

The *Suka Kollus*: Pre-Columbian Agriculture of Tiwanaku

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translated by Charles H. Roberts

The Bolivian highlands (*altiplano*) lie between the eastern and western mountain ranges of the Andes; many valleys and profound ravines stretch down to the Amazon jungle toward the east, and to the desert coasts of the Pacific toward the west. Here, people domesticated the llama and alpaca; they followed them in their permanent search for renewed pastures to the highlands in the hot months and crossed the Andes to the valleys in other seasons. The fate of Andean peoples is inextricably bound up with that of the South American *camelidae* (alpacas, llamas, vicuñas, and *guanacos*), which provide wool, leather, meat, bones, fat, and excrement for fuel, and which are also used as beasts of burden.

With the advent of crop farming, people became sedentary. Solidarity in communal work was fundamental to the life of the community, which had a non-hereditary form of government. The *ayllu* (a local descent group) was the basic form of social organization; it persists in the rural communities of Bolivia to this day. Exogamous marriage was a unifying factor creating and sustaining links of kinship among the separate *ayllus*.

Over the centuries major changes took place in the Andes. The vast Andean state of the Tiwanaku arose. Experimentation produced an extraordinary agricultural technology, known as the *suka kollus* (raised agricultural fields), which were complemented by livestock production and fishing in Lake Titikaka. One of the greatest successes was the cultivation of potatoes; indeed, Bolivian archeologist Carlos Ponce has called Tiwanaku the "Culture of the Potato." A confederation of *ayllus* governed under a non-hereditary council. The original Tiwanaku village became the major city with approximately 100,000 inhabitants spread across 600 hectares (about 2.5 square miles), tied to a network of other cities and villages of Tiwanaku society. Religion encompassed all activities, including art.

Beginning in approximately 1150 A.D. climatic changes reduced agricultural yields in the Bolivian highlands. The social organization of the Tiwanaku collapsed, the state disintegrated, and its extensive territories were fragmented. The highlands could support only a subsistence economy; agricultural technologies were lost. The arrival of the Spaniards, who were more interested in exploiting minerals than in cultivating the land, was the final blow. An agricultural people became a mining people. Ever since, the domestic economy of the highlands has revolved around a hunger-based agriculture.

In 1978, researchers Alan Kolata and Oswaldo Rivera traveled throughout the vast plains of Kohani Pampa in the Andes, beginning an archeological research project which years later would lead to the Wila-Jawira Inter-disciplinary Archeological Project. Subsequently, geographers such as William Denevan and others discovered ruins of pre-Columbian agricultural works on the banks of Lake Titikaka. The initial exploration and excavation of small mounds led to archeological research in the pre-Columbian area of the city of Lukurmata. The objective of this study was to investigate the agricultural and fish-farming systems of the ancient Andean society. This city, considered the third leading urban center of the Tiwanaku culture, is located near the pre-Columbian agricultural systems.

During explorations of these raised fields, the question arose as to whether these agricultural works and ancient technology in general could have been capable of generating sufficient wealth for the development of Tiwanaku civilization. Until then, their productivity had not been quantified. At the same time, Ignacio Garaycochea and Clark Erickson were conducting similar research work in the area of Puno, Peru. They were the first to rehabilitate and plant the raised fields. These fields yielded a hefty crop, outstripping the usual production of contemporary peasants.



Today native communities in the high plateau region of the Andes, with the assistance of anthropologists, archeologists and agronomists, are recovering the ancient raised-field technology of their ancestors. Local farmers join in a mink'a, or communal work group, to plant the raised field. Photo by Alan Kolata

In 1986 reconstruction of the agricultural fields was begun by peasant families in several communities in the area of Tiwanaku. The peasants were skeptical. Previous technological transfer projects undertaken by development organizations had led only to poor harvests and experiences of failure. The lands near the ancient structures had long been abandoned; the peasants did not recall that they had ever been planted. They were being used as pasture for livestock. Some peasants told us that the seeds would rot because of the excessive moisture of the land and that the open fields offer no protection from frost. Nevertheless, when told about the agriculture of their *awichus* (grandparents or ancestors) in the *nayrapacha* (ancient, pre-Columbian times) the majority felt a special sympathy for the project and a pride in their reaffirmed identity. Leaders such as Roberto Cruz from the community of Chukara, Bonifacia Quispe from Lakaya Alta, and Martín Condori of Kiripujo accepted the project on their lands. In order to recover the fields, organized groups of community members dug and rebuilt channels and mounds, collecting the artifacts

uncovered in the process. Most of the project effort went into the fields of Lakaya in 1987, and the productivity obtained was 42.5 tons/hectare, as compared to 2.5 tons/hectare obtained by the same community members on surrounding lands. Although this figure has not been equalled, yields continue to reflect the superiority of pre-Columbian technology.

The recovery of technology used in the same place but at an earlier time is a task for rural society. The well-being of future generations will depend on their own involvement and effort.

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