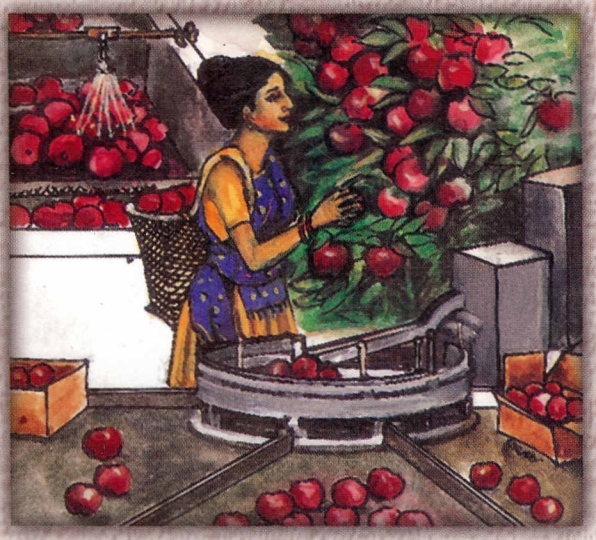
SAARC

Postharvest Management in Agriculture

SAARC Bibliographical Database



SAARC Agricultural Information Centre

Postharvest Management in Agriculture
SAARC Bibliographical Database

A S Chandel and R M Kamal

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

CONTENTS

523 SINGH, J; VASHISTHA, D. 1990. **Effect of harvesting stage and storage methods on garlic self life**. *International Seminar on new frontiers in Horticulture*. p. 194.

524 SINGH, J; PANDEY, UC. 1990. **Effect of different storage methods on storage life of garlic**. *Proceedings of the National Symposium on onion and garlic*. (1990: June 2-3). Solan: Dr. Y.S. Parmar University of Horticulture and Forestry. p. 28.

525 SINGH, J; VASHIST, D; KHURANA, SC. 1994. **Effect of harvesting stages and storage methods on storage life of garlic bulbs**. *Scientific Horticulture*, 4.

526 VASHISTH, DINESH. 1990. **Studies on storage methods of garlic bulbs (M.Sc: thesis)**. Haryana Agricultural University, Hisar.

An experiment was conducted to study the effect of different storage methods on keeping quality of garlic bulbs cv. HG-1. the crop was harvested at two stages i.e. yellow leaves stage and brown leaves stage, and five methods of storage were used to store the well cured bulbs for five months in well ventilated store at room temperature. The storage losses due to shrinkage, dead cloves, yellow cloves, physiological weight loss and total weight loss increased with the increase in storage period. These losses were lower in first stage harvested bulbs than second stage harvested bulbs. Minimum losses were recorded in the bulbs stored with leaves in wooden boxes, followed by the bulbs kept in tied bundles. The bulbs of first stage of harvested stored with tops (leaves) in wooden boxes had no loss due to shrinkage, dead cloves and yellow cloves even after five months of storage period. Second stage harvested bulbs had higher T.S.S. content than first stage harvested bulbs. Moisture content was observed to be more in first stage harvested bulbs throughout the storage period. While sulphur content was more in first stage harvested bulbs upto 90 days and later it was more in second stage harvested bulbs. Among various methods of storage, the highest T.S.S. and sulphur content were recorded in bulbs stored with tops in wooden boxes and the highest moisture content was noticed in tied bundles. NO sprouting was noticed upto five months of storage. Internal sprouting was 8-10 days earlier than external sprouting. Both the forms of sprouting, i.e. internal and external were earlier in stage II harvested bulbs than stage in harvested bulbs and these were delayed maximum in bulbs stored with tops in wooden boxes. Sprouting per cent was more in stage II harvested bulbs. It was noticed to be the least in the bulbs kept in wooden boxes with tops. The germination per cent of cloves in the field was neither affected by the stages of harvesting nor by the methods of storage.

527 WAHID, M; KHAN, MS; SHAH, AH. 1990. **Effect of irradiation and storage on physico-chemical characteristics of garlic**. *Sarhad Journal of Agriculture*, 6: 4, 371-376; 18 ref.

Garlic bulbs (cv. G.S.I.) were irradiated at 0.05, 0.10, 0.15 or 0.20 kGy using 60Co and stored in wooden crates for 4 months at ambient temperature (20-37°C, 50-80% RH) or low, temperature (10°, 80-90% RH). Samples were monitored for sprouting, rot and weight loss. Consumer acceptability and acid value were determined throughout storage. Sprouting was apparent in control (non-irradiated) samples after 4 and 10 weeks' storage at low and ambient temperature, respectively, and reached 100 and 69% after 16 weeks' storage at low and ambient temperature, respectively. Irradiation inhibited sprouting at both temperatures. Percentage decay [unspecified] was lower in irradiated samples than in controls, which showed 31.7% and 52.9% decay, respectively, after 16 weeks' storage at ambient and low temperature. Weight loss increased from 0.2 to 28.3% and from 0.3 to 31.5% in control samples at low and ambient temperature, respectively, between 2 and 16 weeks' storage. Weight loss was less in irradiated samples. Sensory tests showed that irradiated samples retained colour, texture and odour compared with controls. There was a gradual and significant increase (from 0.448 to 2.246 mg KOH/100 g edible portion of sample) in the acid value of controls during storage. Lower doses of irradiation and storage temperature had an irregular effect on the acid value but the highest dose increased the acid value. It was concluded that irradiation had no deleterious effects on the storage properties of garlic and that a dose of 0.05 kGy could be considered cost-effective.

GINGERS

528 BEEK, TA-VAN; POSTHUMUS, MA; LELYVELD, GP; PHIET, HV; YEN, BT. 1987. **Investigation of the essential oil of Vietnamese ginger**. *Phytochem.*, 26: 11, 3005-3010; 38 ref.

Data on oil composition of dried roots collected in Hai Hung province are compared with those reported for samples from India, Australia, Japan, Fiji, Sri Lanka and Trinidad. The oil yield was 2.7% and consisted of 28% monoterpene hydrocarbons, 37% oxygenated monoterpenes, 25% sesquiterpene hydrocarbons, small amounts of oxygenated sesquiterpenes and non-terpenoid compounds. The main component (16%) was geranial

which, together with neral, gave the oil a lemony character. Eleven compounds newly reported for ginger were found. The distillation time influenced the oil yield, composition and odour. Gamma-irradiation at 10 KGy to eliminate microbiological contamination did not affect oil yield or composition (apart from a slight reduction in the alpha-pinene concentration), and appears to be a good alternative to fumigation with ethylene oxide.

529 BHARDWAJ, SS; GUPTA, PK; DOHROO, NP; SHYAM, KR. 1988. **Biological control of rhizome rot of ginger in storage**. *Indian Journal of Plant Pathology*, 6: 1, 56-58; 14 ref.

Rhizome rot [of *Zingiber officinale*], caused by *Pythium aphanidermatum* and *Fusarium equiseti*, was controlled during storage by 3 *Trichoderma spp.* to varying degrees. Of the various treatments tried, steeping inoculated rhizomes in a spore suspension of *T. viride* or smearing with *T. hamatum* was quite effective against *P. aphanidermatum* on seed ginger. Good control of *F. equiseti* rot was given either by pre-storage steeping of inoculated rhizomes in *T. harzianum* suspension or by smearing with *T. viride*.

530 BHUYAN, S; PRASAD, S. 1990. **Drying characteristics of ginger and development of a small capacity dryer**. *International Congress on Mechanization and Energy in Agriculture. Proceedings of a Conference*. (Adana, Turkey: 1990: 1-4 October)/edited by Y Zeren; Y Yildiz; MT Ozcan; E Guzel; A Isik; E Bilgin. Ankara: Ministry of Agriculture, Forestry and Rural Affairs, p. 501-509; 8 ref.

Thin layer drying experiments were conducted on the Siliguri variety of ginger in order to study its drying characteristics. The quality of dried ginger was also evaluated by determining its volatile oil and oleoresin content. A small capacity tray dryer was designed and built and its performance tested. The heat utilization factor, coeff. of performance, overall thermal efficiency and uniformity of drying of sliced ginger on each of the trays were determined. The dryer performed satisfactorily. The air temp. of 60°C was found to be most suitable for drying ginger slices.

531 KOLRA, BN; DOHROO, NP. 1991. **Production technology in ginger - a review**. *Agricultural Reviews Karnal*, 12: 1, 22-36; 4 pp. of ref.

Many aspects of ginger (*Zingiber officinale*) cultivation are reviewed including its origin and history, climatic and soil requirements, sowing dates and spacing, manure and fertilizer requirements, cultivars, mulching, weed and disease control, intercropping and mixed cropping, harvesting and storage, recovery of mother rhizomes and curing.

532 MANTRI, AR; AGRAWAL, YC. 1991. **Process development for ginger (*Zingiber officinale*) dehydration**. *Indian Journal of Agricultural Engineering*, 1: 1, 23-25; 3 ref.

An experiment was carried out to develop a multistage dehydration process for ginger (*Zingiber officinale Roscoe*) employing decreasing temp. through the stages. The multistage dehydration process reduced the drying time of the single stage process reduced the drying time of the single stage process while improving or at least maintaining the quality of dried ginger. Volatile oil, oleoresin and crude fibre were statistically significant biochemical factors for quality determination of ginger powder. Total ash was a non-significant factor. All the organoleptic quality factors (aroma, pungency and absence of odd or burnt flavour) and consumer acceptance were statistically significant. Ginger may be dehydrated at 85°C up to a m.c. of 50% w.b. during the first stage and then be dried at 65°C up to 12% m.c. w.b. for reducing drying time and maintaining quality of ginger.

533 MISHRA, B; RATH, GC. 1988. **Geotrichum rot of stored ginger**. *Indian Journal of Mycology and Plant Pathology*, 18: 2, 213.

G. candidum was isolated from pieces of ginger rhizome collected from markets in Bhubaneswar, Orissa, this apparently being a new record on stored ginger. Fungus caused complete rotting of inocul. rhizomes in 15 d at 25°C and 100% RH.

534 RAJAN, KM; AGRIHOTRI, VP. 1989. ***Pythium* induced rhizome rot of ginger: problem and progress**. *Perspectives in phytopathology*/edited by VP Agrihotri [et al.]. New Delhi: Today and Tomorrow's Printers & Publishers, p. 189-198.

Symptomatology, pathogen (8 P. spp.), disease cycle, losses and their management are reviewed.

535 SHARMA, SK; DOHROO, NP. 1991. **Post-harvest management of rhizome rot (*Fusarium oxysporum f.sp. zingiberi Trujillo*) of ginger through chemical and antagonist**. *Indian Cocoa, Arecanut and Spices Jrl.*, 14: 4, 150-152; 6 ref.

Trichoderma harzianum and *Gliocladium virens* inhibited growth of *F. o. f.sp. zingiberi* in vitro by 73 and 68%, respectively. Results of in vitro tests indicated that Bavistin [carbendazim] and carbendazim + Dithane M-

45 [mancozeb] were fungicidal and completely inhibited the growth of *F. o. f.sp. zingiberi*. Steeping rhizomes in carbendazim (1%) for 60 min before storage controlled postharvest rots and reduced disease incidence from 71.4 to 18.2%. Carbendazim + mancozeb also gave effective control.

536 VIJAY, S. 1986. **A simple method to preserve fresh ginger rhizomes after harvest**. *Proceedings of National Workshop on the Development of Marketing and Export and North East region and the role of Cooperatives*. (Guwahti: 1986: 12 Feb.). p. 123-124.

537 VIJAY, S. 1983. **Preserve ginger's pungency**. *Farmer's Journal*, 3: 7, 52.

538 VIJAY, S; ANAND, JC. 1982. **Preserving ginger all the year round**. *Ind. Hort.*, 27: 3, 13.

TURMERICS

539 CHANDER, H; KULKARNI, SG; BERRY, SK. 1991. **Effectiveness of turmeric powder and mustard oil as protectants in stored milled rice against the rice weevil, *Sitophilus oryzae***. *International Pest Control*, 33: 4, 94-97; 14 ref.

Laboratory studies were conducted to evaluate the efficacy of turmeric powder (TP) and mustard oil (MO) alone and in different combinations as protectants for milled rice against attack by the curculionid *Sitophilus oryzae*. TP alone did not cause significant mortality except at 2 or 4% concn after a 3-month storage interval. F1 progeny were suppressed by more than 50% at a concn of 1%, even after a 6-month storage interval. Only treatment with MO at 4 or 8 ml/kg dosages gave appreciable mortality of *S. oryzae* at all storage intervals. One or 2 ml/kg dosages reduced *S. oryzae* progeny by 40%, even after 6 months storage, while no progeny developed on rice treated with 4 or 8 ml/kg. Adult mortality following exposure to various combinations of TP and MO, in general, declined as the concn of TP increased for any given dose of MO. The 4 ml/kg dosage of MO combining 1-20 g of TP/kg gave the best protection of rice by completely suppressing progeny. The cooking quality of rice treated with TP and MO alone and in combination was similar to that of untreated rice, with the exception of the retention of a slight turmeric aroma and colour in rice containing the higher concn of TP.

540 CHANDER, H; KULKARNI, SG; BERRY, SK. 1992. **Studies on turmeric and mustard oil as protectants against infestation of red flour beetle, *Tribolium castaneum (Herbst.)* in stored milled rice**. *Journal of Insect Science (India)*, 5: 2, 220-222.

541 GOYAL, RK; KORLA, BN. 1993. **Changes in the quality of turmeric rhizomes during storage**. *Journal of Food Science and Technology - Mysore*, 30: 5, 362-364.

Both cured and uncured dried rhizomes of four turmeric cultivars were examined for changes in curcumin, essential oils, and oleoresins during 12 months storage at ambient temperature. curcumin content continued to decline upto 10 months, but the change, thereafter, was minor, However, essential oil and oleoresins decreased throughout the storage period. The maximum losses in curcumin, essential oils and oleoresins were 23.4, 27.5 and 24.2%, respectively, after 12 months in cured rhizomes of cultivar 'EM-321' and uncured rhizomes of cultivar 'PCT-2'.

542 HARISH KUMAR; ROY, AN. 1990. **Occurrence of fungal rot of turmeric (*Curcuma longa*) rhizomes in Delhi market**. *Indian Journal of Agricultural Sciences*, 60: 3, 189-191; 12 ref.

Postharvest rotting was maximum in Sep. and min. in May. Ten fungi were associated with infection, including *Aspergillus flavus*, *A. niger*, *Cladosporium cladosporioides*, *Drechslera* [*Setosphaeria*] *rostrata*, *Fusarium moniliforme* [*Gibberella fujikuroi*], *F. oxysporum*, *Macrophomina phaseolina*, *Pythium aphanidermatum*, *Rhizoctonia solani* and *Sclerotium* [*Corticium*] *rolfsii*. The *Aspergillus spp.* were the most virulent and caused infection of both injured and uninjured rhizomes.

543 SHARMA, MP; MEER-GUPTA; ROY, AN; GUPTA, M. 1987. **Physico-chemical control of rhizome rot of turmeric**. *Pesticides*, 21:4,33-38; 17ref.

Hot water treatment at 50°C for 30 min eradicated all 18 fungi associated with turmeric seed rhizomes without affecting germination. Bavistin and benomyl were the most effective fungicides on rhizomes inoculated with *Macrophomina phaseolina* and *Cladosporium cladosporioides*.

544 SHARMA, MP; ROY, AN. 1986. **Role of environmental factors in decay of turmeric rhizome**. *Indian Phytopathology*, 39: 2, 302; 3 ref.

The most virulent and widespread of the fungi causing storage rot of *Curcuma longa* and *Macrophomina phaseolina* and *Cladosporium cladosporioides*. Favourable incubation temp. and RH 60% led to maximum