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COMMERCIAL COTTON GROWING IN THE SUDAN BETWEEN 1860 AND 1925

A STUDY IN HISTORICAL GEOGRAPHY

Vol. II - Maps

THESIS FOR THE DEGREE OF Ph.D.

BY

HASSAN ABDEL AZIZ AHMED

UNIVERSITY OF DURHAM, U.K.,

NOVEMBER, 1970.

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69. Cotton Production in the Sudan, 1911-1926.

NOTE: FIGURES 46, 57, 59 and 60 HAVE BEEN ENLARGED AND INSERTED IN POCKETS.
FIG. 1. A SKETCH MAP OF THE WORLD TO SHOW COTTON GROWING AREAS UP TO 1918

Cotton Growing Areas
(Not to scale)

Cotton Growing Areas

New or experimental
FIG. 2.
FIG. 2. DISTRIBUTION OF COTTON SPECIES IN THE OLD and NEW WORLDS

A DISTRIBUTION OF INDIGENOUS COTTONS AND OF EARLY INTRODUCTIONS FROM NEW AND OLD WORLDS

B DISTRIBUTION OF G. ARBOREUM

C DISTRIBUTION OF G. HERBACEUM

D DISTRIBUTION OF G. BARBADENSE

E DISTRIBUTION OF G. HIRSUTUM

F DISTRIBUTION OF WILD SPECIES IN Sudan

Fig 4-5 (After J.B. Hutchinsom 1947)
The fall in the land between points A&B is 150-75. The flood of 1920 reached B by merely flowing over its banks.

**SHIOTE CULTIVATION (1921-22)**

- **A**
  - Diagram showing well sunk through sand into soil and cotton plants sown on the top of pillars of soil built up through sand. (Dongola Province)

- **B**
  - Diagram showing places where sands lie deep are used for date trees.

- **Shiote (channel)**
- **Field channels**
- **Embankments**
- **Boundary of old cultivation**

FROM: S.N.R. vol. 5 no. 2 (1925)
FIG. 4.
FIG. 5. SOLID GEOLOGY AND SUPERFICIAL DEPOSITS IN THE SUDAN

SOLID GEOLOGY

SUPERFICIAL DEPOSITS

Coastal Deposits (Recent & Tertiary)

Um Ramada Series sand & gravels

Lavas

Hudi Chert

Kubian Series sandstones

Viroi sandstones

Nawa Series (grits & mudstones)

U. Palaeozoic

Basement Complex

Ironstones, red loams & ferruginous deposits

Large rock mass under thin superficial deposits

Clays predominant

Gaz fixed sands predominant

FROM: S.S. TOPO. NO. 5750-47
FIG. 6. and
FIG. 7.
FIG. 8.
FIG. 9.
A- DAILY WEATHER REPORTS ILLUSTRATING TYPICAL WEATHER CONDITIONS IN SUDAN

10 January 1949 - A northerly wind is blowing over the whole of Sudan, gradually becoming warmer towards the south. A depression is centred over the eastern Mediterranean, and a cold front may shortly be expected to affect weather conditions in the north of Sudan.

3rd April 1949

Conditions by now much hotter than they were in January, and the northerly airstream is felt as far as latitude 10-13 North only, where it meets the southerly winds along the inter-Tropical Front or Convergence (Zone).

2nd July 1949

The ITC has now almost reached latitude 20 North, the rainy season is beginning, and southern Sudan has become the coolest part of the country. The depression in the eastern Mediterranean has virtually no effect in the Sudan.

24th October 1949

The ITC has begun to retreat southwards, and east winds are experienced in eastern Sudan.

FROM: K.M. BARBOUR, OP. CIT., PP 40-41 (WITH MODIFICATION)

B RELIEF RAINFALL and TEMPERATURE CONDITIONS

MEAN ANNUAL TEMPERATURE (°C)

MEAN 10-metre ISOHYETES (1931-60)

TOPOGRAPHY and RAINFALL (MMX1931 50)

FROM: K.M. BARBOUR, OP. CIT., PP 40-41 (WITH MODIFICATION)
FIG. 10. and
FIG. 11.
FIG. 10.
1. ANNUAL "EFFICIENT OF VARIATION" OF FAX
2. RAINFALL VARIABILITY IN MM (1921-50)

FIG. 11.
3. MOVEMENT OF THE SUN AND THE RAINFALL BELT
4. MEAN ANNUAL VALUE OF POTENTIAL EVAPOTRANSPIRATION

[Maps and diagrams with various symbols and color codes for rainfall distribution and climatic data.
From TNR, cited, p. 24]
FIG. 12 and
FIG. 13.
FIG. 14. and
FIG. 15.
SOIL CLASSIFICATION

GROUP 1: SOILS DERIVED FROM RECENT ALLUVIAL DEPOSITS

White sands of the Blue Nile. Grits and reddish river beds seasonally exposed.

Dark gray brown sandy loams of river banks periodically flooded by rivers. Shows well-defined stratification.

Dark gray clays and sandy clays of low-lying sites adjacent to the rivers seasonally inundated (mayes).

GROUP 2: SOILS DERIVED FROM BLUE NILE DEPOSITS

Dark gray brown, gray and dark gray clays of the plain.

GROUP 3: SOILS OF THE ENGED AREAS BORDERING THE RIVERS (HEREB)

Sandy loams, sandy clay loams, sandy clays of highly eroded areas.

Sandy clays of drainage areas in the "hereb".

VEGETATION

Acacia woodland

Bouteloua woodland

Acacia forest

Riverine bush

Scale 1: 25,000

VEGETATION IN THE GEZIRA, THE BUTANA AND N.E. SUDAN

Desert

Semi desert

Acacia tortilis-Acacia karroo crossstrata Desert Scrub

Semi desert grassland on Clay

Bed

Acacia globosa-Peganum harmala Scrub

Acacia seyal-Bouteloua crossstrata A. karroo desert Scrub

Acacia seyal-Bouteloua crossstrata A. karroo desert Scrub

Cross section along A-B

Scale 1: 25,000

EN
FIG. 16a and
FIG. 17.
FIG. 16
1. Percentage probability of receiving less than 100 mm of annual rainfall
2. Percentage probability of receiving less than 100 mm of annual rainfall

FIG. 17
- Average discharges of the Nile & tributaries in CUMECs

1. The Nile gauging in 1924 (solid line) compared with the mean for 1908-35 (dotted line)

- Average discharges, 1908-35
FIG. 18A & B.
FIG. 19. and
FIG. 20.
FIG. 21 and
FIG. 22.
FIG. 23. and
FIG. 24.
**Fig. 23. Gezira: Percentage of Soluble Salts in Top 4-Ft of Soil**

- Less than 25%
- 25-35%
- 35-50%
- More than 50%

**Fig. 24. Mean Monthly Temperature at Some Cotton Growing Areas**

- Khartoum
- Alexandria
- Cairo
- San Antonio, Texas
- Montgomery, Alabama
- Yuma, Arizona

From: *Agric. in the Sudan*, p. 448
FIG. 25. and
FIG. 26.
FIG. 27. and
FIG. 28.
FIG. 29.
FIG. 29.

1. MUNZINGER'S DIVISIONS OF THE SUDAN

2. CULTIVABLE AREAS (after Wills)

SOURCE OF INFORMATION: F. J. COX, op. cit., pp 195-7

From, THE SCOTTISH GEOGR. MAG. Vol. 11 (1886), p. 413
FIG. 31A & B.
FIG. 32.
FIG. 32. DONGOLA and BERBER PROVINCES (1870s)

Basins known to have been cultivated or attempted for cultivation during the Turkish period.

Cultivable land along the river.

Possible rain cultivation area as suggested in the Report of 1872.

Position of the proposed irrigation canal.

Isohytes in mm.

Cataracts

International boundaries

Provincial

Turkish period

Basins

Below 300 M
300 - 500 M
500 - 1000 M
FIG. 33. and
FIG. 34.
FIG. 33. LAND SUITABLE FOR COTTON BETWEEN BLUE NILE AND DINDER RIVERS and 
ESTIMATED IRRIGABLE AREAS BETWEEN RAMAD AND DINDER RIVERS (inset map).

FIG. 34. LAND ENCLODED BY 15m ISOPOTAMON IN NORTHERN SUDAN and AREAS RECOMMENDED FOR 
EXTENSION OF IRRIGATION (inset maps show Government pump schemes and areas of basin irrigation), 
and pump irrigation in Northern Sudan B). (All of these maps are modern & after K.M. Barbour(1961)).

"These maps indicate the overall areas which water might be raised and the portion of that area where soils
are satisfactory. In fact a lift of 15 m. is rather more than is generally regarded as economic today." (Barbour P.M.)
FIG. 35. SUDANS COMMUNICATIONS & TRANSPORT FACILITIES WITH EGYPT & COTTON GROWING AREAS & RELATED INDUSTRIES DURING THE TURKISH PERIOD (1870s)

- Approx Sudan boundaries 1870s
- Provincial boundaries
- Cotton growing areas
- Native cloth weaving
- Ginning factory
- Railways
- Railway projects
- Navigable reaches
  - In flood time
- Unnavigable reaches & cataracts
- Telegraph lines

SUDAN'S COMMUNICATIONS & TRANSPORT FACILITIES WITH EGYPT & COTTON GROWING AREAS & RELATED INDUSTRIES DURING THE TURKISH PERIOD (1870s)
FIG. 36.
FIG. 37. and
FIG. 38.
FIG. 39.
FIG. 40A & B.
FIG. 41.
FIG. 41. PRICES OF COTTON, 1899-1923 (Season's averages)

PRICES AT LIVERPOOL:
- Sea Island
- Brazilian
- American
- Egyptian
- Indian

PRICE AT ALEXANDRIA (for Egyptian)
PRICE IN AMERICA (for Upland)

SOURCE TABLE 29 APP. 29
FIG. 42.
FIG. 42. BRITAIN'S CONSUMPTION OF ALL KINDS OF COTTON CROPS, 1919-24

American 1911-12 1912-13
1919-20 1920-1
1921-2 1922-3
1923-4 1924-5

Indian 1911-12 1912-13
1919-20 1920-1
1921-2 1922-3
1923-4 1924-5

Egyptian 1911-12 1912-13
1919-20 1920-1
1921-2 1922-3
1923-4 1924-5

Others 1911-12 1912-13
1919-20 1920-1
1921-2 1922-3
1923-4 1924-5

BRITAN OTHER COUNTRIES

SOURCE TABLE 28 APP 28
FIG. 43. and
FIG. 44.
FIG. 45 and
FIG. 46.
FIG. 47. and
FIG. 48.
FIG. 49. and
FIG. 50.
FIG. 51.
FIG. 52.
PLEASE NOTE:

FIGURES 53, 54, 55, and 56 HAVE BEEN MISPLACED IN BINDING. AS FOLLOWS: 54, 53, 56, 55.
FIG. 54 PLAN OF LETTI BASIN (For location see inset map A) 1912

KISM (SECTION) NO. IV

Limit of basin area capable of being flooded and cultivated

Canal

Drain

A, B, D, XX Sites of proposed irrigation works

FROM SUDAN ARCHIVES, BOX NO. 112/1
FIG. 53.
FIG. 53  PLAN OF KÉRMA BASIN & PROPOSED IRRIGATION WORKS, 1911-12
FIG. 56.
FIG. 56 ZEIDAB CONCESSION: NORTHERN & SOUTHERN EXTENSIONS

NORTHERN (TIMERAB) EXTENSION

SOUTHERN EXTENSION

LANDS AFFECTED:

- Government sagia land: 130,025 Feddans
- Native: 1063.558

- Native Kuru: 1558.455 Feddans
- Government: 1241.483

Total area: 4013.472 Feddans

Notation:

1. Mahamedab village
2. Wahed village
S.P.S. Sudan Plantation Syndicate

FROM SAS FILES BIN 1/3
FIG. 55.
FIG. 57. and
FIG. 58.
FIG. 59. and
FIG. 60.
FIG. 61.
Fig. 62. and
Fig. 63.
FIG. 64. and
FIG. 65.
FIG. 66. and
FIG. 67.
FIG. 68. and

FIG. 69.

A- AREA IN FEDDANS

B- TOTAL COTTON YIELDS

C- YIELD OF COTTON/FEDDAN

SOURCE SPS FILES ZEIDAB YIELDS BIN 1/3