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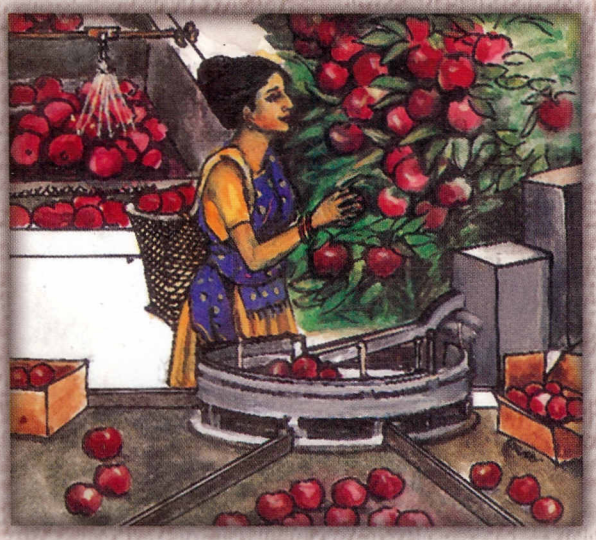

SAARC Agricultural Information Centre

Postharvest Management in Agriculture
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SAARC Agricultural Information Centre (SAIC)

SAARC Agricultural Information Centre (SAIC)
BARC Complex, Farmgate, Dhaka 1215, Bangladesh

Published : 1995

Cover design : Mafruha Begum

Price : US$ 5.00 for SAARC countries
US$ 8.00 for other countries

Chandel, A S and Kamal, R M
Postharvest Management in Agriculture: SAARC bibliographical database.
Dhaka: SAARC Agricultural Information Centre, 1995.
ii, 231, xxxv p.
1. Postharvest technology, bibliography. 2. SAARC Agricultural Information Centre. i. Jt. Author. ii. Title.

Published by : Director, SAARC Agricultural Information Centre (SAIC)
Printed at : Panir Printers, 9 Nilkhet, Dhaka 1205

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lunata [*Cochliobolus lunatus*] and *Rhizopus arrhizus*. Rotting of *Capsicum* was caused by *A. fumigatus*, *A. niger*, *Fusarium solani* and *R. arrhizus*.

1180 SINGH, BP; BHUTANI, RD; PANDITA, ML. 1989. **Storage studies of brinjal varieties: a note**. *Haryana Journal of Horticultural Sciences*, 18: 1-2, 142-145; 6 ref.

In one trial, fruits of 6 aubergine cultivars were stored in open baskets under ambient conditions for up to 6 days. In another trial, fruits of 4 cultivars were treated with 12% mustard oil or 12% Waxol, packed in shredded paper in baskets, and stored at room temperature for up to 9 days. In the first trial, the least physiological weight loss was observed in cv. S-4 and it was the only cultivar in fair condition after 4 days of storage; all other cultivars were either in poor or unacceptable condition after 4 days. In the second trial, fruits treated with Waxol had the best appearance and the least physiological weight loss. Of the cultivars tested, P-8 showed least weight loss and Pusa Purple Long the most.

PEAS

Postharvest handling

1181 MISHRA, D; RATH, GC. 1989. **Comparative rotting ability of *Fusarium* species causing postharvest fruit rot of brinjal**. *Orissa Journal of Agricultural Research*, 2: 1, 72-73.

All 4 F. spp. (*F. solani*, *F. moniliforme* [*Gibberella fujikuroi*], *F. oxysporum*, *F. equiseti*) tested caused rotting of aubergine fruits though the degree varied, *F. solani* being the most virulent. Cultivars differed in their reaction; *Cuttack pendi*, Satasankha local and Cuttack local showed resistance to 1 or more of the species and may prove useful in a breeding programme.

1182 BISHNOI, S; KHETARPAUL, N. 1994. **Protein digestibility of vegetables and field peas (*Pisum sativum*) - varietal differences and effect of domestic processing and cooking methods**. *Plant Foods for Human Nutrition*, 46: 1, 71-76.

Protein digestibility was found to be 60.4 to 66.5 percent in raw unprocessed seeds of different pea cultivars. Protein digestibility (in vitro) was improved by the common methods of domestic processing and cooking including soaking, dehulling, ordinary cooking, pressure cooking and sprouting of legume grains. Pressure cooking had more pronounced effect on protein digestibility followed by ordinary cooking, sprouting, soaking for 18 h and (12 h) and dehulling. Pressure cooking of soaked and dehulled seeds was noticed to give most improved protein digestibility.

1183 BROWN, DL; CHAVALIMU, E. 1985. **Effects of ensiling or drying on five forage species in western Kenya: *Zea mays* (maize stover), *Pennisetum purpureum* (Pakistan Napier grass), *Pennisetum* sp. (bana grass), *Impomea batata* (sweet potato vines) and *Cajanus cajan* (pigeon pea leaves)**. *Animal Feed Science and Technology*, 13: 1/2, 1-6; 6 ref.

Tropical livestock production systems are enhanced when suuplus wet-season feeds can be preserved for use during dry seasons. For this reason, new locally feasible preservation methods were tested on locally available feeds at Maseno, western Kenya. Values for the chemical composition of fresh, dried and ensiled maize stover, Napier grass, bana grass, sweet-potato vines and pigeon pea leaves were compared. Silage and hays preserved nutrients with equal efficiency, except for sweet-potato vine silages. The sweet-potato silages suffered a shift of protein into the acid detergent insoluble fraction, representing a loss of 37 g plant crude protein/kg silage DM. Only 15 g crude protein/kg DM was damaged when sweet-potato vines were dried.

1184 KANAWADE, VL; NARAIN, M. 1993. **Effect of pre-treatment and drying air temperature on quality of peas dehydrated in fluidized bed dryer**. *Journal of Food Science and Technology -Mysore*, 30: 2, 118-120.

Data on pretreatments (pricking and blanching) and drying air temperatures (60-90°C) on rehydration ratio and sensory characteristics of peas (Variety:'Arkel') dehydrated in fluidized bed dryers showed that the effect of pricking was more prominent than blanching. Temperature also affected texture and flavour. Drying air temperatures of 70-80 -degrees-C with pricking and blanching were found to be the optimum treatments for pea dehydration in fluidized bed.

1185 MOORE, DL; MCCRACHEN, VA. 1991. **Evaluation of consumer response to generic promotion of dry peas in Pakistan**. *Economic effects of generic promotion programs for agricultural exports: Proceedings of a Symposium on evaluating economic effects of generic promotion programs for agricultural exports*. (Washington, DC: 1990: 22-23 Feb)/edited by JP Nichols; HW Kinnucan; KZ Ackerman. p. 158-171; 15 ref.

Peas are an important traditional and favoured food in the Pakistani diet, and have a large potential to be a

volume market for dry peas from the USA. The US Dry Pea and Lentil (USDPL) Council, using TEA support from the USDA Foreign Agricultural Service, cooperated with a Pakistan importer to package and sell dry peas in Pakistan, a country where dry peas for human consumption have not previously been advertised of available in volume. Following the first major entry into the market in October 1988, an aggressive advertising campaign emphasized both cooking techniques and the quality of US produced dry peas packaged as Platinum American Dry Peas. This campaign utilized television, print media, and point of purchase displays. Knowledge, recall, and probability of consumption of dry peas can be evaluated for this advertising campaign. The study identifies factors affecting the probability of consumption of peas in the off-season and advertisement recall for a limited budget advertising campaign in Pakistan. Off-season pea consumption serves as the focus of the analysis as dry peas are considered a niche market in the off-season for fresh green peas. A secondary objective is to evaluate the advertising campaign for US dry peas so that future promotions can be adjusted and product perceptions can be targeted. A probit model is used, and results indicate some of the factors that characterize the off-season consumption and advertising viewing of consumers. Brand experience, perceived importance of year-round availability, and retailers as a source of information significantly influenced the probability of off-season consumption. Housewives who recognized the importance of the USA as a source of origin for dry peas, who had advanced education, or who were off-season pea consumers were more likely than others to recall having viewed the dry pea advertisements. Lack of awareness of advertising poses special concerns for this market: the high rate of illiteracy of the rural population needs to be considered in order to select the appropriate mix of advertising.

1186 SINGH, MP; SINGH, B. 1992. **Studies on threshing parameters of pigeon pea (*Cajanus cajan*).** *International Conference on Agriculture Engineering. AgEng '92.* (Uppsala: 12: 1992: 1-4 Jun). Jordbruksteknikska Inst. p. 104.

1187 SINGH, SK; MUKHERJEE, S; CHOURASIA, SK. 1990. **Mechanical properties of Bengal gram at various moisture levels.** *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. 481-484; 7 ref.

The load and energy required for formation (fracture initiation) in Bengal gram (*Cicer arietinum*) were studied for 3 varieties, at 6 moisture levels, 2 orientations and 3 rates of loading. Linear relationships were obtained between m.c. and load required for fracture at both orientations and for all 3 varieties. The load required was found to decrease with increase in m.c. while the energy required increased with increased m.c. The orientation of grains was also found to play an important role in fracture initiation but no significant relationship was established between rate of loading selected and fracture initiation. The results were statistically verified, and found to be significant at the 5% level of significance and 105 degrees of freedom.

1188 VERMA, P; SAXENA, RP; SARKAR, BC; OMRE, PK. 1993. **Enzymatic pretreatment of pigeonpea (*Cajanus cajan L.*) grain and its interaction with milling.** *Journal of Food Science and Technology (India)*, 30: 5, 368-370.

1189 VERMA, RA; TRIPATHI, MP; SRIVASTAVA, RK. 1986. **Screening of pea (*Pisum sativum*) cultivars for canning.** *Progressive Horticulture*, 18: 3-4, 318-323; 6 ref.

Data are tabulated on 27 agronomic, morphological and quality characters for 17 cultivars. S30 had large peas, good seed recovery, high starch percentage, good texture and good retention of colour on canning, and is considered the best canning variety. S18 and Lincoln were of moderate quality and G-C195 and B.L3 were also satisfactory.

1190 VIJAY, S. 1985. **Low cost packaging of peas.** *Bev. Fd. World.*, 12: 39.

1191 VIJAY, S; ANAND, JC. 1982. **Physico-chemical characteristics of pea varieties as affected during steeping preservation.** *Ind. J.Agric.Sci.*, 51: 3, 162.

Storage decay

1192 DEO, PP; GUPTA, JS. 1986. **Further studies on prevention of storage moulds of gram by application of chemicals.** *Pesticides*, 20: 12, 43-44, 46; 6 ref.

The prevention of storage moulds on seeds of 2 *Cicer arietinum* cultivars by application of 3 fungicides, 2 fumigants and 3 organic acids is tabulated. Moulds were considerably reduced by the application of ceresan, ethyl formate and calcium propionate at 0.3% seed wt. Copper sulphate and carbon tetrachloride also reduced incidence but reduced germinability.

1193 DUTTA, SK; NEMA, VK; BHARDWAJ, RK. 1992. **Deep-bed drying of gram**. *International Conference on Agriculture Engineering. AgEng '92.* (Uppsala (Sweden): 12th: 1992: 1-4 Jun). Jordbrukstekniska Inst. p. 224-225.

1194 GANGWAR, AC; YADAV, A. 1986. **Economic analysis of pulses (gram) in Haryana State**. *Research Bulletin, Dept. of Agricultural Economics, Haryana Agricultural Univ.*, No. 17, 69 p.

The study investigates the causes of poor performance and analyses the constraints inhibiting the cultivation of pulses, with special reference to gram (chickpeas), in Haryana. Both primary and secondary data for 1983/84 to 1984/85 were used. On the basis of the highest area under pulses, six tehsils were selected for study from Sirsa, Hisar, Bhiwani, Mahendergarh and Rothak districts. There was a decreasing trend in area of chickpeas, urd, lentils, moong and total pulses. The study of constraints inhibiting the attaining of higher yields of chickpeas indicates that moisture at time of sowing and rainfall during the growth of the crop are two important agroclimatic constraints. During the 14 year period 1970/71 to 1983/84 the arrivals during the post-harvest periods were maximum and lowest in the lean periods, and that the prices of pulses (chickpeas) were indeed higher, but that profitability continues to be low on account of low yields.

1195 GANGWAR, AC; NIWAS, S; RAI, KN. 1983. **Marketing pattern of gram in selected markets of Haryana**. *Agril. Marketing*, 26: 2, 13-17.

The marketing year for gram in selected markets of Haryana was split into three periods (1) peak marketing period (April-July), (2) mid-year period (August-November), and (3) lean period (December-March). Time series monthly data on arrivals and prices of gram were collected from six markets randomly selected for the years 1970/71 to 1979/80. The findings show that the producers'-sellers' marketing decisions were not much directed by price differences from one lean period to the next or differences between post harvest and lean period price. Even though there have been considerable increases in the prices for one lean period to the next in the same year, it did not significantly affect the farmers' gram marketing patterns because they could not withhold the produce for sale in lean months due to pressing financial needs and lack of storage facilities.

1196 KHAIRE, VM; KACHARE, BV; MOTE, UN. 1992. **Efficacy of different vegetable oils as grain protectants against pulse beetle, *Callosobruchus chinensis L.* in increasing storability of pigeonpea**. *Journal of Stored Products Research (United Kingdom)*, 28: 3, 153-156.

1197 LAL, J; CHANDRA, S. 1987. **Plant breeding challenges and constraints: suggested areas of tissue culture relevance in pulses - chickpea and pigeonpea**. *Legume Research*, 10: 1, 53-59.

The main causes and constraints contributing to low yield in these 2 grain legumes are considered, and include such factors as lack of improved varieties, susceptibility to diseases, pests and stress, asynchronous maturity and cross incompatibility. Tissue culture techniques are seen as helping to overcome some of these constraints by allowing interspecific, intergeneric and wide hybridization, by inducing genetic variability, and by allowing preservation of pollen and the production of haploids and homozygous lines.

GROUNDNUTS

Storage

1198 BALWINDER SINGH. 1991. **A study on the pattern and economics of groundnuts storage at different levels in the Punjab**. *Economic Affairs Calcutta*, 36: 2, 90-96.

New technology in agriculture has given rise to an increased demand for storage space in the Indian rural economy. This article investigates economic aspects of the storage of groundnuts in the Punjab. The types and methods of storage are explained, as practices by producers and sellers. The kind of storage available to different farm sizes is also examined. Data from a sample of 40 traders and 60 farmers for the years 1987/88 reveal that about 80% of the farmers sold their groundnut produce immediately after the postharvest period to fulfil their cash requirements. Those who stored their produce faced inadequate facilities and used their houses to keep bags of groundnuts over long periods of time. This finding calls for an effort on the part of the government to improve facilities.

1199 GOWDA, DJ; SHIVAPRASAD, V; RAMAIAH, H. 1991. **Drying and storage studies on groundnut (DH-3-30) seeds (*Arachis hypogaea L.*)**. *Karnataka Journal of Agricultural Sciences*, 4: 1-2, 32-35; 10 ref.

Groundnuts cv. DH-3-30 seeds with initial moisture contents of 35, 43 and 67% (DW basis) were dried at 40-60°C in a model drying unit using an air flow of 4 m3/min and 5 kg seed lots. Seeds were then stored at Bangalore under ambient conditions for 6 months before