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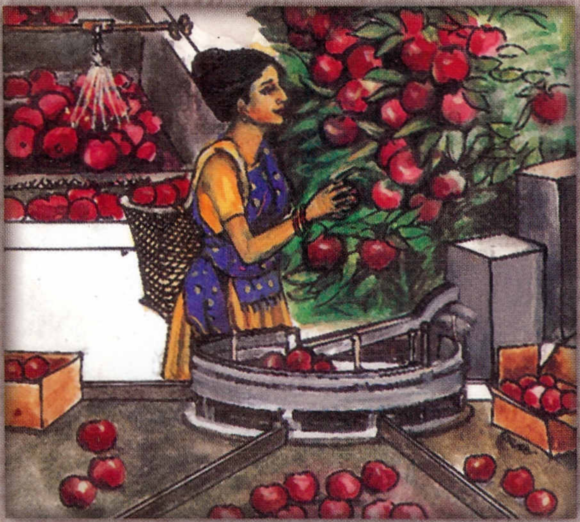

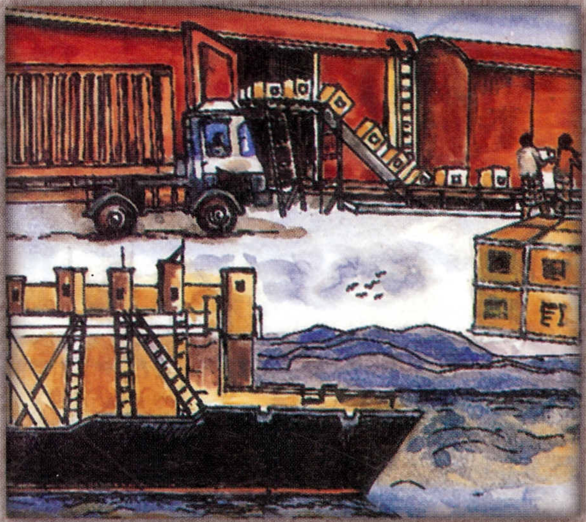

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Postharvest Management in Agriculture
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moisture carrot preserve. *Journal of Food Science and Technology*, 19: 4, 168.

POTATOES

Storage

1037 ANAND, JC; MAINI, SB; DIWAN, BRIJESH. 1982. **A simple way to preserve potato for chips making**. *Journal of Food Science and Technology, India*, 19: 6, 267-268.

Potato tubers were stored successfully for up to one yr after treatment with a solution containing 0.6% acetic acid and 0.2% potassium metabisulphite. Chips prepared from these tubers retained better colour during storage as well as after frying. Substitution of acetic acid with citric, tartaric or malic acid affected the cooking quality of tubers in the same way as acetic acid. Reduction of various chemical constituents of steeped potatoes after 2 months storage was found to be 24.2 to 22.8% for DM, 2.89 to 2.66% for ash, 12.9 to 11.6% for starch, 113.2 to 60.0 mg% for total phenols as tannic acid and 0.3 to 0.1% for reducing sugars. The quantity of phenolics leached out during one month was 34 mg/100 ml of steeping solution.

1038 BADSHAH, N; IRITANI, WM; ROM, CR; PATTERSON, ME. 1990. **Studies on the sugars development of irradiated potatoes receiving different nitrogen levels during growth and stored at different temperatures**. *Acta Horticulturae*, No. 269, 267-275; 28 ref.

Potato cv. Russet Burbank tubers grown at Othello, Washington, USA with 0, 181.8 or 363.6 kg N/ha were irradiated with 0, 0.05, 0.1 or 0.2 kGy of gamma rays (Co60 source) and stored for 3 months at 10 or 15.5°C. Before storage, tubers contained no reducing sugars and 1.49-1.53% non-reducing sugars (DM basis). N and irradiation decreased reducing and non-reducing sugar contents after storage, while temperature had no significant effect. Reducing sugars decreased with increasing levels of N and irradiation. Tubers from unfertilized plots developed 1.5% reducing sugars. Irradiation at 0.2 kGy decreased reducing sugars from 1.7 to 0.9%. The breakdown of non-reducing sugars increased with increasing N levels but decreased with irradiation. Tubers from plots given 363 kg N had a 36% decrease of non-reducing sugars. Irradiation at 0.1 kGy dosage caused the least change (4.9% decrease) in non-reducing sugar content.

1039 BHANDAL, MS; NAIK, PS. 1991. **Storage behaviour and yield potential of potato genotypes stored in country and cold store**. *Journal of the Indian Potato Association*, 18: 1-2, 100-101; 2 ref.

Potato cv. Kufri Chandramukhi, Kufri Lauvkar, Kufri Sindhuri, Kufri Jyoti, BS/F-630 and JH-222 tubers weighing 30-40 g were stored in a thatched hut from the end of Mar. to the middle of June at 32 ± 4°C or in a cold store at 3 ± 1°C, and shrinking and rotting were recorded at 15 d intervals up to 75 d. During observations, rotted potatoes were removed. Percentage loss in weight after 75 d storage was 3.0-8.0% in the cold store and 15.2-59.4% in the hut. The greatest weight loss in both stores occurred in cv. BS/F-630 followed by Kufri Jyoti. The tuber yield from the stored potatoes was highest in cv. Kufri Jyoti (19.43 t/ha) followed by Kufri Lauvkar (13.46 t) both stored in the cold store, and it was lowest in JH-22 tubers (1.04 t) kept in hut.

1040 CHADCHAN, R; BIRADAR, DP; MANTUR, SM; MUMBARADDI, KH. 1989. **Impact of plant population and nitrogen levels on storage of potato tubers of different grades**. *Karnataka Journal of Agricultural Sciences*, 2: 4, 325-328.

In a field experiment at Dharwad during the 1985 *kharif* [monsoon] season, potato cv. Kufri Badshah and Kufri Chandramukhi were grown at inter-row spacings of 30, 45 and 60 cm and given 100, 150 or 200 kg N/ha. Harvested tubers were graded as small, medium or large and stored at room temp. for 5 weeks. Increasing N application increased the moisture loss significantly in all tuber sizes during storage. Tuber size class had no effect on moisture loss.

1041 CHAKRABARTI, AK; ROY, SK; PAL, RK. 1990. **Non conventional method of application of isopropyl n 3-chlorophenol carbamate to control sprouting of potato under low cost storage system**. *23rd International Hort. Congress*. Firenze, Italy: Abstract 2546.

1042 GOWDA, IND; KRISHNAPPA, KS. 1985. **Effect of post-harvest application of maleic hydrazide on the storage behaviour of potato stored at room temperature**. *Journal of the Indian Potato Association*, 12: 1/2, 110-114; 5 ref.

Potato cv. Kufri Jyoti cured seed potato tubers treated for 25 min with factorial combinations of 0, 250, 500, 1000 or 2000 p.p.m. MH and 0, 1000 or 2000 p.p.m. dimethylsulphoxide solutions did not differ significantly in sprout initiation or growth, cumulative weight loss or rot. Failure of MH to control sprouting was ascribed to failure to penetrate the skins of tubers.

1043 GUL, S; HANAN, A; HUSSAIN, S; SHAH, M. 1990. **"Suppression of sprouting in potato" during storage through chemicals**. *Sarhad Journal of Agriculture*, 6: 4, 381-384; 13 ref.

Seven anti-sprouting agents were applied to potato cv. Cosima and Desiree tubers before storage at 5-7°C and 85-90% RH. Treatment with 2000 p.p.m. maleic hydrazide for 10 min completely suppressed sprouting. Cycocel [chlormequat] at 8000 p.p.m. was the next most effective treatment, reducing sprouting to about 3%. The remaining treatments reduced sprouting to 13.34-23.33%

1044 ISLAM, MS; KARIM, A; HOSSAIN, MM; HOSSAIN, A. 1990. **Comparative storage studies of selected varieties of potatoes treated with CIPC and gamma radiation**. *Nuclear Sc. and Applications (Bangladesh)*, 2: 2, 62-66.

1045 KHURANA, DS; RANDHAWA, KS; BAJAJ, KL. 1985. **Carbohydrate content of potato (*Solanum tuberosum L.*) tubers treated with isopropyl-N (3-chlorophenyl) carbamate under different storage conditions**. *Journal of the Science of Food and Agriculture*, 36: 10, 959-962; 16 ref.

Post-harvest application of isopropyl-N (3-chlorophenyl) carbamate [chlorpropham] considerably reduced the degradation of starch when potato tubers were stored in an evaporative cooling chamber. The starch degraded at a faster rate when tubers were kept under refrigerated and room storage conditions.

1046 MAINI, SB; DIWAN, B; ANAND, JC. 1984. **Acetic acid as a sprout suppressant for potato**. *Indian Fd. Packer*, 38: 4, 47-48.

1047 MAINI, SB; ANAND, JC; RAJESH, K; CHANDAN, SS; VISISHTH, SC. 1984. **Evaporative cooling system for storage of potato**. *Indian J. Agric. Sci.*, 54: 3, 193-195.

1048 MAINI, SB; DIWAN, B; GUPTA, SK; ANAND, JC. 1981. **Studies on solar dehydration of potatoes**. *J. Indian Potato Association*, 8: 4, 165-170.

1049 MEHTA, A; KAUL, HN. 1991. **Effect of sprout inhibitors on potato tubers (*Solanum tuberosum L.*) stored at ambient or reduced temperatures**. *Potato Research*, 34: 4, 443-450; 12 ref.

Single and combined applications of the sprout inhibitors maleic hydrazide (MH), chlorpropham (CIPC) and a 2% propham/0.7% chlorpropham mixture (AMK) were tested on potatoes stored from Mar. to June under ambient conditions (20-39°C, 30-80% RH) and in a store with passive evaporative cooling (16-30°, 75-95% RH). All treatments were more effective in reducing physiological losses, sprouting, and sprout growth in the cool than in the ambient store. AMK, CIPC and MH + AMK caused most sprout suppression. All treatments increased tuber rotting but there were no significant differences in numbers rotted by MH, MH + CIPC, CIPC (single treatment) and the untreated control. Nevertheless, the treatments can usefully extend the storage life of potatoes under non-refrigerated conditions.

1050 METHA, ASHIV; KAUL, HN. 1989. **Differences among potato (*Solanum tuberosum L.*) cultivars in northern India in performance of diffuse light stored seed potatoes**. *Potato Research*, 32: 2, 197-202; 16 ref.

Seed tuber behaviour in store and subsequent field performance of 7 potato cultivars stored traditionally in a refrigerated cold store (RCS) in the Indian Punjab was compared with that of tubers kept under diffuse light storage (DLS). DLS of seed tubers from Mar. to Oct. resulted in 34-82% loss by wt due to high temp. and low RH compared with a 6-8% wt loss in RCS. When the DLS tubers were planted in replicated field trials, they showed reduced germination, germination rate index, plant height and final yield (up to 37%) compared with those from RCS. Cv. Kufri Lalima and Phulwa tuber yields were not significantly reduced following DLS.

1051 MISRA, JB; VERMA, SC. 1982. **Effect of storage on acid phophatase activity of tubers of some Indian potato varieties**. *Journal of the Indian Potato Association*, 9: 2/4, 59-64; 9 ref.

Both the acid phophatase activity and the sp. gr. of tubers of 6 potato cv. stored at room temp. were lower than in those stored in a cold store.

1052 MUKHERJEE, D; CHAVA, NR. 1988. **Storage behaviour of potatoes after post-harvest application of camptothecin**. *Plant Physiology and Biochemistry, India*, 15: 2, 251-256; 22 ref.

After storage at 1-3°C and 90% RH for 250 d potato seed tubers were treated with 1 X 10-2 and 1 X 10-1 mM camptothecin (an alkaloid) and then stored at room temp. (15-18°) for up to 30 d. The treatment slightly reduced sprout growth, but n.s.d. was observed in the percentage of cumulative physiological wt loss. The treatment also failed to control starch and protein breakdown or increased activities of hydrolytic enzymes. However, camptothecin effectively decreased sugar formation and reduced the loss in ascorbic acid.

1053 RAMA, MV; NARASIMHAM, P. 1987. **Comparative efficacies of chemical sprout inhibitors and vapour heat treatments on the control of sprouting in stored potatoes**. *Journal of Food Science and Tech. - Mysore*, 24: 1, 40-42.

Potatoes were given a pre-harvest spray of maleic hydrazide (MH) (containing 0.1% Tween-80 and 250 p.p.m. benlate) at 1000 and 2000 p.p.m. levels, and post-harvest treatment with sodium salt of naphthalene acetic acid (NAA), methyl ester of naphthalene acetic acid (MENA), iso-propyl-N-chlorophenyl carbamate (CIPC) and tetrachloronitrobenzene (TCNB) each at 1000 p.p.m. level and stored at 22-35°C and 20° for 3 weeks and at 10° for 6 weeks. Five weeks after harvest, potatoes were given vapour heat treatment (VHT) at 60° with 95 ± 5% RH for 60 min and stored at 22-35, 20 and 10°. After 3 weeks one lot from each of the above temp. was given second VHT at 60° for 60 min. Potatoes were observed periodically for sprout yield, spoilage and physiological loss in wt (PLW). Of the 5 chemicals, MENA and NAA at 1000 p.p.m. and MH at 2000 p.p.m. reduced the sprout yield effectively at the 3 storage temp.; however MENA was found most effective. VHT was more effective at 22-35° than at 20 and 10°, 2 treatments being needed to significantly reduce the sprout yield at 20 and 10°. No treatment significantly reduced the PLW compared with the control. The rate of spoilage in VHT was the same as in any chemical treatment. It is concluded that VHT applied twice was as effective as MH at 2000 p.p.m. when the reduction in sprout yield was 83 and 71%, respectively, when stored at 22-35°.

1054 RHOADES, RE. 1986. **Changing a post-harvest system: impact of diffused light potato stores in Sri Lanka**. *Agricultural Systems*, 19: 1, 1-19.

The adoption and impact of improved low cost potato seed tuber storage management practices in Sri Lanka are described and analysed. Conditions in the main potato producing regions in 1980 were conducive to rapid acceptance of low cost, diffused light seed tuber storage. Due to rising costs of foreign seed tubers, their unavailability at opt. planting dates, heavy losses in handling and storage, government concern with foreign exchange and extension involvement, farmers became receptive to new methods for improving existing storage practices. It was concluded that improved post-harvest technology reduced storage losses, increased yields, altered cropping patterns and reduced dependency on foreign seed tuber imports.

1055 VOLKIND, IL; ROSLOV, NN; MUKHANOV, PA. 1983. **Modern potato and vegetable storage**. New Delhi: Amerind Publishing, 188 p.

This is an English translation of the Russian book published in 1971. It consists of 5 sections: (a) fundamentals of modern storage technology for potatoes and vegetables, (b) modern standard storage, (c) storage equipment, (d) utilization of machinery in modern storage and (e) economic efficiency of capital investment in the construction and reconstruction of storage. In (a) the composition of potato, carrot, onion and cabbage is briefly described, followed by a description of the process of wound healing and the carbohydrate interconversions in potato tubers stored at different temp.; (b) includes a description of piles for the storage of different crops, simple buildings in which the produce is stored in heaps and methods for the calculation of heat load and the thickness of insulation to be provided in stores; (c) describes the conveyor systems for loading and unloading of the produce and systems of ventilation during storage; (d) gives details of the temp. and RH requirements during different periods of storage of potatoes and onions and describes procedures for recording them. 3 methods used for calculating the economic efficiency of stores in (e) include the capital investment, the working cost and the preservation of the produce.

Storage decay

1056 BARTZ, JA; KELMAN, A. 1985. **Infiltration of lenticels of potato tubers by *Erwinia carotovora pv. carotovora* under hydrostatic pressure in relation to bacterial soft rot**. *Plant Disease*, 69: 1, 69-74; 20 ref., 5 tab.

Aq. suspensions of the pathogen (Ecc), rhodamine dye and india ink in water penetrated intact potato tubers that were submerged in them and subjected to hydrostatic pressures of 180-530 cm of water for 20 s-5 min. Stained tissues (usually located beneath or adjacent to lenticels) were more numerous in freshly harvested or warm (≥ 20°C) tubers than in stored or cold (4°) tubers. The number of stained sites also increased as the concn of Triton X-100, a nonionic surfactant, increased from 0.01 to 1% (w/v). When freshly harvested or commercially stored tubers were infiltrated with Ecc and incubated at 20° in a mist chamber for 4 d, the severity of bacterial soft rot (surface area decayed) sometimes approached or equalled 100%. In contrast, severities seldom exceeded 50% in tubers that were submerged in suspensions of Ecc but not subjected to hydrostatic pressures resulting in infiltration. The high potential for soft rot associated with infiltration persisted for at least 4 d, whereas within that period, the increased potential associated with shallow immersion (5 cm) fell to levels that existed before inoculation.

1057 GHANEKAR, AS; PADWAL-DESAI, SR; NADKARNI, GB. 1984. **Etiology of soft rot in stored potato**. *Journal of Food Science and Technology, India*, 21: 3, 127-131; 17 ref.

Distribution of microorganisms was examined on healthy potatoes of indigenous cvs. It was observed that tubers harbour Gram-positive bacteria belonging to the genera *Bacillus* and *Micrococcus* along with Gram-negative pectolytic cocobacilli, *Pseudomonas* and *Erwinia*. The major aetiological agent of soft rot in stored (about 15°C) potatoes was found to be *E. carotovora*, which was located in the lenticels and vascular region. Losses in the tubers stored below 10°C could not be attributed to these organisms.

1058 KARWASRA, SS; PARASHAR, RD. 1991. **Association of *Alphitobius laevigatus* with bacterial soft rot of potato**. *Indian Phytopathology*, 44: 1, 115-116; 2 ref.

During 1985-87, *A. laevigatus* was consistently found in stored potatoes in India. *Erwinia carotovora subsp. carotovora* was identified both externally and internally on the insect larvae. The bacterium was present inside the insect body and was passed on to the next generation.

1059 KUMAR, A; PUNDHIR, VS; GUPTA, KC. 1991. **The role of phenols in potato tuber resistance against soft rot by *Erwinia carotovora spp carotovara*.** *Potato Res.*, 34: 1, 9-16.

Nitrogen fertilization increased storage rot in 6 potato cultivars (Kufri Chandramukhi, Kufri Bahar, Kufri Badshah, Kufri Jyoti, Kufri Lalima and Kufri Sindhuri). Cultivars Kufri Sindhuri and Kufri Lalima showed less rot and contained high amounts of total phenols compared with the more susceptible cultivars Kufri Jyoti and Kufri Badshah. Nine phenolic acids were identified in the peel and pulp of tubers and 4 of these and of other phenolic extracts from tubers suppressed the growth of *E. carotovora subsp. carotovora*.

1060 NOOR BADSHAH. 1984. **Effect of maleic hydrazide on sprouting and weight loss in harvested potato tubers**. *Pakistan Journal of Agricultural Research*, 5: 3, 153-156; 6 ref.

The effect of post-harvest application of MH on potatoes stored for 3 months at room temp. (27.9°C) and at low temp. (4°) was studied. Application was made through dip and impregnated paper techniques. A 2nd application of MH was made to 50% of each treated batch after 1 month of storage. MH did not significantly affect percentage weight loss and number of eyes sprouted but temp. caused significant differences. It was concluded that MH was ineffective in inhibiting potato sprouting.

1061 PARASHAR, RD; SINDHAN, GS. 1988. **Efficacy of klorocin and other chemicals in controlling soft rot of potato in field and storage**. *Indian Journal of Mycology and Plant Pathology*, 18: 1, 39-42; 3 ref.

Soil applications of klorocin (7 kg/ha) and emisan (0.2%) significantly increased tuber germination and yield, whereas streptocycline (100 p.p.m.) decreased germination and yield, in comparison with the control (no treatment). All the chemicals significantly reduced soft rot (*Erwinia carotovora subsp. carotovora* and *E. carotovora subsp. atroseptica*) incidence when compared with the control in field and in storage. Among the treatments, klorocin as granules or powder gave the best results in increasing germination and yield and reducing the incidence of soft rot in the field and in storage. The wt loss of stored tubers was also minimal.

1062 PATEL, RL; PATEL, VA. 1992. **Effect of four fungicides on prevent of cut seed piece decay of potato**. *Agricultural Science Digest (India)*, 12: 1, 55-56.

1063 PRASAD, S; MISHRA, B; GUPTA, U; RAI, KK. 1989. **Extent of losses due to post-harvest fungal diseases of potato**. *Journal of Research, Birsa Agricultural University*, 1: 2, 173-174.

Severe rotting occurred in tubers released from cold storage and left in markets at Ranchi, Bihar, for a period before sale. Of total losses averaging 24.64%, c. 8% were due to *Rhizopus arrhizus* and the remainder to *Fusarium, Pythium, Aspergillus* and *Penicillium spp*. Disease was most severe in the warm, humid summer months and least severe in Jan.

1064 RAI, RP. 1983. ***Cercospora solanicola* as a cause of tuber rot of potato in storage**. *Indian Phytopathology*, 36: 2, 390-392; 4 ref.

This fungus has not been previously reported from India and appears to be different from that occurring elsewhere as it is only pathogenic to stored tubers and not to leaves.

1065 SHASHIREKHA, MN; NARASIMHAM, P. 1990. **Effects of treating seed potatoes with trace elements on sprouting and microbial spoilage during storage under tropical conditions**. *Annals of Applied Biol.*, 117: 3, 645-652.

Attempts were made to extend the storage life of seed potatoes by treating them with trace elements as antimicrobial and antisprouting agents. In tests to measure the growth of *Fusarium oxysporum* and *Erwinia carotovora subsp. carotovora*, it was found to be decreased more by iron, copper and zinc than by boron, manganese and molybdenum. Dipping seed tubers in aqueous solutions of trace element salts decreased both sprouting and microbial spoilage during storage at ambient conditions. Field testing at the end of storage showed that treating seed potatoes with ferrous sulfate did not decrease the yield of tubers or increase their iron content. It is suggested that elements may be used to extend the storage life of seed potato tubers, in tropical conditions.

1066 SHASHIREKHA, MN; KARANTH, NGK; NARASIMHAM, P. 1987. **Surface microflora of seed potatoes (*Solanum tuberosum L.*, cv. Kufri Jyoti): isolation and identification of organisms responsible for spoilage of potatoes grown at Devanahalli**. *Journal of Food Science and Technology, India*, 24: 5, 261-263; 16 ref.

Microbial spoilage of 8-15% occurs in seed potatoes during post-cold storage transport, handling and holding under tropical ambient conditions. Bacterial soft rot (*Erwinia carotovora subsp. carotovora*) and dry rot (*Fusarium oxysporum*) were the principal organisms associated with spoilage in this cultivar grown in Karnataka. Genera such as *Fusarium, Penicillium, Aspergillus* and *Rhizopus* composed the fungal surface flora and Gram positive rods and Gram negative coccobacilli constituted the bacterial flora.

1067 SHELKE, SS; JADHAV, LD; SALUNKHE, GN. 1987. **Storageability of seed potatoes treated with vegetable oils/extracts against *Phthorimaea operculella Zell*.** *Current Research Reporter, Mahatma Phule Agricultural University*, 3: 2, 33-38; 6 ref.

Of 7 plant oils or extracts tested against *Phthorimaea operculella* in stored seed potatoes, neem oil at 0.03-0.1% and extracts of *Pongamia glabra*, *Jatropha cureas* and *Ipomoea carnea* leaves at 0. 05 and 0.1% were the most effective, with only 1.39-2.50 tunnels per potato up to 30 days, as compared with 4.04 tunnels per potato for no treatment.

1068 SHIRSAT, SG; THOMAS, P; NAIR, PM. 1991. **Evaluation of treatments with hot water, chemical and ventilated containers to reduce microbial spoilage in irradiated potatoes**. *Potato Research*, 34: 3, 227-231; 9 ref.

Potatoes irradiated to control sprouting were dipped in: hot water (56°C, 5 min; 52°, 10, 15 and 20 min); cold (25°, 5 min) or hot (56°, 5 min) salicylic acid (1000 and 2000 p.p.m.); or sodium hypochlorite (0.1 and 0.2%, 5 min); or dusted with salicylic acid (1 and 2%) to reduce the incidence of bacterial soft rot (*Erwinia sp.*) during controlled temp. (10°, 15°) and ambient temp. (20-34°) storage. All treatments, particularly hot water and hot salicylic acid dip, increased microbial spoilage, possibly as a result of handling damage during the treatments combined with the inhibition of wound periderm formation as a result of irradiation. Storing irradiated tubers in well ventilated containers reduced soft rot compared with storing them in sacks and after 6 months storage at 10, 15 and 20-24°, 95, 90 and 77%, respectively, were healthy and marketable.

1069 SINGH, BP; SAXENA, SK; NAGAICH, BB. 1989. **Chemical control of dry rot of potatoes caused by *Fusarium spp*.** *Indian Journal of Plant Protection*, 17: 1, 91-95; 10 ref.

Preliminary tests were made on 17 chemicals used to treat cv. Kufri Bahar prior to storage in a shed or precooling chamber. In a confirmatory trial under similar conditions but using in addition cv. Kufri Badshah, all the selected treatments reduced dry rot significantly, the best being boric acid, followed by thiabendazole and Emisan-6 (2-methoxyethylmercury chloride). When tubers of Kufri Bahar were inoculated with *F. oxysporum*, treatment within 24 h provided the best control.

1070 SINGH, BP; NAGAICH, BB; SAXENA, SK. 1987. **Fungi associated with dry-rot of potatoes, their frequency and distribution**. *Indian Jrl. of Plant Pathology*, 5: 2, 142-145; 14 ref.

Isolations made from dry rot infected tubers in storage and tuber washings of 3 cultivars showed that *Fusarium oxysporum*, *F. solani*, *F. equiseti*, *F. acuminatum* [*Gibberella acuminata*], *F. semitectum* [*F. pallidoroseum*], *Phoma sp.* and *Penicillium sp.* were associated with this disease in the central plains of India. The frequency of F. spp. varied with cultivar but *F. oxysporum* predominated in all cultivars. *F. oxysporum* (wilt isolate) proved the most virulent followed by *F. equiseti* and *F. oxysporum* (dry rot isolate).

1071 SINHA, DC; PRASAD, RK. 1991. **Sweet potato-tuber rot caused by *Fusarium oxysporum f.sp. batatas* and its control**. *Indian Phytopathology*, 44: 2, 253-254; 3 ref.

Freshly harvested healthy sweet potato tubers were dipped into preparations of fungicides (dinocap, benomyl and carbendazim) and antibiotics (griseofulvin) for 30 min either before or after inoculation with *F. o. f.sp. batatas* and stored for 30 d. Benomyl and carbendazim controlled the disease when used as post-inoculation treatments but dinocap and griseofulvin failed to completely control the disease.

1072 SOMANI, AK; SHARMA, VC; SHEKHAWAT, GS. 1988. **Influence of date of harvesting of potato on the development of bacterial soft rot and emergence**. *Indian Phytopathology*, 41: 4, 517-520; 5 ref.

During 1980-85, field studies carried out in Jalandhar, India, revealed a progressive increase in the incidence of soft rot (caused by *Erwinia carotovora* and *E. [carotovora subsp.] atroseptica)* in Kufri Chandramukhi potato tubers harvested during Jan.-Mar. and kept in a country store. Potatoes in cold storage after harvesting in Jan. and Feb. showed higher sprouting than those harvested in Mar. Light irrigation prior to harvest did not influence the incidence of soft rot in country and cold storage or the sprouting of cold stored potato tubers in the field.

1073 SOMANI, AK; SHEKHAWAT, GS. 1988. **Influence of levels and sources of nitrogen on the development of bacterial soft-rot in potato tubers**. *Indian Phytopathology*, 41: 2, 238-240.

The effect of N levels of 0, 100, 200 and 300 kg/ha as ammonium sulfate and N sources of ammonium chloride, ammonium sulfate, calcium ammonium nitrate and liquid fertilizer N (at 120 kg N/ha) on potato cultivars Kufri Sindhuri and Kufri Chandramukhi infected by *Erwinia carotovora* and *E. [carotovora subsp.] atroseptica* was investigated. Tubers were stored in the country store (av. temp. 26°C and 63% RH) or in cold storage (av. temp. 4° and 88% RH). No soft rot was detected in tubers in cold storage. The results suggest that the application of high rates of N increases soft-rot incidence but this could be minimized by applying liquid fertilizer N. The use of ammonium chloride leads to more soft-rot and its use in potato cultivation should be discouraged.

Marketing

1074 KALYANKAR, SP; RAJMANE, KD. 1987. **Marketing of potato in Jalna District of Maharastha State.** Journal of Maharashtra Agricultural Universities, 12: 1, 88-90; 5 ref., 3 tab.

Findings of a study on arrivals and prices of potato in Jalna market (Maharashtra) for 1973-82 showed that March was the peak month for arrivals while minimum arrivals were recorded in November. Seasonal price indices showed that the increase in the off season price compared with the immediate post harvest price was around 30%. The producer's share in consumer's rupee was 65.71%, i.e., Rs110.40 in Rs167.99 per quintal paid by the consumer, the remaining 34.29% being spread over different marketing agencies. The study emphasized the need to stabilize prices during peak harvesting periods by providing cold storage facilities in the producing centres and establishing wholesale and retail markets in the potato producing area to minimize the marketing costs of potatoes.

1075 MAHMOOD, K; KHAN, SM; AFZAL, M. 1989. **Production and marketing of potatoes in upland Baluchistan: a preliminary survey. MART/AZR project: high elevation research in Pakistan**. *AZR Research Report*, Arid Zone Research Inst., Quetta (Pakistan) No. 45: 48 p.

1076 NAVE, RW. 1992. **SOTEC village-level potato processing development: Organization and marketing**. *Ferguson Product development for root and tuber crops. I: Asia*/edited by GJ Scott; S Wiersema; PI. CIP, Lima (Peru) p. 187-193.

Processing

1077 MAINI, SB; DIWAN, B; ANAND, JC. 1983. **Efficiency of various processing techniques to remove solanine from sprouted potatoes**. *Indian Food Packer*, 37: 82-83.

1078 MAINI, SB. 1988. **Quality evaluation of fresh and processed potatoes**. *International Course on Production and Marketing of Processed Products*. (IARI, New Delhi: 1988: 10-23 April).

1079 NAVE, RW; SCOTT, GJ. 1992. **Village-level potato processing in developing countries: A case study of the SOTEC project in India**. *Product development for root and tuber crops. I: Asia*/edited by GJ

Scott; S Wiersema; PI Ferguson. CIP, Lima (Peru) p.331-353.

1080 ROBERTSON, DG. 1990. **Report of a mission to India to formulate a project on village-level processing of potato**. 27 p.

1081 ROY, SK. 1991. **The role of village level processing in meeting the demand for potato products**. *Third Triennial Conference*. (Bombay: 1991: 17-22 June). Asian Potato Association.

1082 SHIRSAT, SG; THOMAS, P; NAIR, PM. 1994. **Effect of gamma-irradiation and CIPC treatment on processing quality of potatoes**. *Journal of Food Sc. and Tech. - Mysore*, 31: 2, 130-134.

The processing quality of 5 potato cultivars, after inhibition of sprouting by irradiation or chloroisopropyl phenyl carbamate treatment, was compared during storage at 20, 15 and 10°C up to 9 months. Cultivars 'K. Jyoti', 'K Lavkar, 'Gujrat-S' and 'Talegaon'. with initial reducing sugar levels of 120 to 240 mg/100 g. yielded light coloured chips and French fries. Neither of the treatments affected the processing quality of these cultivars. when stored at 15 and 20°C up to 6 months, but the storage at 10°C resulted in darker products, due to higher levels of reducing sugars. In tubers, stored for more than 6 months at 15°C, reconditioning at 27-32°C or blanching improved the colour of the products. Cultivar 'K. Badshah', with initial reducing sugar levels of 3 10 to 440 mg/100 g, was not suitable for processing. In vitro infiltration studies showed that glucose contributed to browning more than fructose or sucrose.

1083 SUSHEELAMMA, NS; CHANGALA REDDY, G; RUKMANI, CS; THARANATHAN, RN. 1992. **Studies on sweet potatoes. Part I: Changes in the carbohydrates during processing**. *Starch Staerke (Germany, F.R.)*, 44: 5, 163-166.

1084 TRESP, N. 1988. **Integrated potato processing technologies in India**. *Appropriate Technology International Bulletin*, No. 16, 4 p.

The integrated processing technologies introduced are storage of surplus potatoes, processing and drying of stored potatoes into chips, and the milling of chips into powder. The rustic stores proposed are mud huts with thatched roofs, designed to be cool, dark, and properly ventilated; their capacity varies from 5 to 15 tons and storage time can be for up to 3 months. These stores can also be used for ginger, onions, paddy rice and dry fodder. The floor is a slatted platform constructed with bricks and bamboo; a layer of sand underneath is flooded with water, the operation of the store being one of passive evaporative cooling. The processing of the dried potato slices and potato powder is also described with details of markets and price.

1085 TRIPATHI, VK; JAIN, SP; RAM, HB; SURJEET SINGH. 1983. **Studies on enzymatic and non-enzymatic discolouration in tubers of some potato varieties**. *Progressive Horticulture*, 15: 1/2, 152-154; 18 ref.

Three varieties studied did not differ in phosphate content, but there were varietal differences in contents of tyrosine and total proteins. C2703 and Kufri Chandramukhi, which contained comparatively high levels of tyrosine and total proteins, showed less enzymatic and nonenzymatic discoloration than did Kufri Sinduri. It is concluded that C2703 and Kufri Chandramukhi are superior in processing quality to Kufri Sinduri.

ONIONS

Drying

1086 MAINI, SB; DIWAN, B; GUPTA, SK; ANAND, JC. 1981. **Studies on solar dehydration of onions**. *Progressive Hort.*, 13: 3-4,29-32.

1087 NETRA PAL; NARENDRA SINGH. 1988. **Analysis of genetic architecture for total soluble solids, total insoluble solids and drying ratio in onion (*Allium cepa L.*)**. *South Indian Horticulture*, 36: 1-2, 77-80; 3 ref.

Parents and F1s from a diallel cross (excluding reciprocals) involving 8 diverse inbred lines were analysed using the Jinks and Hayman method to give estimates of components of variation for the quality parameters studied. It is suggested from the results that total insoluble solids could be improved by heterosis breeding, while both heterosis breeding and conventional breeding methods could be used to improve total soluble soldis, total solids and drying ratio.

1088 VIJAY, S; ANAND, JC. 1973. **Netrapal and Bhagchandani, screening of white onion cultivars for use in dehydration**. *Indian Food Packer*, 27: 5, 5.

Storage

1089 BHALEKAR, MN; KALE, PB; KULWAL, LV. 1987. **Storage behaviour of some onion varieties (*Allium cepa L.*) as influenced by nitrogen levels and**