

Bibliography on bamboo and agricultural waste

SEARCH CORPORATION OF THAILAND

MISCELLANEOUS INVESTIGATION NO. 4 BUILDING MATERIALS FROM AGRICULTURAL PRODUCTS

REPORT NO. 1 BIBLIOGRAPHY ON BAMBOO AND AGRICULTURAL WASTE PRODUCTS

BY
MILAN M. PAJEVIC
REVISED BY
M.R. SUKSHOM KASHEMSANTA

ASRCT, BANGKOK 1970

not for publication

APPLIED SCIENTIFIC RESEARCH CORPORATION OF THAILAND

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FOREWORD

A draft of this bibliography was prepared by Mr. M.M. Pajevic during his mission to Thailand as United Nations Building Materials Expert attached to ASRCT's Technological Research Institute. The bibliography was done as part of his study on the utilization of local resources for the manufacture of building materials and therefore did not include references pertaining to other aspects of utilization. It was found, after Mr. Pajevic's departure from Thailand, that his draft contained many typographical and other errors. M.R. Sukshom Kashemsanta, ASRCT's Scientific Editor, therefore undertook the task of checking the references and revising the manuscript.

The bibliography is incomplete, most of the references being confined to publications in Asia. Further work on this bibliography should pay particular attention to other continents, such as Africa and South America.

The compilation of most of the data on bamboo was done, on Mr. Pajevic's request, by ASRCT's Thai National Documentation Centre. Special thanks are due to the Division of Building Research, CSIRO, Australia, and to the Overseas Division of the Building Research Station in Garston, England, for the information supplied on bamboo.

A valuable source of information has been the Bibliography on the utilization of waste products, Pansdoc Bibliography No. 266, published by the Pakistan National Scientific and Technical Documentation Centre.

In meeting the ever-growing demand for low-cost housing, the contribution of lightweight, traditional materials based on agriculture and forestry products should not be underestimated. A comprehensive survey of experiences obtained in the use of these materials in other countries, particularly India, is a precondition for further study.

It is hoped that the references contained in this bibliography will prove of value as starting material to those concerned with this important problem.

BIBLIOGRAPHY ON BAMBOO AND AGRICULTURAL WASTE PRODUCTS

By Milan M. Pajevic,* as revised by M.R. Sukshom Kashemsanta+

GENERAL

- DE, P.L.
 - 1965. Building materials from wastes. Sci Rptr. 2(2): 87-90.
- NARAYANAMURTI, D.
 - 1957. Adhesives from seed proteins and seed cakes. Indian Council of Agricultural Research Rev. Ser. No. 12.
 - 1959. Utilization of some agricultural wastes. Indian Council of Agricultural Research Res. Ser. No. 10.
- PAKISTAN NATIONAL SCIENTIFIC AND TECHNICAL DOCUMENTATION CENTRE
 - 1960. Bibliography on the utilization of waste products. Pansdoc Bibliography No. 226.
- SUBBA RAO, T.V.
 - 1954. Use of wood waste and agricultural residues in the manufacture of plastics. Indian Pulp Pap. 9(5): 313-320.

BAMB00

A. Preservation

- BEESON, C.F.C., and BHATIA, B.M.
 - 1937. On the biology of the Bostrychidae (Coleoptera). <u>Indian</u>
 Forest Rec. n.s.Ent. 11(12): 223-323.
- COBIN, M., and SEGUINOT, R.P.
 - 1946. Relation between curing and durability of <u>Bambusa tuldoides</u>.

 <u>Caribb. Forester</u> 7: 253-274.

^{*} Former United Nations Building Materials Expert, TRI, ASRCT.

⁺ Editorial Services, ASRCT.

- FRANCIA, F.C., and GARCIA, M.L.
 - 1958. Powder post beetles ("Bukbok") injurious to seasoned wood and forest products. <u>Lumberman, Philippines</u> 4(2): 6, 8-10.

GARDNER, J.C.M.

1945. Note on the insect borers of bamboo and their control.

Forest Research Institute, Dehra Dun, Forest Bull. 125.

GOVERNMENT OF INDIA

1910. Note on the preservation of bamboos from attacks of the bamboo beetle or "shot borer". Forest Zoology Series No. 2. Forest Pomphlet 15 (2nd ed.)

LIESE, W.

1959. Report to the Government of India on bamboo preservation and soft rot. FAO (Rome) Expanded Technical Assistance Progress Report No. 1106.

MATHUR, R.N.

1957. Clump curing of bamboos and susceptibility to powder post beetle attack. Forest Research Institute, Dehra Dun, Forest Bull. 221. Entomology.

NARAYANAMURTI, D., PURUSHOTHAM, A., and PANDE, J.N.

1947. Preservative treatment of bamboos. Part I. Treatment of green bamboos with inorganic preservatives. Forest Research Institute, Dehra Dun, Forest Bull. 137.

PLANK, H.K.

- 1947. DDT for powder post beetle control in bamboo. Science 106:317.
- 1948. Biology of the bamboo powder post beetle in Puerto Rico.

 Puerto Rico (Mayaguez) Fed.Exp.Stn Bull. 44.

PLANK, H.K.

- 1949. Control of powder post beetle in Puerto Rico. <u>Trop.Agric.</u>,

 <u>Trin. 26(1-6): 64-67</u>.
- 1950. Studies of factors influencing attack and control of the bamboo powder post beetle. Puerto Rico (Mayaguez) Fed. Exp.Stn Bull. 48.
- PLANK, H.K., and FERRER-DELGADO, R.
 - 1949. Permanence of DDT in powder post beetle control in bamboo.

 J.econ.Ent. 42: 963-965.
- PLANK, H.K., and HAGENIAN, R.H.
 - 1950. Starch and ether carbohydrates in relation to powder post beetle infestation in freshly harvested bamboo. <u>J.econ.Ent.</u>44: 73-75.

PURUSHOTHAM. A.

- 1963. Instructions for treatment of timber, bamboo, etc., when facilities for pressure treatment are not available. <u>J.Timb</u>. <u>Dry.Preserv.Ass.India</u> 9(3): 5-26
- PURUSHOTHAM, A., SUDAN, S.K., and SAGAR, V.
 - 1953. Preservative treatment of green bamboos under low pneumatic pressures. <u>Indian Forester</u> 79(12): 652-672.
- RAMAKRISHNA AYYAR, T.V.
 - 1940. "Handbook of Economic Entomology for South India." p. 376-377. (Madras.)
- ROONWAL, M.L., CHATTERJEE, P.N., and THAPA, R.S.
 - 1958. Results of laboratory and field experiments on protection of bamboos in storage against ghoon beetles, <u>Dinoderus</u> sp. (Coleoptera: Bostrychidae). Forest Research Institute, Dehra Dun, Forest Bull. 216.

SAINI, B.S.

1967. Durability of bush materials. Overseas Bldg Notes ~ 1967 (120): 5-7.

STEBBING, E.P.

1908. "Manual of Elementary Forest Zoology for India." (Supt. Govt. Printing: Calcutta.)

TROTTER, H., and BENSON, C.F.C.

1933. Liability of solid bamboo staves to attack by borers. <u>Indian</u>
<u>Forester</u> 59: 709-712.

VIADO, G.B., and YLAGAN, M.M.

1957. Starch, total sugar and moisture content of <u>Bambusa vulgaris</u>
Schrad. in relation to infestation by <u>Dinoderus minutes</u> Fabr.

<u>Philipp.Agric. 41(4): 215-222.</u>

WOLCOTT, G.N.

1947. Termite repellents: summary of laboratory tests. Puerto Rico Collecting Stn (Rio Piedras) Bull. 73.

B. Bamboo as material of construction

ATUANYA, V.O.

1956. Modified three hinged arch truss using bamboo. Centro Interamericano de Vivienda, Bogota, Colombia Progress Report No. 5.

BAUMAN, R.

1912. Versuche über die Elastizität und Festigkeit von Bambus. Z. Ver. dt. Ing. 56: 229-232.

BOND, P.S.

1913. Some experiments in the use of bamboo for hasty bridge construction. Prof.Mem.Cps Engrs, U.S. 5: 593-602.

BROERSMA, G.

1951. / Editorial apropos van der Woude's article on building materials. 7 O.S.R. News 3:81.

CASTRO, D.

1959. Building with bamboo. Bouw 30: 850-853.

COHEN, W.E.

1947. Utilization of bamboo in Japan. <u>Tech.Pap.Div.Forest Prod</u>. <u>C.S.I.R.O.Aust.</u>

ESPINOZA, J.C.

1930. Testing bending and compressive strength of the common Philippine bamboo (Bambusa spinosa Roxb.). Philipp.J.Sci. 41: 121-135.

GLENN, H.E.

1950. Bamboo reinforcement of Portland cement concrete structures.
Bull.Clemson agric.Coll. 4.

INDONESIA, DEPT. OF PEOPLE'S HOUSING

1954. Bamboo for low-cost housing. Information leaflet.

JAIN, N.C.

1959. Resilient pads from bamboo waste. Res.Ind. 9: 192-193.

KUMPE, G.

1937. Experimental bamboo truss. Milit.Engr 29: 288-289.

KURZ, S.

1876. Bamboo and its uses. <u>Indian Forester</u> 1: 219-269; 335-362. LIMAYE, V.D.

1943. Bamboo nails, their manufacture and holding power. Indian Forest Rec. n.s. (Utilization) No. 3.

- LIMAYE, V.D.
 - 1952. Strength of bamboo (<u>Dendrocalamus strictus</u>). <u>Indian Forester</u>
 78(11): 558.

McCLURE, F.A.

1953. Bamboo as a building material. U.S. Dept. of Agriculture, Foreign Agricultural Service, Washington, D.C.

MEHRA, S.R., and GHOSH, R.K.

1966. Bamboo reinforced soil cement as a new material for construction. In: "Indian Builder Annual 1966." (New Delhi.)

MEHRA, S.R., GHOSH, R.K., and CHADDA, L.R.

1965. Consideration as material for construction of bamboo - reinforced soil cement with special reference to its use in pavements. I.-III. <u>Civ.Engng publ.Wks Rev.</u> 60: 1457, 1459-1461; 1643-1645; 1766-1768.

MEHRA, S.R., UPPAL, H.G., and CHADDA, L.R.

1951. Some preliminary investigations in the use of bamboo for reinforcing concrete. Indian Concr.J. 25(1): 20-21.

MEYER, H.F., and EKLUND, B.

1924. Tests on the mechanical properties of bamboo. Proc.Engng Soc.China 22: 3-31.

MISSION DE L'ÉCOLE NATIONALE SUPÉRIEURE DES BEAUX - ARTS DE PARIS

1952. Construction au Cameroun. Bâtir, Paris 1952: 47-51.

MOSS, F.G.

1966. The potential importance of bamboo in the Territory of Papua and New Guinea. Ind.Rev., Papua New Guinea 4(3): 13-18.

NARAYANA, S.K., and ABDUL RAHMAN, P.M.

1962. Bamboo - concrete composite construction. <u>J.Instn Engnrs</u>
<u>India</u> 42: 426-440.

PURUSHOTHAM, A.

- 1963. A preliminary note on some experiments using bamboo as reinforcement in cement concrete. J.Timb.Dry.Preserv.Ass.

 India 9(4): 3-14.
- 1965. Bamboo mats as expedients. <u>J.Timb.Dry.Preserv.Ass.India</u>
 11(1): 2-7.
- 1965. Low cost structure. II. Twin-rooms with arched roofs.

 J.Timb.Dev.Ass.India 11(4): 2-6.

SAMAPUDDHI, Krit

1959. A preliminary study in the structure and some properties of some Thai bamboos. Royal Forest Dept. (Bangkok) No. E. 30.

SHEN, L.G.

1947. Studies on physical properties of bamboo timbers. Science,
Nanking 29: 268-272.

SINGH, M.M.

1960. Pressed boards from bamboo dust. <u>Indian Pulp Pap. 15</u>: 201-203.

TEODORO, A.L.

1925. A preliminary study of the transverse strength of structural bamboo. Agric. Engng, St. Joseph, Mich. 6: 266-267.

VAN DER WOUDE, C.A.A.

1951. New building materials in Indonesia. <u>0.S.R.News</u> 3: 106-110. WHITE, D.G.

1949. Bamboo culture and utilization in Puerto Rico. Puerto Rico (Mayaguez) Fed. Exp. Stn Bull 44.

CASHEW NUT

- AJMANI, G.M.
 - 1952. Use of cashew nut shell liquid in cottage industry.

 Paintindia 2(2): 18-19.
- AJMANI, G.M., and JATKAR, S.K.K.
 - 1940. Use of cashew nut shell oil in paints and stoving varnishes.

 J.Indian chem.Soc.ind.Edn 8: 57-58.
- BAFNA, S.L.
 - 1952. Cashew nut shell liquid. Paintindia 2(1): 78-79.
- DHAMANEY, C.P.
 - 1957. Adhesives from cashew shell oil. Paintindia 7(2) 29-31.
 - 1957. Cashew shell resin adhesives. Paintindia 7(7): 32-35.
- GEORGE, J., and SINGH, S.M.
 - 1965. Phosphated cashewnut shell liquid resin for use as a fire retardant. <u>J.Timb.Dev.Ass.India</u> 11(3): 3-8.
- JAIN, R.K., SINGH, S.M., and GEORGE, J.
 - 1964. An expansion joint filler from cashew nut shell liquid and coconut pith. Res.& Ind., New Delhi 9(2): 35-36.
- KALE, V.V., and KAMATH, N.R.
 - 1954. Cashew nut shell liquid. Paintindia 4(3): 27-34.
- KRISHNAMURTI. A.S.
 - 1952. Studies on the preparation and properties of polymers of cashew shell oil. Ph.D.thesis, Bombay University.
- MATHUR, H.H.
 - 1952. Cashew nut shell liquid a potential in paints and varnishes.

 Oils Oilseeds J. 4(9 & 10): 37-38.

- MENON, M.C., and AGGARWAL, J.S.
 - 1957. Coating compositions from cashew nut shell liquid. Paintindia 7(1): 65.
- MURTHY, B.G.K., and AGGARWAL, J.S.
 - 1959. Analysis and upgrading of cashewnut shell liquid. Paintindia 9(6): 26-29.
- NARAYANAMURTI, D., and JAIN, N.C.
 - 1949. Studies on adhesives, pt. XI: A preliminary note on adhesives from cashewnut shell oil. Indian Forest Leaflet No. 111, Dehra Dun.
- REMAJUNAM, S.
 - 1960. Improved cashewnut liquid resins. Paintindia 10(11): 91-106.
- BOY, Jyotirmoy
 - 1954. Chemical aspects of cashewnut shell liquid. <u>J.Proc.Instn</u>
 Chem.India 3: 172-183.
- SETHI, S.C., and AGGARWAL, J.S.
 - 1955. Utilization of cashew kernel rejections. Oils Oilseeds J. 8(3): 5-6.
- SIDDIQUI, S.
 - 1946. Recent developments in plastics in India III: Natural resins. 5.Bhilawan shell liquid.6.Cashew shell liquid.

 J.Sci.ind.Res. 4: 732-736.
- THAMBI, M.U., and YEDDAMAPALLI, L.M.
 - 1952. Thermal polymerization in bulk of the monophenol from raw commercial cashewnut shell liquid. Proc.Indian Sci.Congr.39(3): 75.

CASTOR OIL

- SUBBA RAO, T.V.
 - 1952. Varnishes from the residue of vacuum destillation of castor oil. Paintindia 2(1): 61-64.

COCONUT

- CENTRAL ROAD RESEARCH INSTITUTE
 - 1963. Utilization of waste products (i) Coconut pith for manufacture of expansion joint filler. In: "Annual Report 1962-63." p. 27. (New Delhi.)
- GEORGE, J., and JOSHI, H.C.
 - 1959. Complete utilization of coconut husk. 1. Building boards from coconut husk. Indian Cocon.J. 12: 46-51.
- GEORGE, J., and SHIRSALKAR, M.M.
 - 1963. Particle boards from coconut husks. Res.& Ind., New Delhi 8(5): 129-131.
- HARCHARAN, S.
 - 1956. Production of furfural from coconut shells and arecanut husk. Compos.Wood 3: 47-50.
- JOSHI, P.N., and GIRI, K.V.
 - 1948. Preparation of coir from dried coconut husk. Proc.Indian Sci. Congr. 35(3): 50.
- NARAYANAMURTI, D., and HARCHARAN, S.
 - 1955. Acid hydrolysis of coconut shells and arecanut husk for furfural and derivative plastics. Compos.Wood 2: 112-117.
- NARAYANAMURTI, D., and SINGH, J.
 - 1954. Studies on adhesives. XVIII: Adhesives from coconut shells.

 Compos.Wood 1(2): 41-42.

- SHIRSALKAR, M.M., JAIN, R.K., and GEORGE, J.
 - 1964. Fire resistant building boards from coconut pith. Res.& Ind. 9(12): 359-360.

GROUNDNUT

- BASU, U., and SEN GUPTA, S.K.
 - 1946. Utilization of groundnut meal. Proc.Indian Sci.Congr.33(3): 92.
- BASU, U., and SEN GUPTA, S.K.
 - 1947. Note on the preparation of adhesives from groundnut meal protein. J.Indian chem.Soc.ind.Edn 10(1/2): $73-7\frac{L}{4}$.
- CHITENDEN, A.E., and PALMER, E.R.
 - 1964. The production of particle board from groundnut shells.

 Board 1964: 1-6.

JUTE

- GHOSH, P.K., BHOWMIK, T., and BOSE, P.K.
 - 1955. Moulding powder fillers from jute sticks. <u>J.Sci.Ind.Res.B.</u>.

 14: 121-123.
- GUPTA, A.P.
 - 1950. Studies on the production of thermo-setting moulding powders from jute waste. Ph.D.thesis, University of Calcutta.
- GUPTA, A.P., and GUHA, B.C.
 - 1953. Production of thermosetting resins and molding composition from jute waste by digestion with acidic substance. I.

 Effects of variation in the nature of hydrolyzing and condensing agents and concentrations of the reagents used. II.

 Effects of variation in the time of reaction, pressure, and size of jute waste. III. Accelerating activities of certain

substances. IV. Heat-treatment of the pasty resin. J.Indian chem.Soc.ind.Edn 16: 1-6, 7-10, 11-14, 15-18.

GUPTA, A.P., and GUHA, B.C.

1954. Production of thermosetting resins and molding composition from jute waste by digestion with acidic substances. V. Activities of different substances as plasticizers. VI. Effects of incorporation of small amounts of fusible phenol-formaldehyde condensation product. J.Indian chem.Soc.ind.Edn 16: 97-100, 101-104.

ISLAM, M.A., and KHUNDKAR, M.H.

1957. Furfural from jute-stalk. Proc.Pakist.Sci.Conf. 9(3): 67.

KHUNDKAR, M.H.

- 1951. Utilization of wastes of jute industry. Proc.Pakist.Sci.Conf. 3(3): 52.
- 1952. Utilization of wastes of jute industry. Agriculture Pakist. 3(1/2): 14-17.

NODDER, C.R.

1945. Utilization of jute waste. J.Sci.ind.Res.4(2): 128-129.

SAHA, P.K., PAUL, S., and SARKAR, P.B.

1952. Utilization of jute root cuttings. Jute Bull. 14(12): 483.

MAIZE - CORN

RAMACHANDRA RAO, K.

1965. Utilization of corn-cobs for manufacture of plywood. <u>Indian</u>
<u>Forester</u> 91(6): 405-406.

UPPAL, I.S.

1949. Recovery of maize starch by-products and their industrial applications. <u>Indian Text.J.</u> 59(702): 522-530.

RICE

- AHSAN ULLAH, A.K.M., MUBARAK, A., and CHOTANI, A.H.
 - 1958. Studies in the properties of heat insulating building materials. I. Mixtures of cement and rice-husk ash.

 Pakist.J.Sci.& ind.Res. 1(1): 53-57.
- ALI, M.E., and KHUNDKAR, M.H.
 - 1953. Studies on rice husk, betelnut husk, and bamboo lignins.

 I. Isolation. J.Indian chem.Soc. 30: 551-555.
 - 1954. Studies on rice husk, betelnut husk, and bamboo lignins.

 II. Nitrolignins. J.Indian chem.Soc. 31: 471-4.
- BHAT, R.V., and SINGH, M.M.
 - 1954. Pulp for strawboards from wheat straw and rice straw.

 Indian Pulp Pap. 9(5): 259-263.
- CHITTENDEN, A.E., and FLAWS, L.J.
 - 1964. The use of rice hulls as aggregate in lightweight concrete.

 Tropical Science. 6: 187-199.
- PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
 - 1959. Utilization of rice husk. In: "Quinquennial Report 1953-1958." p. 71-72 (Karachi.)
- SEN, B.N.
 - 1955. Utility plastic from liquid refuse: Fena (gruel) after cooking of rice and refuse of tea-leaves and tea-dusts after decoction from the liquor in preparing tea. Proc.Indian Sci.

RUBBER

JAIN, N.C.

1965. Hardboards from rubber wood. Indian Pulp Pap. 19(8): 525.

SAWDUST

- BRYANT, L.H., and HUMPHREYS, F.R.
 - 1958. Building-boards from sawmill waste. Compos.Wood 5: 41-46.
- JAIN, N.C., GUPTA, R.C., and BAJAJ, S.C.
 - 1964. A further note on building boards from sawdust. Indian Pulp
 Pap. 18: 613-615.
- NARAYANAMURTI, D., and GEORGE, J.
 - 1957. Boards and moulded products from sawdust and agricultural wastes. Res.& Ind., New Delhi 2(8): 213-216.
- UPPAL, I.S., and KAPUR, R.N.
 - 1957. The use of cement sawdust blocks for thermal insulation in cold storages. Indian Concr.J. 6: 184-185, 197.

SUGARCANE - BAGASSE

BHARGAVA, M.P.

- 1941. Investigation on bagasse for the production of insulation and pressed boards, wrapping paper and straw boards. Indian Coun.Agric.Res.Misc.Bull. No. 44.
- BHARGAVA, M.P., and NAYAR, A.N.
 - 1941. The manufacture of insulation and pressed boards, wrapping papers and straw boards. Indian Coun.Agric.Res.Misc.Bull. No. 44.
- CHATURVEDI, H.S.
 - 1936. Utilization of by-products of the sugar industry. Indian Inst.Sug.Technol. (Allahabad) Bull. No. 40.

- GASTROCK, E.A., and LYNCH, D.F.J.
 - 1939. Cost evaluation of bagasse for industrial utilization.

 A method for calculating equivalent fuel values and costs of bagasse in relation to other fuels. Facts Sug. 6: 37-39.
- JAIN, S.C.
 - 1959. Bagasse-its industrial utilization. Indian Sug. 7: 598-603.
- LATHROP, E.O.
 - 1955. Economic factors in the use of sugarcane bagasse as a raw material for paper and board manufacture. <u>Indian Pulp Papers</u>. 10: 21-24, 173-183.
- MOHAN, R., and SHARMA, C.S.
 - 1964. Building lime from sugar press mud. Res.& Ind., New Delhi 9(7): 188-190.
- PATHAK, S.R., and SRINIVASAN, V.R.
 - 1958. Studies on sugarcane bagasse. I. Indian Pulp Pap. 12: 429-431.
 - 1959. Studies on sugarcane bagasse. II. Indian Pulp Pap. 13: 547-550.
- SEN, H.D., and SRIVASTAVA, H.C.
 - 1949. Plastics from sugar and molasses. Proc.a.Conv.Sug.Technol.

 Ass.India. 18(1): 57-59.
- SIDDIQUI, S., et al.
 - 1957. Heat and sound insulation boards from sugarcane bagasse and other agricultural wastes. Proc.Pakist.Sci.Conf. 9(3): 63.
- SINGH. M.
 - 1959. Straw board from sugarcane bagasse. Indian Pulp Pap. 14: 295-296.
- SINGH. S. Chattar
 - 1945. Manufacture of insulating and press boards, wrapping paper and straw board from bagasse. <u>J.Sci.ind.Res</u>. 3(9): 399-403.

- SPENCER, G.L., and MEADE. G.P.
 - 1929. "A Handbook for Cane-sugar Manufacturers and Their Chemists." p. 38-40. (John Wiley & Sons, Inc.: New York.)

SRIVASTAVA, R.C.

- 1945. Industrial utilization of bagasse: Introduction. J.Sci.ind.

 Res. 3(9): 389-390.
- 1956. Use of sugarcane bagasse as a raw material for paper and board manufacture. <u>Indian Pulp Pap.</u> 11: 239-244.
- VARMA, P.S., and SINHA, A.
 - 1951. Analysis and utilization of bagasse. Proc.natn.Acad.Sci.
 India 20 A.(1): 15-28.
 - 1952. Analysis, ultimate composition and fuel value of bagasse.

 Proc.Indian Sci.Congr. 39(3): 124-125.

TAPIOCA

NARAYANAMURTI, D., and SINGH. Y.

1953. Studies on building boards. V. Utilization of tapioca stems and hoop pine bark. Compos.Wood 1(1): 10-18.

TEA WASTE

RAMACHANPRA RAO, P., and SINHA, M.P.

1958. Plywood adhesives and caffeine from tea waste. Res.& Ind.

New Delhi 3: 241-242.

SEN, B.N.

1955. Utility plastic from liquid refuse: Fena (gruel) after cooking of rice and refuse of tea-leaves and tea-dusts after decoction from the liquor in preparing tea. Proc.Indian Sci.

TOBACCO

- AGGARWAL, J.S.
 - 1951. Utilization of tobacco seed, safflower oil and like oils as surface coating materials. Chem. Age India 3: 169-171.
- BALBI, G.
 - 1959. Tobacco oil in the production of varnishes. Olearia 13: 118-127.
- BALU, V., and KRISHNAMURTHI, M.N.
 - 1955. Tobacco seed oil. Oils Oilseeds J. 8(3): 14-15.
- KAPADIA, V.H., and AGGARWAL, J.S.
 - 1954. Indian tobacco seed oil for varnishes and paints. <u>J.Sci.ind</u>.

 <u>Res.</u> 13 B(5): 352-354.
- NARASIMHA RAO, M.
 - 1952. Tobacco seed oil. Paintindia 2(1): 55-57.
- PATEL, M.S., and SRIVASTAVA, A.N.
 - 1953. Wealth from tobacco wastes. Indian Fmg n.s. 3(8): 14-15.
- RAO, M.N., McGREW, C.E., and LEWIS, A.J.
 - 1951. Tobacco-seed oil in surface coatings. Paint Technol. 16: 241-244.
- RAO, N.V.C., and RAGHUNATH, D.
 - 1955. Preparation of factice. A new use for tobacco and safflower oils (lett.). <u>J.Sci.ind.Res. 14</u> B: 425.
- SHARMA, P.G., BUDHRAJA, N.C., and AGGARWAL, J.S.
 - 1951. Utilization of tobacco-seed and safflower-seed oils in varnishes and paints. I. <u>J.Sci.ind.Res.</u> 10 B(2): 33-36.