

# The expansion of the Yarkand Oasis

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## Introduction

The Yarkand Oasis is located at the very edge of south-western Takla-Makan (Taklimakan) Desert in southern Xinjiang – Uyghur Autonomous Region in the present China (People’s Republic of China).

In this essay, it is attempted to present an outline of the expansion of the oasis (which means “of the farming land”) and features of its changes from the 18<sup>th</sup> century to the present age.

## 1 The expansion of cultivated area in the Yarkand Oasis

### (1) The outline of the present Yarkand Oasis

#### -A big oasis spreading over a few prefectures

Present Yarkand (Yākān in Uyghur) indicates *Suo-che* (莎車) in Chinese. It’s because the place, the modern city Yākān (Yarkand) and surrounded area, remains it as the prefecture name. However, historical meaning of Yarkand as an oasis (or as a district) covers the broader area.<sup>1)</sup>

Therefore, to avoid misunderstandings in this essay, “Yarkand” is used as “the big oasis” or as the historical region in the broad sense. As the same reason, “Yākān”, following the present Uyghur, is used as “the city” or the

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1 For instance, in the Qing Dynasty, as an administrative district, *Yeerqiang* (葉爾羌) covered the same area as two districts and nine prefectures in present days.

name of prefecture.

As a definition of physical geography, an oasis is considered as the place that keeps fresh water constantly in the dried land. Historically, the “oasis” also meant as an aggregation of the man-made arable land. Under these two conditions, the oasis surrounded the present Yākān prefecture is a vast cultivated area that covers four prefectures (Yākān, Poskam, Qaghiliq and Mākit). Moreover, at a desert between Yopurgha (the north west) and Maralweshi (the north east), the farming land is expanding. Before too long, a huge farming land will appear in this area.

From the 1980s to the 1990s, the arable area in the Yarkand Oasis that covers 4 prefectures comprises about 3,000,000 *mu*. (1*mu*=6.6a, 19,760ha) (The total of Yākān, Poskam, Qaghiliq and Mākit, except mountainous district.) The number was summed up from each prefecture’s record.

## (2) The summary for the expansion of the Yarkand Oasis

### -From the mid 18<sup>th</sup> century to the 20<sup>th</sup> century

In the 1770s, the Qing Dynasty introduced the government system in this area. The Yarkand Oasis had about 590,000 *mu* of farming land. The calculation is as follows. The total amount of 1/10 tax was 20,000 *dan*[石]. This number is simply considered as the seeding amount. The local unit of this was about 4,000 *patman*. From a governmentally-owned land, 900 *patman* was supplied. Thus, 4,900 *patman* is considered as the farming land. 1 *patman* seeding area = 120 *mu*. (This is recorded in *Ohki Document*.) Therefore, 120 *mu* × 4,900*p*=590.000 *mu*.

In the 1840s, the reexamination of taxable arable land was enforced. The result was recorded in so-called *Ohki Document*, the tax collection record of Yarkand written in 1855/56. The document is the possession of Tokyo University Orient Culture Institute. The arable area recorded in the document was about 12,200 *patman*. Following 1 *patman* 120 *mu*, which written in the same document, the land covers equals about 1,460,000 *mu*. (The ground is

followed the present Yarkand Oasis as showed in the previous section.)

During the end of the Qing Dynasty, in about 1910, the detail of farming land in the Yarkand Oasis can be found in *Xinjiang tuzhi* 「新疆图志」 (*gouqu* (溝渠志)). The numerical value was written in each irrigation canal. Applying the same standard as above, the total of the land would be about 1,680,000 *mu*.

The oasis has been spreading. (During the 1980s and the 90s, there was about 3,000,000 *mu* as mentioned above.) However, these documents were written for different aims, besides the conversion rate is mistrustful. Moreover, the data was from the government side. Therefore, we can only find the fact that the farming land has been expanding for more than 200 years.

## 2 Changes of cultivated area in Yäkän prefecture -from the 1850s to the 1990s.

### (1) Yäkän prefecture – as a part of the Yarkand Oasis

The expansion of farming area in the Yarkand Oasis after the conquest of the Qing Dynasty is as follows. (The figure is very rough though.)

The late 18 <sup>th</sup> century	About 590,000 <i>mu</i>	(The part of Yäkän prefecture)
1855/56	About 1,460,000 <i>mu</i>	About 830,000 <i>mu</i>
About 1910	About 1,680,000 <i>mu</i>	About 1,000,000 <i>mu</i>
1990s	About 3,000,000 <i>mu</i>	About 1,800,000 <i>mu</i>

It is of importance to focus on the period and the place if we discuss the detail.

The reason is as follows. *Ohki Document*, 1855/56 was the oldest documents that used *yaza* (鄉) and *känt* (村) for counting the farming villages in the oasis. Only one document that can contrast with *Ohki Document* is *Yäkän Nähiyisining Yär Namliri Khäritilik Täzkirisi*<sup>2)</sup> (for short, *Täzkirisi*), written in Uyghur in the 1990s, using the same counting unit. Unfortunately, the

<sup>2</sup> *Yäkän Nähiyisining Yär Namliri Khäritilik Täzkirisi*, Yäkän, 1996 (?).

other prefectures (Poskam, Qaghiliq and Mäkit) composing the Yarkand Oasis are not able to use the present detailed information. Besides, in the early 20<sup>th</sup> century, the data was classified in each waterway. Those names of waterways coincided with village names in *Ohki Document* and in *Täzkirisi* nearly perfectly.<sup>3)</sup> However the location was vague, thus it is unreliable in some parts.<sup>4)</sup>

The change of farming area that we can focus on is in Yäkän prefecture. The period is after 1850s. It is needed to use village data in *Ohki Document* and its of *Täzkirisi* written in present days as the base. Also the data of *Xinjiang tuzhi* is needed for some support.

## (2) The scale of irrigation in present Yäkän Prefecture

It is well known that in Yäkän prefecture, people can not maintain farming without man-made irrigation system. A recent annual precipitation is only 45.3mm in average. (*The local-gazetteer of Yäkän*, p.105)

Therefore if it is possible to obtain the detail of irrigation canal, we can clarify the approximate distribution of arable land. In this point of view, a useful document is a topographical map 1/100,000 issued in the USSR in the 1980s, which is now the possession of Gifu prefecture library.

Attached **Map I** is an outline of irrigation canal in Yäkän prefecture in the 1970s. The data is based on the topographical map above-mentioned. It is mixture of natural river, traditional canals and canals based on the recent project after the new China was established. Therefore it is similar to the thing we can observe at the spot today. The big difference between historical irrigation canals and that of present days is the existence of long drainage,

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3 The comparison is in [Hori 2004].

4 We do not have the exact information for the location of kânt in *Ohki Document*. However, in this case, it is clear that the waterway belonged to Yaza, therefore the comparison between place names in *Ohki Document* and that of present days was easily proceeded.

salt elimination system and large scale of dams (for water saving). The numbers of them are increasing in present days.

### (3) Distribution of farming villages –A comparison of the days of *Ohki Document* and the present days

The map made in the USSR is based on satellite photographs; therefore the data of place name is insufficient. Concerning to the place name, *Tāzkiṛisi* is more reliable. **Map II** (the present villages in Yākān prefecture and villages (小莊) in *Ohki Document*.) In this **Map II**, village names are distinguished names coincided with names in *Ohki Document* (showed as ●), from names which were not in the document (showed as ⊙).

Many villages close to Yākān city can be found in *Ohki Document*. On the other hand, as being far away from Yākān city, the percentage of coincidence tends to be lower.

We paid attention to this phenomenon, and put present yaza (鄉) · bazar (鎮) that were not on *Ohki Document* upon an outline of canals on the **Map III**. (Larger subordinate villages (總莊) on *Ohki Document* and villages of present Yākān prefecture)

Present villages enclosed like Khangdi in the map can not be seen in *Ohki Document*. It is considered that in the mid-19<sup>th</sup> century, there was no kānt in that area, which means the area was not farmed at all. These 7 yaza · bazars are all located in the east and the north of Yākān prefecture. This place is the lowest place in the Yarkand Oasis and is the lower reaches of the river.

## 3 Features of expansion of the cultivated area in each district in Yākān prefecture

### (1) The outline of changes of cultivated area

It is needed to clarify the spatial detail about the expansion of arable land

5 We need to except Qoshrap (霍什拉甫) District that has 3 yazas. (The South- ↗

and arrangement of irrigation system in Yākān. In the attached **Table**, the data of 3 periods is divided into areas covering waterways and brooks. (Changes of arable land in Yākān in the 19<sup>th</sup> century to the 20<sup>th</sup> century.)<sup>5)</sup>

The arable land in villages of the prefecture was divided into 6 regions. The source is alone the Yarkand River.<sup>6)</sup> In the main waterways (östāng) laid on the Yarkand River, regions depend on the Opa Östāng, the biggest and the oldest, are ① from to ③, and the rest, ④ to ⑥ rely on different irrigation canals.

Let us consider the changes of arable area in Yākān using this **Table**.

## (2) Features of each district

### a. Irrigation canals centering around the Opa Östāng

Neighboring villages of Yākān city are located in the North-West, the North-East and the South-East part of the oasis. With a few exception, most parts rely on the Opa Östāng. Exceptional two yaza · bazars are located at the edge of the North-West part. They rely on new water ways constructed after the issue of *Ohki Document*. The Hanġdi Östāng (= 荒地渠, 旧劉渠, Yenġi-abat Östāng (英額瓦提渠)) was set in 1887<sup>7)</sup>, being recorded in *Xinjiang tuzhi*. The Shingnuch (= 新劉渠) was set in 1915, which was not recorded in *Xinjiang tuzhi*.

### ① The North-West of Yākān Oasis

In this area, the farming land relied on the Opa Östāng was expanded from

↘ West of Yākān Prefecture) The reason is the District is separated with the desert from the Yākān Oasis that we are concerning in this essay, although Qoshrap was recorded in *Ohki Document* as the big villages in Yarkand.

6 Baghwat Yaza and Qarasu Yaza are new villages in the 20<sup>th</sup> century. The water is taken from the Tiznap River.

7 It is clear that 4 waterways of upper and mid Yenġi-abat Östāng (英額瓦提渠) (reaches around Rawatchi (熱瓦奇莊) in *Ohki Document*) and a waterway of lower part (Terāk-lāngġār) were already constructed in the 1850s. Therefore, this östāng was not the brand-new of the construction in 1887. (cf. Hori 2005, pp.179-181)

180,000 *mu* in 1855/56 to 190,000 *mu* in the end of the 20<sup>th</sup> century. The expansion was small, however, as the remarkable point, the land was expanded northward widely.

In *Ohki Document* in the 19<sup>th</sup> century, northern end of arable land and governed area were Elishqu (愛吉特虎) and Teräk-lānggār (鉄列亮喝爾). Both of them are now in Elishqu Bazar.

Khangdi Bazar and Dōng-bagh Yaza are located in further north. They were reclaimed in the end of the 19<sup>th</sup> century, and also in the beginning of the 20<sup>th</sup> century.

The length of Opa Östāng was originally 96 km. After the repair by the New China, it became 65km. Be that as it may, it is still big östāng. However, the use of canal has limitation except near the sluice gate of the Yarkand River, which is for the irrigation in a part of Arslan-bagh Yaza. The use has not been made as far as the middle of the canal. The reason was unclear since we could not have used a map of reference with contour lines. Fortunately, after making an on-the-spot inspection, we found out the upper part of canal was not man-made; moreover, about 20 km far from near the head gate, the river was running through under the deep cliffs that were more than 10m away from the shore. (I've got an idea if [Yar-kand] means [Cliff-Town], the name must have derived from this sight.)

The point where the surface of Opa Östāng reaches the same height as the shore is from the middle reaches; Concretely, after the crossing point of Kashghar-Khōtan highway in Gül-baghYaza.

It is certain that the direct water intake from this östāng increases from this point.

## ② The North-East of Yäkän Oasis

The farming land decreases in this area. After the issue of *Ohki Document*, about 20,000 *mu* of the land was reduced. Even from the beginning of the 20<sup>th</sup> century, it has been reduced about 30,000 *mu*. The reason is not clear. As a

few possibilities, since Yar-Bagh big villages were dismantled, the territory was obscure; the stream of the Yarkand River changed; and the big dam was constructed. It might have been because of mere statistical mistakes, but it must be suggested the reduction of existing farming land would happen.

Villages in this district are irrigated with present Misha Östäng from Opa Östäng and about 15 branches separated directly from the Opa. Regrettably, the Misha is recorded as Aq-ata ariq (阿哈阿塔渠) in *Xinjiang tuzhi*. Therefore, the location and branches have some obscure points.

Furthermore, although eastern part of villages in this district expands towards the left bank (west) of the river, most of arable lands on the coast are a few meters higher than the river surface or river embankments were constructed; Therefore the water intake has not been carried out.

### ③ The South-East of Yäkän Oasis

It is the village neighboring the south-east of Yäkän city. The altitudinal variation is big in the area and slopes eastward, toward the Yarkand River. The farming land in this area has increase about 30 % for 150 years. However, ② and ④, southern and northern part of borders are obscure. With this point, we can consider the increase was in very small quantity.

At any rate, it is the farming area that spreads from the Jilchaq Östäng (branch off from the Opa Östäng running through to the North-East) to the drainage point of the Yarkand River.

It is noteworthy that the Jilchaq has been maintained the best for keeping the original condition among the oases. This is because the winding damp area prevented from new construction. It is understandable that in the 18<sup>th</sup> century, the expedition of Qing Dynasty had a desperate fight at the Qara-su war at this place owing to the terrible geographical features.

### b. Irrigation canals centering around the Chiliq Östäng



#### ④ The South of Yäkän Oasis

The Chiliq Östäng has the head gate and the drainage point in the Yarkand river. The area is depending on this canal. The farming area has been decreasing about 20 % from the beginning of 20<sup>th</sup> century. It is because the Yarkand River changed its waterway and riparian works were carried out.

This district is the best for its well-planned and straight lined waterway repair in the oasis.

#### c. Irrigation canals centering around the Charäk Östäng

##### ⑤ The West of Yäkän Oasis

The farming area is located in the west end of Yarkand oasis. This area is depending on 2 östängs. One is the Korwat, running through as the border of the desert and the oasis. The other is the Charäk, running parallel to 5 km east of the Korwat. Both of them vanish their tails in the desert. It is peculiar that about 60,000 mu of farming land was decreased from the 19<sup>th</sup> century to the 20<sup>th</sup> century.

The reason is clear. After the Muslim rebellion of north-western China, Qurghan village (98,000 *mu*) was abandoned. This village was cultivated under the leadership of the government in the end of the 1840s. Considering without this big village, the farming area was slightly increased as an example of the expansion in the north-west of Korwat district.

As mentioned above, the Hanġdi Östäng and the Shiġnuchi Östäng that used the expansion of the district ① are running through the east of the Charäk Östäng, however, irrigation system of aforementioned canals had already constructed in the 1850s.

#### d. Irrigation canals centering around the Bäsch-Känt Östäng

##### ⑥ The East of Yäkän Oasis

(The East coast of the Yarkand river · The Tiznaf river system)-

In present villages in Yäkän prefecture, only three (Bäsch-Känt牌斯鉛, Tar-

tar塔塔爾, Kona-Tartar柯納塔塔爾-(Old Tartar)) existed in the east (right side) of Yarkand River at the times of *Ohki Document*. We found out Bāsh-Kānt is present Besh-kānt and Igārchi. However, we still can not have an idea which present villages suit both new and old Tartar. Even though, from the name of small village in TartarYaza, the big village was in the area of present Qara-su Yaza.<sup>8)</sup>

At any rate, although only about 80,000 *mu* land was recorded in the east cost of the Yarkand river in the 1850s, it increased in 250,000 *mu* in the early 20<sup>th</sup> century. And now, the area spreads to the east cost of Tiznaf River, and covers the north-east of Yarkand Oasis, with 310,000 *mu* farming area in 7 yaza · bazars.

In other words, this district has the highest increasing rate of farming area in the Yākān Oasis. The development was the result of the construction of Yēngstān (Awat as we know it today) Östāng in the end of the 19<sup>th</sup> century and new drainages and reservoirs after the establishment of the autonomous region. The increased farming area was 170,000 *mu* in 4 yazas located at the lower reaches of the Bāsh-Kānt. Moreover, the total of its increase in Qara-su yaza reached 210,000 *mu*.

The reason of the delay of the development in this area was a damp ground, and the area had been left for discharge water spot in case of a flood. (It is not for the reason I mentioned before. Compare with the area near the Yarkand River and the Tiznaf River, this area is located in high position.) The cultivation has become possible owing to the present civil engineering.

#### 4 Geographical features of expansion of cultivated area in Yākān prefecture

In the end, let us make clear the features of changes of the farming land in Yākān.

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8 Hori 2005, pp.183-84

a. Near Yākān city, and the south and the east region, the change of farming area is small. (From the outline of districts ②③④.)

b. Arable land has expanded to the west and the north-west of the lower reaches in the desert owing to the construction of long distance canals. (From the outline of districts ①⑤.)

c. At the damp ground in the east of lower part in the oasis, the land was expanded by the construction of new canals and drainages. As a result, it made a area that covers the Yarkand and the Tiznaf Rivers. (From the outline of district ⑥.)

## Conclusion

Even it is very rough verification, we have clarified that in the North-West and the North-East of the lower reaches, the expansion of farming land is obvious in Yākān prefecture for more than 150 years of changes of farming land in the Yākān Oasis.

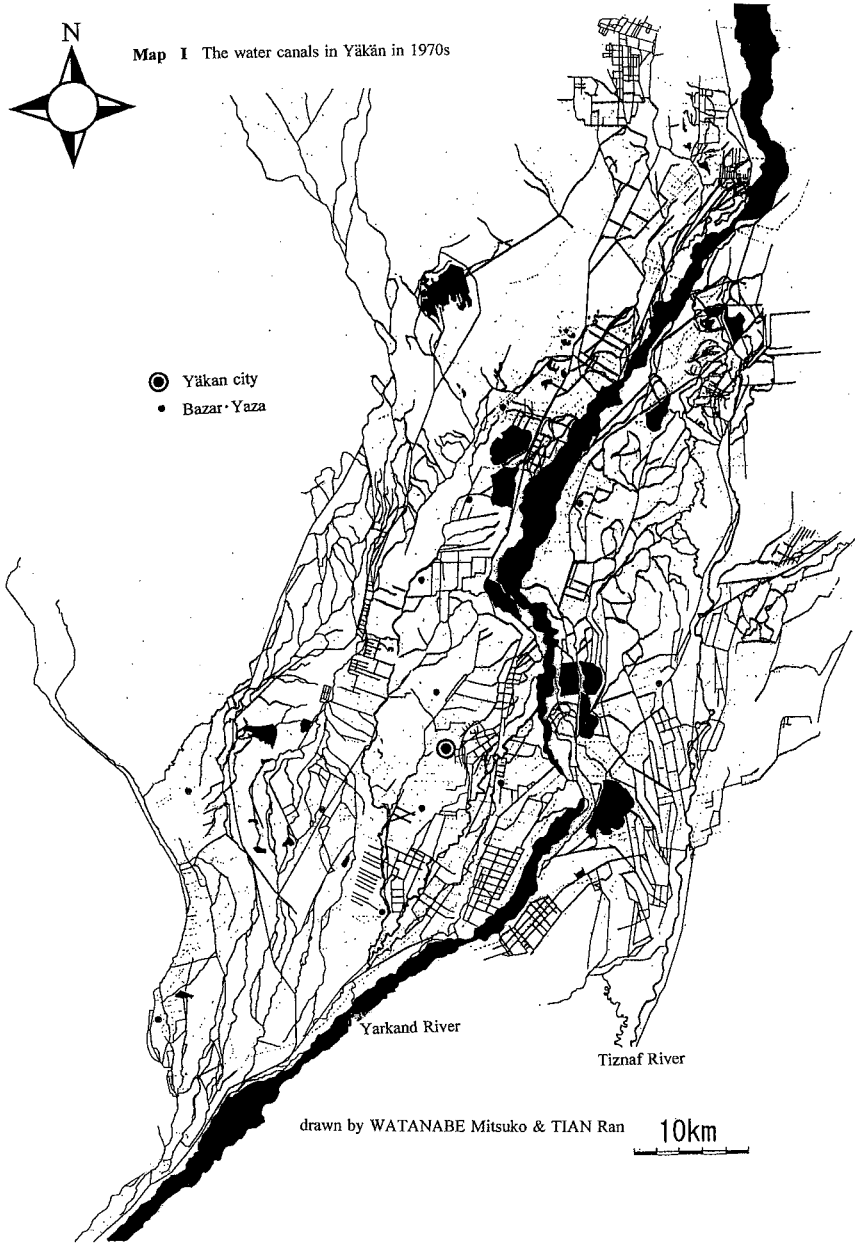
After this inspection, it is needed to make a precise conclusion of the above based on a detailed contour map. It is also needed to find out whether this tendency is the common phenomenon or not, for oases in the Central Asia at the same period, in other words, whether there is the possibility of generalization can be proved or not.

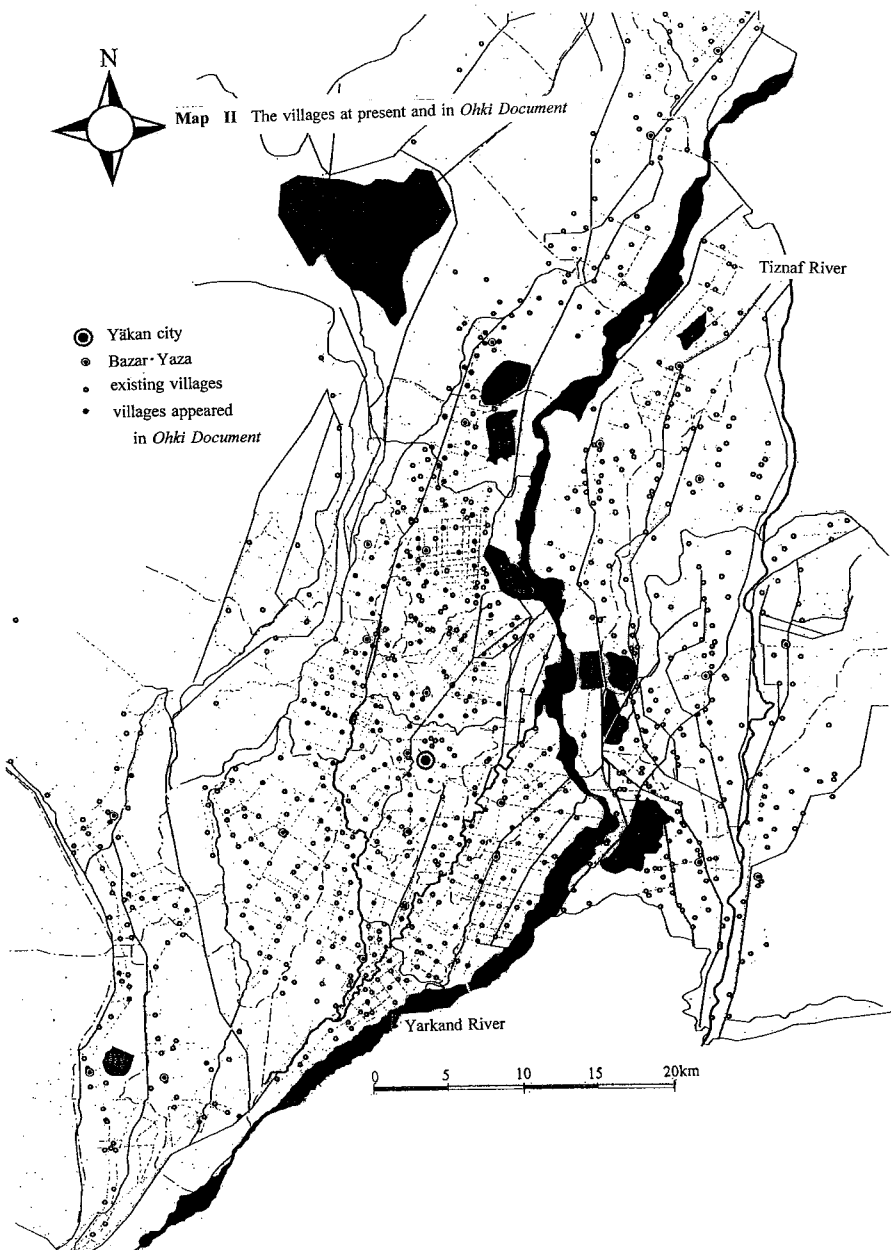
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Map I The water canals in Yäkän in 1970s





Map III The Head villages on *Ohki Document*  
and present Bazars and Yazas

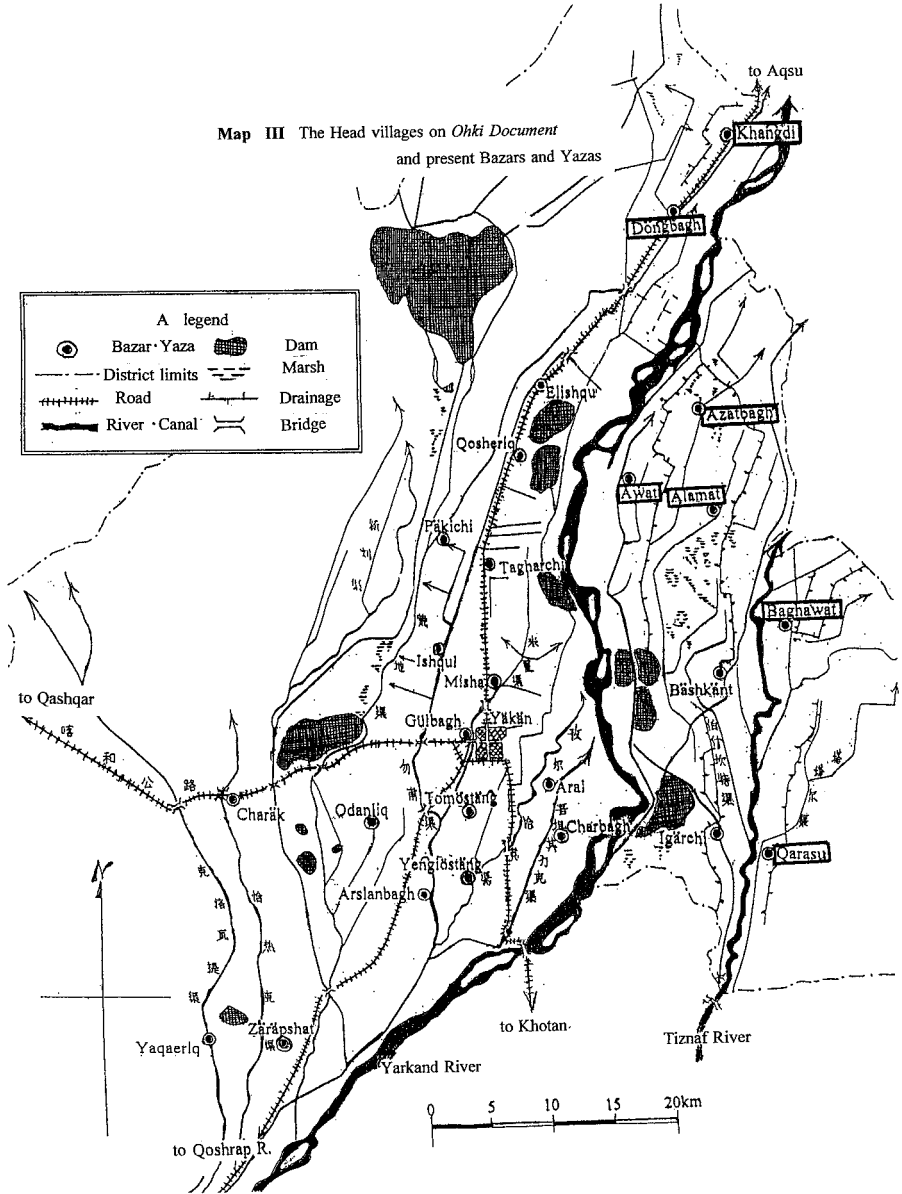


Table The Changes of cultivated land in Yākān

1855/56 <i>Ohki Document</i>			1910s <i>Xinjiang tuzhi</i>		1990s <i>Tazikirisi</i>		Notes
Head Village	acreage (p.)	change into 100 <i>mu</i>	main canal (number of small canals)	acreage (100 <i>mu</i> )	Bazar·Yaza	acreage (100 <i>mu</i> )	
City	—	—	—	—	Yākān	17	
①North-West Opur	1,505	1,806	窩浦 45	1,523	Arslan-bagh Gül-bagh Ishqur Päkichi Qosh-eriq	553 228 496 379 250	— (1,906)
Elshqu	596	715	*愛吉特虎 2	420	Elshqu	530	
Teräk	—	—	*英額瓦提 23	959	Khangdi	600	
—länggär	—	—			Döng-bagh	278	
subtotal	2,101	2,521		2,902		3,314	
②North-East Tagharchi	209	251	*枯洪奇 12	368	Tagharchi	650	
Yar-bagh	569	683	*阿哈阿塔 11	451			
Mishar	224	269	*阿哈阿塔 26	510	Misha	376	
subtotal	1,002	1,202		1,329		1,026	
③South-East Kamra	252	302	*曲龍 8	339	Yengi-östäng	388	
Orda-östäng	127	152	*稀尼巴 4	125	Tom-östäng	485	
Khan-eriq	92	110	*罕那里克 4	182			
Aral	374	449	*沙巴拉 13	651	Aral	456	
subtotal	845	1,014		1,297		1,329	
④South Otan-chiliq	539	647	秋魯克+ 13	632	Char-bagh	481	+ another 4 main canals
⑤West Rawatchi	807	968	茄列克 3	266	Charäk	605	
Qosh-abad	120	144	英額瓦提 9	623	Odanliq	780	
Qurghan	800	(980)	排泣普 141	141	Zäräpshat	277	
Kökrawat-länggär	14	17	科料熱 6	434	Yaqa-eriq	196	
subtotal	1,741	2,109		1,464		1,858	
⑥East Besh-kánt	596	715	別什幹 5	1,094	Bäsh-kánt	571	
			拔有力口 87	87	Igärchi	514	
			英額斯塘 15	1,023	Bagh-awat	365	— (1,706)
					Awat	457	
					Almat	484	
Tartar	56	67	** 吟拉蘇 2	24	Azat-bagh	400	
Könä-Tartar	—	—	塔他 239	239	Qara-su	350	
subtotal	652	782		2,467		3,141	
the total	6,880	8,275	M.-13./S.-202	10,091	B.-7./Y.-19	18,045	

\* number of main canal included

\*\* belonging to Qaghaliq at the time