

SELECTED ARTICLES

CONCLUSIONS AND RECOMMENDATIONS OF THE
CONFERENCE OF COLONIAL DIRECTORS OF
AGRICULTURE, HELD AT THE COLONIAL
OFFICE IN JULY, 1938*

1. THE WORK OF THE IMPERIAL AGRICULTURAL BUREAUX

THE Conference desires to place on record its high appreciation of the work of the Imperial Agricultural Bureaux and of the Imperial Institute of Entomology and the Imperial Mycological Institute, and has no suggestion of major importance to make concerning the manner in which their functions are performed so far as the Colonial Empire is concerned.

It is, however, suggested that consideration might usefully be given to the possibility of providing somewhat fuller abstracts of papers which appear in publications which are normally difficult of access to workers in the Colonial Dependencies or which appear in languages with which British workers are unlikely to be familiar.

It is thought that a useful purpose would be served if arrangements could be made to supply those in charge of the Institutes and the Bureaux with lists of the publications which are normally received and filed in the Colonial Departments of Agriculture and Veterinary Services as this would afford guidance as to the amount of abstracted matter which should be provided in respect of articles appearing in particular publications.

It is also suggested that such lists could be interchanged with advantage between the various Colonial Departments as they would serve to guide the departmental authorities in the choice of publications desirable for departmental use.

The Conference further desires to express the high appreciation of Colonial workers of the critical reviews of certain aspects of agricultural research which have been from time to time issued by certain of the Bureaux and to suggest that so far as circumstances permit the continued issue of similar reviews would be welcomed by Colonial workers.

II.

In connexion with the work of the Imperial Bureaux the Conference desires to invite attention to resolution XXXIV of the Commonwealth Scientific Conference which relates to co-operation in obtaining and maintaining plant material for crop improvement.

* Extract from the *Report and Proceedings of the Conference of Colonial Directors of Agriculture*, Colonial Official Publication No. 156.

The Conference is of opinion that it is most desirable that colonial research workers should be placed in a position to know the sources from which material of the recognized varieties of cultivated crops could be obtained and the nature of the varieties available.

To this end it is recommended that the Executive Council of the Imperial Agricultural Bureaux or other suitable authority should consider the possibility of taking steps to cause lists to be prepared of the recognized and established commercial varieties of the more important tropical and sub-tropical crops grown in the different territories in the Empire, and to include therein brief descriptions of the characteristics of each variety and an indication as to the sources in each territory from which planting material would be available to research workers engaged in plant improvement problems.

III.

The Conference also desires to invite attention to Resolution XXXVI of the Commonwealth Scientific Conference which relates to the control of damage by termites.

The Conference stresses the importance of active measures being taken to control the losses being occasioned by termites in the Colonial Empire and expresses the hope that the Executive Council of the Imperial Agricultural Bureaux may be able to take such steps as will lead to the collection and interchange of information on the lines recommended by the Commonwealth Scientific Conference at as early a date as may be possible.

In particular it is desirable that material showing the various stages of the development of the different species of termites which occur in the Colonial Empire, together with an account of their distribution and the character of the damage done by them, should be submitted to the Imperial Institute of Entomology, with a view to establishing the species which should be regarded as dangerous and destructive and to determining their distribution.

The Conference desires to lay stress on the importance of securing the active collaboration of other Government authorities with the official Entomologists in termite investigations and particularly that of the Public Works Departments.

2. SOIL CONSERVATION

The Conference recognizes that the importance of soil conservation cannot be over-stressed. Increased attention has been given to this matter in recent years throughout the Colonial Empire and a sound public opinion is being formed in favour of soil conservation, the prevention and check of accelerated erosion and the maintenance of soil fertility. In many Colonial dependencies active steps have been taken to check accelerated erosion and further action is contemplated. It is recognized that the chief asset of the colonial peoples is the soil and that economic policy requires to be planned on soil fertility and productivity.

Accelerated erosion takes place when there is an interference with the vegetative cover and it is necessary to recognize that lands should be utilized for

the purposes for which they are best fitted, due regard being given to the maintenance of adequate forest and grass cover, especially in hilly districts and for the protection of the springs and water supplies. Nature dictates that some lands should always be maintained in forest cover, others are suited for grassland development whilst others are fitted for cultivation.

Ecological surveys should be a preliminary to the planning of land utilization and where development has progressed general agricultural and economic surveys are also desirable as a necessary preliminary to schemes designed to improve conditions or to introduce new systems of husbandry, which aim at increasing soil fertility or the improvement of soil structure. The Conference is of the opinion that further investigational work is necessary to ascertain the scientific causes of crumb formation and of those factors which lead to soil stability.

In agricultural practices attention should be given to all measures designed to effect soil stability, improve fertility and check erosion. These measures must vary with circumstances, with the differing characters of soils and climatic conditions and with the crops under cultivation. Some crops are liable to induce accelerated erosion more readily than others and in agricultural practices the aim should be to encourage contour ploughing or planting and the development of a satisfactory land cover at least during the periods which are dangerous from an erosion point of view.

Erosion occurs in widely varying forms in different types of country, each calling for the application of measures which may be found to be locally suitable. These measures should naturally be designed to slow down the movement of soil by either wind or water by every economic means possible and should include the protection and restoration of vegetation and the erection, where necessary, of structures to slow down and spread the movement of water.

Importance is attached to the use of vegetation control in attempts to check erosion and the Conference desires to record its opinion that simple measures should always be explored before works of an engineering character or of a costly nature are contemplated. Schemes of erosion control should be based upon drainage areas and work should invariably start at the head of the natural drainage channels or at the sources of the erosion trouble. The maintenance of forests or other vegetative cover on high lands and at the heads of natural drainage channels is of the utmost importance.

The Conference recognizes that soil conservation work is the duty of all and that it is unlikely to be successful, owing to the varied and far-reaching problems involved, unless a policy of close co-operation is established between the Administration, all technical departments of Government, all local Authorities and the people. It desires to emphasize that it is essential to get down to the people themselves in order to arouse their interest in the problems and to secure their willing collaboration. The creation of an informed public opinion is an essential to success. Collaboration and co-operation may be effected by the formation of local Committees and the direct interest of the people may be aroused by the establishment of good demonstration areas of adequate size at well selected and important centres. In these demonstration areas it is necessary not only to show how anti-erosion measures can be successfully

carried out but to demonstrate the proper utilization of land and the methods of crop and animal husbandry designed to assist in soil conservation and the maintenance of fertility. The development of sound systems of agriculture is as essential in soil conservation work as are measures against erosion, even in areas where erosion is already assuming serious proportions.

The importance of dams to intercept run-off cannot be over-emphasized and the Conference has noted with satisfaction the valuable results which have been achieved in Basutoland as a consequence of the creation, as part of the scheme for erosion control, of small dams and the establishment of terraced fruit and vegetable gardens. In pastoral areas the importance of improved and increased water supplies also cannot be overstressed : the creation of such supplies assists in the better utilization of the pastures.

The conference wishes also particularly to emphasize the important role which Administrative Officers should play in all matters connected with the planned utilization of lands and soil conservation control. On them falls the duty, in collaboration with technical officers, of arousing interest amongst the agriculturists or pastoralists in the erosion problems with which they are faced, in stimulating the effective working of local committees, in encouraging effective co-operation and in smoothing out the difficulties which face technical officers charged with soil conservation duties. It recommends also that the subject of land utilization and of soil conservation and the part which Administrative Officers can play in these matters should take an important place in the courses provided at Oxford and Cambridge during the training period for Administrative Officers prior to their assumption of duties in the Colonial Service. It is suggested that in these courses the wide and important nature of the subject should be emphasized and the necessity for the fullest co-operation between all branches of the Colonial Service stressed.

Technical officers with experience in soil conservation work are necessary in many of the Colonial dependencies for executive duties and for effecting liaison between the several departments and between those departments and Administrative Officers. The Conference is of the opinion that the best interests will be served if these officers are regarded as liaison officers rather than purely executives. Work on soil conservation and even work connected with anti-erosion measures concern a large number of departments and an even greater number of individuals. It would be impossible to expect satisfactory progress if executive works were entrusted solely to soil conservation officers as their numbers could not be adequate to the task which has to be faced in the Colonial Empire. Officers with specialist knowledge of and experience in soil conservation measures are essential to progress and all plans formulated by local committees or by departments should be examined and approved by competent technical authorities before they are put into operation.

The value of an interchange of visits is emphasized and the Conference recommends that provision should be made for officers concerned with soil conservation to visit neighbouring territories or even farther afield in order to study measures which have been adopted to deal with erosion or with other matters concerning the conservation of soil and its fertility. It also feels that

farmers engaged in soil conservation operations should be enabled to exchange visits from time to time and that organized visits by them to demonstration areas should be arranged.

In the matter of de-stocking the Conference recognizes that this may be necessary in certain areas where soil erosion has assumed serious proportions and where stock concentrations are high, but it does not overlook the difficulties which have to be faced. The education of responsible leaders on the need for de-stocking under certain conditions is regarded as being the first essential, and it is felt that progress in the development of a public opinion in favour of stock reduction will follow efforts to establish a commercial outlet for stock and animal products. Efforts in this direction may include the development of great numbers of market centres and the encouragement of butchers' shops at these centres and elsewhere. An increase in the centres for drying hides and skins is also necessary in some areas and, as far as cattle are concerned, the development of dairy undertakings and the preparation of ghee should be encouraged. Improvement schemes designed to enable the stock owners to secure from a reduced number of good, well-fed stock a financial return which is not less than that previously obtained from a large number of ill-fed inferior stock are certain to secure results in the long run and the denudation of the countryside caused by trampling and over-grazing will be reduced.

Pasture management plays an important role in soil conservation in grassland areas and the importance of controlled movements of stock and of controlled grazing is considered to be of the greatest importance under such conditions.

In all areas the Conference desires to express the opinion that there is a necessity for some measure of control over grass or bush burning, and that such control measures as are desirable should be established when the necessary preliminary investigational inquiries have been made.

3. ANIMAL HUSBANDRY

The Conference desires to emphasize the importance which animal husbandry must play on the development of systems of mixed farming, the value of which cannot be overstressed if soil fertility is to be maintained and the nutritional standards of the inhabitants of Colonial Dependencies improved.

The Conference recognizes the valuable progress which has been made with mixed farming in the Northern Provinces of Nigeria and notes the experimental work which is being done with mixed farming in several other parts of the Colonial Empire. The trials which have been initiated recently in the Wet Tropics were recognized as being of the greatest importance and the results secured from the use of farmyard manure on Benin sands in Southern Nigeria and in other areas are of importance. It is urged that further efforts should be made to test the feasibility of the introduction of animal husbandry into the agricultural systems of the wetter areas. Interest was taken in the successful results obtained from the folding of sheep in certain parts of the forest area of the Gold Coast and in the value which followed the keeping of poultry in citrus cultivations in some areas. It is recognized that there were considerable

difficulties in effecting the introduction of animal husbandry in many areas and that the question of disease required careful consideration. In the wetter tropics it is recognized that open grazing may be difficult, and under these conditions the stall feeding of stock with forage and fodder crops provides a better alternative than grazing.

The Conference also suggests that increased attention could with advantage be paid to the part which buffaloes can play in the Wet Tropics and recommends that future work should include trials designed to ascertain how far buffaloes both of the milch type and also of the working type can be successfully employed in suitable regions in the development of mixed farming.

It is felt that extensive preliminary experiment is always necessary before mixed farming is introduced and that provision for the training of cultivators in the new methods and for establishing the more progressive of them, after training, as groups of demonstrators is essential to success.

The question of finance for the provision of the necessary stock and implements is a matter which requires special consideration and the Conference expresses the view that some provision must be made for reasonable financial assistance to selected individuals and that means should be devised to enable prospective "mixed farmers" to effect savings through co-operative thrift societies or by other means against the necessary purchases of stock and implements. It also feels that the amounts of loans and the terms of repayment should in general be in direct relation to the capacity of the farmers to repay.

Government assistance, after experimental work had been done and the necessary training provided, could in the view of the Conference best take the form of—

- (1) The provision of water supplies in centres where mixed farming is being started.
- (2) The provision of instructional agricultural services.
- (3) The provision of reasonable financial assistance for the establishment of trainees on their holdings.
- (4) The encouragement of thrift societies.
- (5) The provision of adequate supplies of selected and trained stock at the lowest possible prices.
- (6) The provision of implements at the lowest possible prices.
- (7) The provision of veterinary services for the immunization of stock required by mixed farmers and for detection of disease and attention thereto when it occurs amongst the stock maintained by them.
- (8) The development of market centres and of schemes for the orderly marketing of produce.

4. NUTRITION.

With a view to effecting a general improvement in nutrition, the Conference recognizes the importance which should be attached to increased attention being given by all Colonial Departments of Agriculture and Veterinary Services to the development of animal husbandry, the encouragement, where practicable, of mixed farming, and to the production of greater supplies, and to the greater diversification, of locally grown foodstuffs.

The nutritional problem in the Colonial Empire is basically economic and agricultural, and it can only be tackled satisfactorily if there is the closest co-operation between the Medical, Agricultural, Veterinary and Education Departments.

Generally speaking there are definite indications that emphasis should be given to the greater consumption throughout the Colonial Empire of meat and other animal products, fruit and green vegetables.

A greater consumption of meat can often be secured by increasing the number of butchers' shops and in some areas it has been found that a greater consumption of milk has followed schemes for the development of mixed farming and for the production of ghee. Milk, from which the fat has been extracted for sale, if returned to the producers at the time of separation, will, it has been proved, be taken back for consumption in the homes, the occupants of which would otherwise not have secured the milk at all, but have allowed it to be consumed by suckling stock. The development of poultry keeping also offers possibilities of considerable development, whilst there is in some areas a serious lack of fruit supplies and in certain seasons a dearth of green vegetables. Leafy spinaches and indigenous vegetables form an important part of native dietary and the Conference considers that Departments of Agriculture could profitably give greater attention to the development of vegetable gardens, especially where water supplies are available.

The Conference agrees with the suggestion that endeavours should be made to encourage the use of under-milled or good quality par-boiled rice in the place of polished white rice in all territories where rice is the staple food of diet.

It also desires to place on record that in its view the improvement of nutritional standards will follow, as has already been frequently demonstrated in many areas of the Colonial Empire, an improvement in the economic position of the people concerned, and that it is essential that the production of commercial cash crops or animal products should continue to be encouraged, in addition to the production of greater local supplies of food, if progressive improvement in the nutrition of the peoples concerned is to be achieved.

5. LAND SETTLEMENT

The Conference has taken careful note of the observations submitted on the subject of land settlement in the Colonial Empire, and of the steadily increasing importance which is being attached to this form of development as a means of providing a solution of certain social problems of pressing importance, particularly in the Caribbean area.

It feels that if development is planned along lines, the nature of which is now becoming reasonably well recognized, land settlement can do much to provide an alleviation of certain social difficulties. There are, however, limits to the possibilities of land settlement and failure to appreciate and to take account of these can only lead to disappointment and failure.

The Conference desires to stress that in all schemes of land settlement careful consideration must be given to the selection of the land and that this must be chosen by reason of its suitability for cultivation from an agricultural point

of view, its accessibility to transport facilities and to market centres. The existence of suitable provision for water supply is essential and in malarial districts steps to improve health conditions must not be overlooked.

Great importance attaches also to the selection of settlers, while provision must be made for their training after selection.

The system of tenure adopted is also of importance and whilst freehold tenure has been and is still, in certain quarters, extensively advocated, it should not be overlooked that continued supervision of the settlers by qualified officers is necessary if satisfactory results are to be achieved. Unsupervised settlement and the unrestricted possession of lands by peasant owners frequently results in unsatisfactory methods of cultivation, to fragmentation of holdings and the ultimate frustration thereby of settlement schemes. In this connexion it is emphasized that if land settlement is to be a source of permanent improvement and not merely a temporary palliative of existing difficulties it is necessary to take a long view and to plan accordingly.

The Conference considers that in all schemes it is necessary to pay the most careful attention to the systems and methods of agriculture employed and that those responsible for the supervision should be in a position to insist on the holders following cultural practices which will so far as possible ensure that the fertility of the soil on the settlement is adequately conserved.

The Conference further desires to stress that from the point of view of general efficiency a collection of small holdings is usually less efficient agriculturally than a large estate, and consequently it is desirable that a measure of co-operation should be applied in regard to the purchase of farming requirements, the provision of implements, stock and buildings and the preparation and marketing of produce.

It also desires to indicate that successful land settlement is often costly and although a part of the initial outlay may be in time recouped a proportion of non-recoverable expenditure on land settlement schemes has to be faced.

Particularly it desires to emphasize that in planning land settlement schemes due account must be taken of the crops which can be cultivated by the tenants and the markets which can be found for the produce. All schemes should include the production of as large a proportion as possible of the food requirements of the tenants themselves but there must also be included at least one cash crop if the holders are to be expected to achieve a reasonably adequate standard of living.

The Conference considers that as a prelude to the inception of land settlement schemes a survey of the economics of peasant agriculture is of the greatest value and urges that wherever possible such surveys should be undertaken before developments are embarked upon, and that when this is not possible a careful economic examination should be made of the data available.

All attempts to launch land settlement schemes without due consideration of the factors involved or the examination by the agricultural authority as to the suitability of the lands for development are to be deprecated. It is felt that there have been sufficient examples in the past of the folly of establishing land settlement schemes on unsuitable lands without adequate preliminary

inquiries or without the provision of continued instruction for the settlers. All feasible steps it is recommended should be taken to avoid a repetition of these mistakes in the future.

6. PRODUCE INSPECTION

The Conference has noted with interest the progress which has occurred in the development of schemes of inspection of agricultural produce in a number of dependencies since the last Conference in 1931.

It feels that in territories and under conditions where there is an opening for their operation the further development and extension of such systems should be considered.

Particular attention is directed to the striking measure of success which has attended efforts in this direction in certain African Territories and it is noted with satisfaction that the necessity of providing for the continuation of the service on a permanent basis in Nigeria has now been accepted.

The Conference desires to emphasize that an essential to the success of schemes of Produce Inspection lies in securing the support for them of trade interests. In Nigeria this has been secured by appointing to the Advisory Committees members of merchant firms interested in the purchase and shipment of produce.

When lack of success has occurred it is traceable in some instances to insufficient collaboration with commercial interests and to lack of propaganda designed to explain the objects of the inspection schemes to the producers prior to their introduction.

It further seems clear that Produce Inspection is only likely to produce satisfactory results where the improvement in the quality of the produce which it is sought to bring about is in accordance with the recognized demands of the market. Consequently an essential preliminary to the inception of new schemes should be the careful examination of the market requirements in regard to quality and where grading is undertaken the grades which are established should be in accordance with market standards.

Instances do, however, exist where attempts to improve the quality of exported produce may meet with success by reason of the fact that it will tend to reduce the losses which badly prepared produce is liable to undergo during storage and transit.

7. AGRICULTURAL EDUCATION AND TRAINING

The Conference has noted with satisfaction the general progress that has been made in the development of training in agriculture for adolescents and adults and the steps which have been taken to provide for the training of staff for the requirements of Departments of Agriculture.

An exchange of views at the Conference indicated the nature of the main difficulties which are experienced in regard to vocational training for adolescents and adults under the varying conditions prevailing in the Colonial Empire.

Elementary education in certain territories still stops at an early age and consequently youths who proceed from elementary schools to agricultural courses complete their vocational training before they are ready to start agricultural enterprises on their own account. There is a decided difficulty in bridging the gap between the completion of their agricultural training courses and the time when they can establish themselves as farmers. Attention is being given to this problem in some dependencies.

The Conference is fully in accord with the general policy adopted in regard to community education and agrees that training centres for teachers and instructors should be located in rural areas wherever possible alongside those provided for forestry, veterinary, health and other subjects. Stress should be laid on the necessity for securing improvement in general living and working conditions in rural areas and efforts should be directed towards making rural life more attractive.

Supervision of students who have received vocational training is, in consequence, important and the Conference records the view that the importance of "follow-up" work cannot be over emphasized.

Definite progress in the training of subordinate staffs for Departments of Agriculture is recorded but the Conference attaches importance to steps being taken to ensure that scholars, especially those in receipt of bursaries or scholarships from public funds, admitted to vocational agricultural schools or colleges have a rural background or outlook.

The Conference welcomes the steps which are being taken by the authorities of the Imperial College of Tropical Agriculture to provide special courses of training for selected subordinate officers in Colonial Departments of Agriculture with a view to fitting them for promotion to higher staff appointments.

The Conference further welcomes a growing measure of co-operation between the agricultural and education departments, and hopes that it will become increasingly fruitful.

8. PROPAGANDA AND PUBLICITY

The Conference desires to record that close attention to propaganda and publicity is necessary if satisfactory progress in extension work is to be achieved. It has examined the different systems in operation and concludes that the use of films and, in certain dependencies, broadcasting can form a useful adjunct for reinforcing normal extension activities and of attracting attention to them.

Films, for the purposes of agricultural propaganda and instruction, may be divided into three classes :—

- (a) General interest films designed to secure the interest of the audience.
- (b) Background films depicting familiar local scenes and operations designed to provide a background for more detailed instruction.
- (c) Films aiming at detailed instruction in agricultural processes.

The Conference notes that up to the present time experience in certain dependencies appears to indicate that, with regard to category (c), detailed

instruction in agricultural processes is better conveyed by means of still lantern pictures with a spoken commentary, but that there is need for further experiment on this point, while films under categories (a) and (b) appear to be valuable as an adjunct to detailed instruction whether by films or by slides.

The Conference considers that films under categories (b) and (c) can serve a useful purpose only if they are prepared with a precise regard to local circumstances and conditions, *i.e.*, that in general they should be prepared locally or under local guidance from technical departments. The Conference further believes that it is in general practicable for Colonial Governments to prepare reasonably satisfactory films of this nature locally without importing expensive professional assistance. The possibility of securing help from selected amateurs interested in cinematography and professional assistance when it can be obtained cheaply should not be overlooked.

In any case propaganda or publicity through the medium of the film or broadcasting requires to be "followed-up" intensively by extension workers if it is to secure a lasting measure of success and the Conference attaches importance to demonstrations and lectures at district shows, village council meetings and schools and to the organization of visits to agricultural and demonstration stations and selected farms.