https://doi.org/10.29321/MAJ.10.A04636

upland sub-soil, while checking the velocity and reducing the violence of floods. Now, it is believed that many, even of the *ryots*, are beginning to see how beneficial these works are.

What the Darbar are doing at present is but little, it is true, having regard to the magnitude of the problem. Lakhs, perhaps crores, might be spent on it. That is not possible, but the Darbar consider that it is better to go on methodically, year after year doing what little they can, rather than to do nothing. They do not subscribe to the principle 'Posterity has done nothing for me, so there is no reason why I should do anything for posterity'.

Addendum to Notes on Erosion The Darbar must not omit to mention the valuable advice that they received from Rao Sahib E V. Padmanabha Pillai who was lent for a short time by the Madras Government to study the problems of erosion in the State, and advise as to the methods to be taken to deal with them. He visited the State from 28th August to 7th September, 1938 and again from 21st January to 1st February 1939, and wrote a useful note on the subject, which the Darbar had printed.

An appeal to Tanjore *ryots* *

By M. S. SIVARAMAN, I. C. S.,

Collector and President, District Agricultural Association, Tanjore.

There is an impression among many that paddy cultivation which has been in vogue from time immemorial in Tanjore District has reached a high level of perfection. But the truth is that no proper attention is paid to cultivation in this district. The average outturn realised is 25 *kalams* per acre which is about one-third of the yield per acre in the Aduturai Farm and one-fourth of the yield per acre in Spain and Japan.

The reason for this low outturn is the deficiency of the bulk of the soil of the delta in the two vital elements, nitrogen and phosphoric acid, which are essential for the successful raising of paddy. The existing manurial supplies are totally insufficient to replace the elements taken off the lands by the crops raised and there has been a gradual deterioration of the soil which has gone on for centuries. It is necessary that more attention should be paid to the proper manuring of the lands if the average outturn of the district is to be anything like what it ought to be.

Can the *ryot* repair the damage done in the course of centuries and secure a better outturn in the immediate future without much extra expense? He can, if he follows the advice of the Tanjore District Agricultural Association. He can increase the av rage yield of the district by over a hundred per cent even in the course of two years.

The deficiency of nitrogen can be made good by green manuring. The Association has distributed seeds of several kinds of green manure plants like *daincha*, *pillipesara*, sunhemp, *kavumpayar*, *kolinji* and *Sesbania speciosa* with instructions to *ryots* to raise their own seed requirements on bunds of fields and on waste lands. The intention of the Association is to make every *ryot* self-sufficient in respect of the supply of green manure seeds. There are 1·2 millions of acres of wet land in this district and these will require atleast 20 million lb. of green manure seed or roughly 1¼ lakhs of bags of seed. Each seed produces not less than 2000 seeds in the course of a season and in two seasons, it is theoretically possible to get 40 lakhs of seed. Five lb. of seed can be theoretically multiplied in the course of two seasons to satisfy all the requirements of the

* An appeal issued on 15th February 1943.

district. The Agricultural Association has distributed free already over 1000 lb. of different kinds of seeds for multiplication purposes alone. If a *ryot* is anxious to raise his green manure seeds and plants on his own lands nothing will stand in his way except his own lethargy and want of initiative. Already over 20 lakhs of *pungam* plants have been planted in the last rainy season along road margins, canal banks, field bunds and on lands which are not put to any use now. The green manure crops raised on the fields and the green manure leaves that can be grown on lands that are left waste now should be more than sufficient to supply the deficiency of nitrogen.

The deficiency of phosphoric acid can also be made good by the *ryot* without any extra expenditure. The chief source of phosphoric acid available for the *ryot* is bone which however, requires to be converted into a suitable form for application uniformly to the lands. Raw bones are hard to break; but if the bones are calcined, they crumble to pieces in the fingers. The *ryot* can easily collect all available bones and have them calcined as follows: The bones are spread between alternate layers of *karukkai* (*shavi* paddy) or *umi* (paddy husk) or other fuel and the whole is covered with a layer of leaves or straw and mud-plastered. A few small holes are made for ventilation before the heap is set on fire. After the fuel is completely burnt, the bones will remain intact consisting mainly of calcium phosphate and they can be easily powdered with a stone if it is done on a small scale and in the mortar mill if required on a larger scale.

The bone loses 40 per cent of its weight during calcination and the remaining bone-ash is richer in phosphoric acid content than bone-meal. Analysis by the Agricultural Chemist at Coimbatore has shown that it consists of 37·8 per cent of phosphoric acid against 23·2 per cent in bone-meal. Bone-ash has no smell and it can be stored in the house. It is less bulky and it costs nothing if the *ryot* converts the bones of his dead cattle into bone-ash with the waste products of paddy cultivation like *karukkai* or *umi* as suggested above.

At present, the bones are collected by a few collecting agencies and converted into bone-meal or super-phosphate with the aid of expensive machinary or chemicals. The *ryot* does not realise that the bones which are sent out of the district in this way are derived from cattle that are fed on the crops raised on his own lands and therefore, there is a continual drain of phosphates which can certainly be prevented if he is careful. The Association therefore appeals to every *ryot* whose lands are deficient in phosphoric acid to arrange to collect all available bones and calcine and powder them and apply the ash to the fields.

With intensive green manuring and bone-manuring, every *ryot* should be able to produce at least 75 *kalams* to an acre and the Association hopes that the *ryots* will stir themselves up and see that their lands produce more paddy at less cost and thereby improve their own material prosperity and the prosperity of the country.

Abstract

Factors affecting the longevity of cottonseed D. M. Simpson (*J. Agri. Res* *64, 407—419, 1942*). The longevity of cottonseed is definitely dependent upon the moisture content of the seeds and the temperature conditions under which the seeds are stored. The studies here reported deal with the effects of moisture alone under "normal" storage temperatures and with the combined effects of controlled moisture temperature conditions.

In ordinary storage, seeds quickly reach a moisture content in equilibrium with that of the storage environment. In storage experiments with upland and sea-island cottonseed under the humid and fairly high temperature conditions prevailing near Charleston, S. C., seeds in bags deteriorated rapidly after 2 years, but seeds with a moisture content reduced below 8 percent and stored in tin containers to prevent the rapid reabsorption of moisture retained their viability with only slight impairment for 7 years, and a few seeds were still germinable after 10 years' storage.

Lots of upland and sea-island cottonseed sealed in glass jars and containing 11 percent moisture were worthless for planting purposes after 2 years' storage, but other lots, especially of the sea-island seed, containing 6 and 8 percent moisture, showed a high percentage of viable seeds after 7½ years' storage. Thus, cottonseed containing less than 8 percent moisture apparently does not require aeration and can be kept viable for many years in airtight containers even at the temperatures that prevail along the Coastal Plain.

Cottonseed of two upland varieties was adjusted to several levels of moisture ranging from 7 to 14 percent and stored at constant temeratures of 90°, 70°, and 33° F. Corresponding checks were subjected to normal fluctuating temperatures at Knoxville, Tenn. The seeds stored at 90° deteriorated rapidly, those containing 14 percent moisture were all dead in 4 months and after 36 months' storage only those seeds with 7 percent moisture were germinable, and their vitality was impaired. In contrast seeds stored at 33°, even with 14 percent moisture, retained their viability for 36 months without appreciable impairment. Seeds stored at air temperature and at 70° were somewhat intermediate with respect to moisture tolerance. The higher moisture lots deteriorated less rapidly at 70° than at air temperature.

If the moisture content is low cotton seeds can withstand high temperatures without rapid deterioration, and if the temperature is kept low they are tolerant of high moisture, but both temperature and moisture cannot be high if rapid deterioration is to be prevented.

In field germination tests, the percentage of seedling mortality was greater from seeds stored at 33°F. than from seeds stored at higher temperatures. Apparently, the low storage temperature was also favourable for the survival of anthracnese spores on the seeds.

Analyses of stored seeds showed that with increased seed moisture or increased storage temperature there was a corresponding increase in the percentage of free fatty acids in the oil. *(Author's Summary)*.

Gleanings

Synthetic fibre from soyabean It seems, as it were, that there is no end to the list of uses in which soyabean can be used. Here is the news of a synthetic fibre, similar to sheep's wool, produced from soyabeans, which is coming into use in upholstery in ever increasing quantity. The pioneering lead was given by the Ford Motor Company which now operates a 'pilot' mill capable of spinning more than thousand pounds of synthetic fibre a day. The fibre is spun from a molasses-like substance containing soyabean protein as its chief ingredient. The process involves the extraction of oil from soyabean and the subsequent removal of protein from oil-free meal. Protein, thus extracted, is dissolved to produce a viscous substance which is forced through a spinneret containing 500 holes to emerge in the form of filaments. The filaments are then passed through acid baths and later on immersed in formaldehyde baths to set the fibres. The fibres are cut according to required lengths and subjected to a process of drying under controlled conditions of temperature and humidity. Some other minor operations are necessary before the fibres are finally made ready for spinning. The product is merited with a natural crimp and a high degree of resiliency. The research chemists are of opinion that the synthetic product can