**. *International Journal of Food Science and Technology*, 23: 3, 275-279; 28 ref.

Full-fat flour from unblanched soyabeans develops a beany flavour during milling, due to lipoxygenase activity; the flour also becomes bitter. The min. thermal treatment necessary to inactivate lipoxygenase in soyabeans before milling was determined. Soyabeans were

dehulled and blanched in water at 80-99.3°C. Water blanching for 3 min at 99.3° was necessary when cotyledons were subsequently sun dried; the flour had a N solubiity index (NSI) of 37.8% and residual trypsin inhibitor activity (RTIA) of 64.2%. Only 1.5 min at 99.3° was necessary to inactivate lipoxygenase in cotyledons subsequently dried at 60°; NSI of this flour was 32.7%, with 44.7% RTIA.

444 SINGH, DS; SINGH, BPN. 1989. **Heating of a thin bed of soybean**. *Journal of Agricultural Engineering - Indian Society of Agricultural Engineers*, 26: 2, 139-146; 10 ref.

Experiments were conducted to study the heat transfer behaviour of soyabean with thin layer drying. Bed thickness was 50 mm. Five levels of initial m.c. (10, 14, 18, 22 and 26% d.b.) and 5 levels of air temp. (90, 95, 100, 105 and 110°C) at a high air velocity of 2.03 m/s were chosen. In each case, the bed was heated for 600 to 1800 s with an interval of 300 s. Temp. rise followed a simple exponential model of first order kinetics. The rate constant is not influenced by air temp. but decreased slowly with increase in initial m.c.

445 SINGH, DS; SINGH, BPN. 1990. **High temperature drying of soybeans in thin layers**. *Proceedings of the International Agricultural Engineering Conference and Exhibition*. (Bangkok, Thailand: 1990: 3-6 December)/edited by VM Salokhe and SG Ilangantilebe. Bangkok: Asian Institute of Technology, p. 523-529.

Thin layer drying behaviour of soyabeans was studied at several air temp. (90, 95, 100, 105 and 110°C), initial m.c. (10, 14, 18, 22 and 26% d.b.) and at 2.03 m/s air velocity. The bed thickness was 50mm. In each case, the bed was heated for different durations between 600 and 1800s at 300s intervals. Drying of soyabeans was found to be by diffusion controlled mass transfer. Decrease in m.c. and drying time was directly proportional to the square root of time. Temp. dependence of the moisture diffusivity in the grain followed the Arrhenius law with an activation energy of 9.478 kcal/g-mol.

Storage and storage decay

446 DEY, G; MUKHERJEE, RK. 1984. **Iodine treatment of soybean and sunflower seeds for controlling deterioration**. *Field Crops Research*, 9: 3/4, 205-213; 30 ref.

Treatment of 2-month-old soyabean and 4-month-old sunflower seeds with a dry dressing of iodine in a calcium carbonate carrier effectively reduced physiological deterioration during subsequent storage under elevated temp. and different RH regimes. The beneficial effect of seed treatment was reflected in better germination and early seedling growth accompanied by greater cellular membrane integrity and dehydrogenase activity, often found to be directly correlated with seed vigour. This suggests that iodine-like substances play a role in the repair or control mechanism of membrane damage incurred during postharvest storage, particularly in tropical countries.

447 GUPTA, IJ; SCHMITTHENNER, AF; MCDONALD, MB. 1989. **Changes in the production of volatile aldehyde compounds by storage moulds in soybean during accelerated aging and germination**. *Beitrage zur Tropischen Landwirtschaft und Veterinarmedizin*, 27: 3, 335-339.

There was a 5-fold increase in the production of volatile aldehyde compounds (VAC) during the germination of accelerated aged (AA) and noninfested seed. With the increase in the level of fungi (*Aspergillus niger*, *A. glaucus*) on the seed there was a decrease in the amount of VAC produced during germination of AA seeds. Sand germination gave higher percentage germination than the paper towel method.

448 GUPTA, IJ; SCHMITTHENNER, AF; MCDONALD, MB. 1993. **Effect of storage fungi on seed vigour of soybean**. *Seed Science and Technology*, 21: 3, 581-591.

The effect of *Aspergillus niger* and *Aspergillus glaucus* on seed deterioration during accelerated aging (AA) was investigated. Both fungi increased deterioration as manifested by reduced germination in rolled paper towel and modified sand tests. *A. niger* reduced germination more than A, glaucus. An application of 8-10 spores/seed of A, niger was as effective in reducing germination as an application of 50-60 spores/seed of *A. glaucus*. The modified sand test gave better germination of AA seeds than the rolled paper towel test. Seed treatment with fungicides gave significant control of moulds; benomyl (Benlate) was most effective. Seed treatment before AA was better than seed treatment after AA for benomyl, thiram and captan. Benomyl gave a greater increase in germination than the other fungicides used. There was a five-fold increase in the production of volatile aldehyde compounds (VAC) after AA during the germination of accelerated aged noninfested seed. With increased levels of fungi on the seed there was a decrease in the amount of VAC produced during germination of AA seeds. Treatment of the seed with benomyl increased the VAC indicating control of the fungi and increased germination.

449 JHA, K; BARGALE, PC. 1993. **Chemical and microbial changes in full-fat soyflour during storage in different packaging materials**. *Jrl. of Food Science and Tech. - Mysore*, 30: 1, 56-57.

The changes in total bacteria, lipolytic bacteria, yeast and mould counts, moisture and free fatty acids of full-fat soyflour (FFSF), when stored at 38°C and 90% RH in jute cotton bags, metal containers (tins), low density polyethylene and laminated aluminium foil packs, have been studied. Moisture impermeable metal containers and laminated aluminium foil packs gave maximum protection to FFSF under above conditions, while jute and cotton bags were found to be unsuitable.

450 KULKARNI, SD; BHOLE, NG; SAWARKAR, SK. 1993. **Dehydration of soybeans during high temperature processing**. *Drying technology (USA)*, 11: 1, 229-240.

451 KUNDU, GG; SRIVASTAVA, KP. 1992. **Soybean pests in India and their management**. New Delhi: Today & Tomorrow's, 137p.

This book is a reference guide to the the biology and control of insect pests on soyabeans. The chapter titles are: pests at germination stage; pests at seedling stage; pests in grown-up plants; storage pests; pest management; and integrated pest management. Appendices contain a list of the insects discussed in the book with their host ranges, and a list of insecticides and their chemical structures.

452 MUKHERJEE, RK; PATHAK, DG. 1985. **Stepwise hydration of soybean seed to prevent soaking injury and loss of viability during storage**. *Proc. of the Indian Nat. Science Aca-demy, B. Biological Sciences*, 51: 4, 515-521.

Soaking of soyabean seed for a brief period followed by drying back failed to improve its germinability due to the rapid imbibition and consequent damage. Stepwise hydration of the seed was attempted to reduce membrane damage and leakage loss during hydration. Osmotic control by 2-step hydration (osmotic treatment with PEG, then soaking in water) followed by drying improved immediate germination, whereas 3-step hydration (moisture equilibration before osmotic treatment and soaking in water) followed by drying had a remarkable effect on storability; soaking-drying treatment of humidified seeds was also promising.

453 RAVIKUMAR, CH; KULKARNI, GN; VYAKAPNAL, BS; SHASHIDHARA, SD. 1987. **Effect of fungicides and insecticides on storability of soybean genotypes (*Glycine max (L.) Merrill*)**. *Plant Path. Newsletter*, 5: 1-2, 11; 3 ref.

Treatment of Monetta and Bragg soyabean seeds with captan or thiram and BHC [HCH] or malathion improved storability. Fungicide alone or with insecticide improved storability of KHSb-2 but insecticide alone did not.

454 SANGAKKARA, UR. 1988. **Effect of threshing method, drying temperature and storage condition on microbial deterioration of soybean seeds**. *Jrl. of Applied Seed Production*, 6, 1-5.

The effects of 2 methods of storage, 4 drying temp. and 2 conditions of storage on the development of fungal infections on soyabean seeds were evaluated. The fungi were identified by culture on potato dextrose media. Seeds threshed mechanically and dried at higher temp. showed a higher percentage of infection. This was most prominent when the seeds were stored at high RH, and was reflected by the rapid development of fungal infection leading to the rapid loss of germinability. *Aspergillus* and *Phomopsis sp.* predominated. In contrast, hand threshed seeds dried at lower temp. retained their germinability 12 weeks after storage and were relatively free of fungal infection. Possible methods of retaining the quality of seed under tropical farming conditions are presented.

VIGNA

Storage

455 ASTHANA, A; DIXIT, K; KISHORE, N. 1988. **Toxicity of citral and eugenol against some storage fungi**. *Archiv fur Phytopathologie und Pflanzenschutz*, 24: 5, 417-421; 6 ref.

The min. inhibitory concn of the naturally occurring terpenoids citral and eugenol against *Aspergillus flavus*, the most common fungus causing deterioration of *Phaseolus radiatus* [*Vigna radiata*] during storage, was found to be 300 p.p.m. Tests with 12 other storage fungi showed the compounds to have a broad range of antifungal activity. The terpenoids showed no toxic effects on the seed germination, seedling growth and general health and morphology of *V. radiata*.

456 BEGUM, S; QUINIONES, AC. 1990. **Protection of stored mungbean seeds from bean weevil *Callosobruchus chinensis* by vegetable oil application**. *Bang. Jrl. of Zoology*, 18: 2, 203-210.

Experiments were carried out at 24-32.9°C and 61-98%