

Agriculture in Uganda, J D Tothill editor, London, 1940

(Extracts relating to Kigezi from this seminal multi-authored book, which at the time was primarily engaged in self-sufficiency agriculture and supply of local markets, as transport was slow and expensive and dependant on whether Indian merchants found agricultural produce profitable in Kampala and beyond.)

The Kigezi Highlands

The rainfall of these is only 30 to 40 inches per annum, but is very well distributed, heavy downpours are rare and evaporation in this area is less than in most other parts of Uganda on account of its higher elevation. The agricultural soils are developed on Karagwe-Ankolean beds and are deep and well drained. The district is densely populated and the steepest slopes are cultivated, millet, peas, and beans being the main crops. Coffee has recently been introduced as a cash crop for export. Although the rainfall is moderate the native has developed his own anti-erosion measures; he grows his crops in strip across the slopes, with intervening strips of uncleared land, and this system leads to the formation of natural terraces. In addition some individuals have built small terraces. The lava plain extending around the Mufumbiro volcanoes suffers little from erosion, but on the slopes the native collects stones to build them into contour bunds.

Environments

5. Mountain Bamboo Zone

This occurs on all the mountains of Uganda, at 8-9,000 feet (in Kigezi at 7-8,000 feet) and comprises a dense growth of *Arundinaria alpina* and allied species; the zone is not important agriculturally, but of great value to the native, who use the bamboos for building purposes and, in Kigezi, for firewood.

Peas

Peas (*Pisum sativum*) are very productive in most parts, and in Kigezi they form a large part of the diet of the natives – the numerous grey-foliaged patches of this crop are conspicuous on the hill-sides in this area. The origin of the cultivation of the pea in Kigezi is unknown and the introduction was made prior to the arrival of the Europeans, for Speke reports that when he was in the neighbourhood in 1861: “Here (Kufro) for the first time in this part of the world, I found English peas growing”...

... The only district in Uganda where peas are cultivated to any large extent is Kigezi, where they form a staple food. It has been stated that these peas were introduced into Kigezi from Ruanda, where they are extensively grown, and they thrive best in Bufumbira County, at an altitude of 6,000 feet, or more, probably on account of better soil. The crop is planted in September and harvested in the following February. The seed is sown broadcast in unweeded plots, where it is left to grow with little or no attention. Recently the practise of planting peas as a mixed crop with beans and maize has become more usual and appears to result in better yields. The variety cultivated is a dwarf type and does not need a support to climb over. When the plants are mature they are cut and left on the plots to dry out; threshing is carried out on a cleared space in the plots after the pods have been dried sufficiently. The thrash left from the crop is allowed to remain on the plot, though it is sometimes used to mulch coffee plots, and the peas

are taken and stored in granaries in which they may be kept for about a year provided they are occasionally taken out and dried in the sun.

Two chief varieties of peas are recognised by the natives of Kigezi: Mitali has light-coloured seeds and Miseriseri has dark green seeds – the latter variety is probably *Pinum sativum* var. *arvense*. Only relatively small amounts of this crop are cultivated in other parts of Uganda, though in south-west Bunyoro it is grown rather more commonly, as a mixed crop with beans. In Buganda and Busoga only occasional plots of peas are seen and most of these are grown for sale in the local markets. The seed is used in these areas is usually purchased from Indian or European stores and is of imported varieties from Europe or South Africa having larger seeds than the native varieties grown in Kigezi.

Coffee

Native Coffee Industry in Western Province

(b) Kigezi In 1921-2 a few scattered plots of coffee were being grown by natives of Kigezi, the seed probably having been obtained from the Congo Belge. In 1923 the Administration and Agricultural Departments decided to make trials of *Arabica* coffee in parts of the district; four natives were also sent to Masaka for instruction in the cultivation of the crop. Seed was obtained from a native plot and planted in nurseries; the resulting plants were transplanted into plots at the end of 1924. Until the end of 1927 no further developments occurred, and there was a distinct opinion that *Arabica* coffee cultivation by natives should be restricted to Bugisha District in the Eastern Province. The Coffee Office reported in 1928 that *Robusta* coffee was unsuited to Kigezi District on account of the altitude and climate, and it was decided to concentrate on *Arabica*. At the end of the same year nurseries were prepared throughout the district, and 112lb of selected seed were received from Kampala. At this time it was estimated that there were 9,000 trees planted in Kigezi. Little supervision was possible for some years, but in August 1934 an Agricultural Officer was posted to Kabale. At first the coffee was concentrated in Kinkizi and Ruzumbura Counties and demonstration plots were placed in each village.

In October 1931 the first recorded sales of *Arabica* coffee in Kigezi occurred; about 1½ tons were bought by an Indian trader. Early in 1932 four natives were sent to Kampala for a month's training on the Government plantation. Planting continued steadily, and at the end of 1934 there were about 840 acres under coffee; this increased to over 2,000 acres by the end of 1936...

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Cultivation

The system of coffee nurseries is designed to provide a convenient and adequate supply of plants in all three districts; in Toro the nurseries are being concentrated at fewer centres than in the past, in order to achieve better supervision and care, and a similar policy is likely to be adopted in Kigezi and Ankole. The young plants are ready for distribution when 9 to 12 months old and are issued only to natives who have prepared their plots in readiness. From 30 to 50 trees are issued to each grower. Wherever possible care is taken to ensure that coffee plants are opened only on new land, and land exhausted by frequent cropping must be avoided. In Kigezi District the plots are opened on hill-sides or hill-tops in preference to valley bottoms, where fog is liable to lie for hours during the mornings of some months of the year. Trial plots planted some years ago in these valley bottoms gave very poor results.

In spite of the instructions given and the supervision of native instructors much bad planting still occurs and results in poor stands on new plots and unhealthy trees in older plots. In Toro especially some selection is necessary in the issue of plants.

In all three districts many growers interplant their young coffee with low-growing leguminous crops, which assist in keeping the soil covered and in prevention of erosion. After the first two years all plots are required to be mulched with grass or other material available, such as sorghum stalks or papyrus. The disadvantage of the intercropping is that inter-row cultivation may result in damage to the young plants by careless digging or allowing beans to climb over them. Climbing legumes are discouraged for use but are sometimes planted. The system of intercropping is popular, as it enables the peasant to obtain some return for his labour before the coffee reaches the bearing stage, and possibly results in his taking more interest in his coffee.

After the trees have come into bearing mulching is insisted upon, either complete mulching or strip mulching, and in Toro many peasants appreciate the effect of mulching in reduction of the amount of cultivation required to keep their plots in good order.

The question of shade for native coffee is being investigated; as mentioned above, it is known that the provision of shade controls 'hot and cold' disease. Banana shade was common in the past in Toro, but it was found that unless the natives could be trained to control the growth of the bananas the plots tended to become pure banana plots, as the coffee was unable to compete with the dense growth of bananas. It is now proposed to try out a semi-permanent shade in Toro, such as *Sesbania* sp., and to experiment on shade for coffee in the other two districts.

The system of pruning in all three districts is a modified multiple-stem system, considered to be the simplest for use by native cultivators. When plants are issued from the nursery they have two stems each, due to the topping carried out some months before issue. After the plants are about 18 months old (from planting out) a sucker is allowed to develop from near the base of the plant; when this approached maturity another is allowed to develop and one of the original main stems is removed. When this method is properly carried out two main fruiting stems are always present. No other pruning is done on the trees except the removal of all primaries from the ground to a height of 18 inches and of all young shoots close to the main stem; the latter is done to prevent a dense bushy growth which harbours pests.

The pruning of the trees is often complicated by *Antestia* damage, and severely damaged plots are stumped to within about a foot of the ground.

By far the most important pest of coffee in all three districts is *Antestia*, which has caused serious damage in some localities and in Ankole is responsible for a recent change of policy. Here the damage from the bug on *Arabica* coffee has been so serious that this type is in places being abandoned in favour of *Robusta*. Control by hand collection of the bug has not been effective; considerable difficulty has been experienced in getting the natives to pick the bugs regularly and efficiently and to use smoke to assist them in this work. In Kigezi 'bug days' have been instituted, when every grower is supposed to devote the early morning to the collection of *Antestia*.

Other pests occurring in Kigezi on coffee are Berry-borer (*Stephanoderes*), Leaf-miners, and Cutworms. Leaf disease (*Hemileia*) occurs in all three districts, but this and other pests mentioned are of minor importance compared with *Antestia*.

In Toro a small crop is produced on coffee trees about two years after planting out, but the size depends on local conditions and the care the trees have received. On the whole experience indicates that a large 'maiden' crop on trees is a disadvantage, as it imposes too great a strain on the trees, resulting in 'die-back', and the trees recover from this strain very slowly. The first main crop is produced when the trees are 2½ to 3 years old (from planting out), and under normal weather conditions two flowerings per year occur after this stage, one in March-April and the other in August-September. In Toro, however, weather conditions are seldom 'normal', and small flowerings are of common occurrence in all but the driest months.

Climatic conditions are suspected of exerting a peculiar influence on the cropping of *Arabica* in Toro. In many years ill-defined dry seasons are responsible for much spasmodic flowering and frequent spells of dull, cold, sunless weather appear to retard the buds from maturing and to cause a form of flower abortion. Under these conditions the flower buds fail to open and merely shrivel up, blacken, and drop to the ground when disturbed. The loss of crop from this cause is often considerable and particularly high during unusually wet years.

Weather is also considered to be responsible for another condition of coffee in this district which causes some loss of crop. This condition is known locally as 'weather scorch' and is encountered in areas liable to experience late morning mists, as in the neighbourhood of swamps and low-lying hollows. The tender growing plants are affected, their growth being retarded to such an extent to induce the formation of profuse vegetative growth behind the damaged tips, and the production of a dense mass of crowded tertiary branches. The internodes are very short and badly affected plants produce no crop. The general appearance of the trees is very similar to that produced by heavy infestation by *Antestia*. Light shade prevents the trouble, which is probably purely an effect of temperature. The same trouble is experienced in Kigezi and is known in Kenya as 'hot and cold' disease.

In Kigezi conditions of soil, climate, and altitude show great variation in the different coffee areas. In Ndolwa County, where coffee is grown at about 6,000 feet, most of the soils are markedly acid; here low night temperatures are associated with the 'hot and cold' disease mentioned above. *Antestia* has so far been found in only one locality in this county, on a very acid yellow-brown soil (pH 4.0). In Bufumbira County the soils are of volcanic origin and neutral; the plants here grow more erect and robust, and their general health is better than in Ndolwa; higher yields are obtained here and the *Antestia* is so far absent. In Rukiga County coffee is grown below 6,000 feet and *Antestia* is much more prevalent than in the two preceding counties; in Ruzumbura County at elevations of 4,800 to 5,400 feet *Antestia* is very prevalent and does much damage. The trees show abnormal production of stunted secondary branches and in some plots nearly the whole fruit is spoiled by bug punctures. In this county the soils are acid (pH 4.0 to 5.5) and there are grounds for suspecting the intensity of *Antestia* attack increases with the acidity of the soil; experiments are being designed to investigate this point.

The main limiting factor at present to a flourishing native coffee industry in Kigezi is therefore the presence of *Antestia*, possibly associated with soil acidity and a deficiency of potash. The rainfall in this district is rather low, and dry periods, lasting from one to three months, are liable to occur frequently. It is

very difficult to find any crop more suitable than coffee for this district, so that it is necessary if possible to find means of overcoming these disadvantages. Attempts at control of *Antestia* by hand have so far given very disappointing results, and suggestions for the future are that *Arabica* coffee be limited to less acid soils, that the natives be encouraged to manure their coffee with wood ashes from their huts as well as to mulch with grass, and that *Robusta* coffee be introduced in all areas of serious *Antestia* damage up to the limit of its economic range. The use of manure from the herds of cattle, sheep and goats on the coffee land also assists to improve soil conditions and is encouraged.

In Ankole the greatest drawback to rapid expansion of the coffee industry is the custom of the natives of leaving their houses for varying periods each year. This is an economic necessity in the case of the younger natives, but in many cases has developed into a habit. The expansion of the industry is slow under such conditions and the standard of cultivation poor, and this is likely to continue for some years, until the majority of growers have areas of bearing coffee large enough to provide their cash requirements. When this stage has been reached expansion is likely to be more rapid. Large quantities of kraal manure are available in Ankole, but it is difficult to convince the natives of its value; they are being encouraged to manure their crops with it, but progress in this direction is slow.

Preparation of the Coffee

In all three districts most of the crop is sun-dried in the cherry and then hulled in native mortars by pounding. This results in a high proportion of broken and crushed beans, unless the process is carried out very carefully. In Ankole this preparation of coffee has hitherto given a much better product than in Toro and Kigezi, so that it commands a premium of one cent per pound over the usual *Arabica* offered for sale in Kampala markets. Greater care is taken in Ankole to pick only ripe cherry and to dry it thoroughly before hulling. In Toro attempts have been made to introduce hulling machines, either imported or made locally, but hitherto the natives have evinced little interest, mainly because few cultivators can afford to purchase even the locally manufactured article, which is sold at 8 shillings.

Tea

Other areas of Uganda which are of potential value for tea-growing are Bunyoro and Mubende, from both of which transport would cost less than 1d per lb.; in some of the more distant areas such as West Nile and Kigezi Districts these charges would be 1d or slightly more. The latter two districts have another disadvantage from the stand-point of tea-planting: both suffer from a more intense dry season than is usual in most parts of Uganda and the yields would suffer as a consequence. Small plots of tea have been tried in Kigezi – the first, at Kabale, was planted in 1919, and other plots were planted in various parts of the district in 1934 – but in no case has the tea shown much promise, except at Rukungire, which appears to be subject to hail storms and these have a depressing effect on tea yields.

Tans

Samples of bark of two native trees – *Acacia spirocarpa* and *Terminalia velutina* – were submitted for a report in 1908; as they contained only 10.4 and 13.7 per cent of tannin respectively they were not considered to be of value for export, although they have been used locally for tanning. *Acacia decurrens* var *mollis* has been planted in large quantities in Kigezi; in many parts of the district it is the only common tree and is consequently of great value to the natives, being used as a wind-break, for building-

poles, and for fuel. The climate of Kigezi appears to be admirably suited to the growth of this tree, and were it not for the high cost of transport the export of wattle bark would provide a welcome source of income to the district; up to the present this difficulty has not been surmounted. Other tan-producing plants have been introduced into Uganda for trial at different times: seed of 'Algorobilla' (*Caesalpinia brevifolia*) was imported in 1913 but failed to germinate; *Acacia catechu* was introduced in 1916, and more recently, *Caesalpinia coriaria* and *C spinosa* (Tara Bean), which are being grown but have not yet fruited.

Sorghum

This crop ranks with cassava in importance in Uganda as a native food crop. In 1935 the estimated acreages grown were:

Baganda Province: 9,000 acres, Eastern Province: 79,000 acres, Northern Province: 151,000 acres, Western Province: 64,500 acres, of which Kigezi: 50,000 acres)

The total estimated acreage in 1935 was 303,000. In Karamoja and Kigezi sorghum is the primary food crop of the natives and generally this crop is of most importance in the drier areas of Uganda,

... It is essential for storage that the grain should be thoroughly dried out, and this is difficult in Kigezi on account of the altitude and humidity in the air. The result is that much of the produce turns mouldy when stored any length of time and suffers great damage from insects. Certain varieties have such poor keeping qualities that the native has to grow two crops of them each year in order to retain his seed supply...

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Insect Pests of Sorghum

Seed-head Caterpillars

There are several of these, some of them common to sorghum and maize, the most important is the larva of *Sitotroga cerealella*, Olive. (Gelechiid). The seed are attacked when ripening, but the main damage occurs during storage, breeding continues unless the moisture content of the seeds is reduced to below the minimum necessary: preliminary tests in 1936 indicated that slightly less than 15 per cent moisture is the maximum allowable to avoid such damage.

Types of sorghum with hard seed-coats, stated to be resistant to insect damage in storage, were imported by the writer (H Hargreaves) from Tanganyika Territory in 1936, with a view to use in areas such as Kigezi where humid conditions at and after harvest prevent the drying of the seed. A disadvantage of these good-storing varieties is that their yields are moderate or poor.