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THE GEOGRAPHY OF AGRICULTURE IN IRRIGATED AREAS

of

THE MIDDLE EUPHRATES VALLEY

VOLUME II

MAPS, DIAGRAMS AND PHOTOGRAPHS

THESIS SUBMITTED FOR THE DEGREE OF Ph.D. (IN GEOGRAPHY)

of

THE UNIVERSITY OF DURHAM

N.K. AL-BARAZI

FEBRUARY 1960
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88. Mufraq – Karbala Station.
IRAQ GEOGRAPHIC REGIONS

SCALE 1:4,000,000

I MOUNTAIN AND FOOTHILL REGION
II GEZIREH HIGH PLAIN
III DESERT PLATEAU
IV ALLUVIAL LOWLAND

MIDDLE EUPHRATES VALLEY

FIG. 1
TOPOGRAPHY AND DRAINAGE MAP
OF THE MIDDLE EUPHRATES VALLEY

FIG 2
MARSHES ZONE

- El Dar Marshes
- Artificial Drain
- RicArt Canals
- Regulator

- Nuggara - Natural Drainage
- Marshes
- Artificial Drain
- Irrigation Canals
- Regulator

FIG. 4
DRAINAGE EVOLUTION OF THE
EUPHRATES COURSE FROM
3,000 B.C. TO PRESENT

FIG 5

SOURCE: DEPARTMENT OF ARCHEOLOGY; 1956
THE EXTENSION OF THE OLD DELTA OF MIDDLE EUPHRATES IN CHALADIAN TIMES, 39 B.C.

SOURCE: DE MORGAN

FIG. 6
JEZIREH ZONE

SOLID GEOLOGY

ALASWAD

KARBALA

ISKANDRIA

HILLA

ABU-SKHAIR

KUFA

SAMAWA

KHIDHER

0 16 8 16
MILES

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SOURCE: W. A. MACFADYAN 4th JULY 1937.

FIG. 7
NOTE: ISOTHERMS DRAWN AT INTERVALS OF 1°
DAILY MEAN = UNADJUSTED ARITHMETIC MEAN OF READINGS AT 0300, 0600, AND 1200 HRS G.M.T. LE 0600, 0900, AND 1500 HRS LOCAL TIME.
NOTE: ISOTHERMS DRAWN AT INTERVALS OF 1°F.
DAILY MEAN = UNADJUSTED ARITHMETIC
MEAN OF READINGS AT 0300, 0600, AND
1200 HRS G.M.T. (0300, 0600, 0900, AND 1500 HRS
LOCAL TIME.)

FIG. 9
Average means of daily pressure for January 1936-56

NOTE: ISOBAR LINES ARE BASED ON THE RECORDED FIGURES FOR STATIONS PUBLISHED IN THE MONTHLY WEATHER REPORT OF THE METEOROLOGICAL DEPARTMENT, IRAQI GOVERNMENT.
NOTE: ISOBAR LINES ARE BASED ON THE RECORDED FIGURES FOR STATIONS PUBLISHED IN THE MONTHLY WEATHER REPORT OF THE METEOROLOGICAL DEPARTMENT, IRAQI GOVERNMENT.
AVERAGE FREQUENCY AND WIND DIRECTION
AT HABBANIYA, AND DIWANIYA STATIONS
JANUARY 1936-56

NOTE: THE LENGTH OF EACH ARROW VARIES WITH THE
NUMBER OF DAYS ON WHICH THE WIND BLOWS FROM
A PARTICULAR DIRECTION. THE NUMBER IN THE
CENTRE OF THE CIRCLE SHOWS THE NUMBER OF
DAYS OF CALM.

FIG. 12
NOTE: THE LENGTH OF EACH ARROW VARIES WITH THE NUMBER OF DAYS ON WHICH THE WIND BLOWS FROM A PARTICULAR DIRECTION. THE NUMBER IN THE CENTRE OF THE CIRCLE SHOWS THE NUMBER OF DAYS OF CALM.
AVERAGE ANNUAL RAINFALL
1936-1956

RAINFALL STATION AND PRECIPITATION (MM)

ISOHYETAL LINE BASED ON PRECIPITATION DATA (MM)

BOUNDARY

RIVER

NOTE: ISOHYETAL LINES REPRESENT MEAN ANNUAL RAINFALL IN MILLIMETERS BASED ON THE 20 YEAR PERIOD, 1936-1956.
DEPRESSION
TUESDAY 22nd FEBRUARY, 1956.

FIG. 15
AVERAGE MEANS OF RELATIVE HUMIDITY IN PERCENTAGES FOR JULY 1936-56

FIG. 17
MEANS OF RELATIVE HUMIDITY IN PERCENTAGES
FOR JANUARY 1936-56

FIG. 18
LAND UTILIZATION, 1957

FIG. 21

- SETTLEMENTS
- ORCHARDS
- RICE
- GRAZING OR UNCULTIVATED LAND
- OTHER CULTIVATED LAND
- LAKE & MARSH

MILES
POPULATION DENSITY, 1957

FIG. 25(A)
AREAS OF SOIL SALINITY
(LOCATION OF PROJECT AREAS)
FIG 26

IRRIGATION PROJECT AREAS
EXISTING CANALS
REMODELLED EXISTING CANALS
PROPOSED CANALS
RESERVOIRS
BARRAGES AND REGULATORS

PROPOSED IRRIGATION PROJECTS

FIG. 28
FIG. 30

AREA IRRIGATED FROM HILLA CANAL

HINDIYA BARRAGE
HINDIYA CANAL
HILLA CANAL
SHAMIYA BRANCH
KURA BRANCH
DAGHARA BARRAGE
DAGHARA C
DIWANIYA C

MILES
0 5 10

FIG. 30
DISTRIBUTION OF BARLEY
BY QADHAS, 1957
(IN MESHARAS)
DISTRIBUTION OF WHEAT
BY QADHAS, 1957
(IN MESHARAS)

FIG. 34
DISTRIBUTION OF RICE BY QADHAS, 1957 (IN MESHARAS)
DISTRIBUTION OF MINOR GRAINS IN OADHAS, 1957
(IN MESHARAS)

FIG. 36
DISTRIBUTION OF COTTON BY QADHAS, 1957
(IN MESHARAS)

FIG. 38
DISTRIBUTION OF DATES BY QADHAS, 1957
(IN MESHARAS)
DISTRIBUTION OF FRUITS BY QADHAS, 1957 (IN MESHARAS)
DISTRIBUTION OF FRUIT TREES AND PERCENTAGE OF EACH TYPE

- Pomegranates
- Oranges
- Apples
- Apricots
- Lemons
- Peaches and Pears

FIG. 41
DISTRIBUTION OF VEGETABLES
BY QADHAS, 1957
(IN MESHARAS)

FIG. 42
DISTRIBUTION OF SHEEP
BY QADHAS, 1957
ONE DOT REPRESENTS
1000 HEAD
TOTAL POPULATION 1098428
DISTRIBUTION OF CATTLE
BY QADHAS, 1957
ONE DOT REPRESENTS
500 HEAD
TOTAL POPULATION 216,385
DISTRIBUTION OF GOATS BY QADHAS, 1957
ONE DOT REPRESENTS 500 HEAD
TOTAL POPULATION 162837
DISTRIBUTION OF BUFFALO BY QADHAS, 1957
ONE DOT REPRESENTS 100 HEAD
TOTAL POPULATION 13,056

FIG. 46
DISTRIBUTION OF HORSES
BY QADHAS, 1957
ONE DOT REPRESENTS 100
HEAD
TOTAL POPULATION 43,958
DISTRIBUTION OF DONKEYS AND MULES BY QADHAS, 1957
ONE DOT REPRESENTS 250 HEAD
TOTAL POPULATION 177,808

FIG. 48
DISTRIBUTION OF CAMELS
BY QADHAS, 1957
ONE DOT REPRESENTS 50
HEAD
TOTAL POPULATION 18,326

FIG. 49
DISTRIBUTION OF SETTLEMENTS BY NUMBER OF DWELLINGS, 1957

AVG. NUMBER OF OCCUPANTS PER HOUSE IS 6.2
DISTRIBUTION OF SETTLED AND SEMI-SETTLED ARAB TRIBES, 1957
DISTRIBUTION OF THE TYPES OF LAND TENURE AND PERCENTAGE OF EACH TYPE, 1957
YEARLY VARIATIONS FROM MEAN RAINFALL
1937-1952
FIG. 3(B)
LENGTH OF DAY AND NUMBER OF HOURS: MONTHLY MEANS
HABBANIYA STATION, 1936-1956

POPULATION INCREASE
1919-1957

NOTE: 1919—ESTIMATES
1935—UNRELIABLE
1947—CENSUS
1957—CENSUS

FIG. 4

FIG. 5
METHODS OF IRRIGATION EMPLOYED, 1957

AREA IN MESHARAS

- Area irrigated by flood: 27%
- Area irrigated by lifts: 66%
- Area irrigated by flow: 7%

FIG. 6

LAND UTILIZATION IN THE MIDDLE EUPHRATES VALLEY, 1957

- Waste land: 42%
- Cultivated land: 14%
- Uncultivated land (potentially cultivated): 44%

FIG. 7
Crop distribution in percentage, area - in mesharas - 1957

- Vegetables: 41%
- Rice: 28%
- Beans and minor grain: 12.2%
- Fruits: 4.5%
- Dates: 4.3%
- Wheat: 4.2%
- Barley: 4.1%
- Fallow: 1.8%
- Cotton: 0.8%

FIG 8
SHAMIYA NO-20 FARM

FARMHOUSES

GREEN GRAMS
BARLEY
WHEAT
ORCHARDS
RICE
FALLOW
HAUR

0 440 880 1760 YARDS

FIG. 16