Specifications on Lixian Ma Shan Yao

I. Name of the Product

Lixian Ma Shan Yao

II. Product Description

Yams are the tubers of *Dioscorea batatas* Decne., which belongs to the family Dioscoreaceae. Lixian Ma Shan Yao, in the region of Li County (Lixian), Hebei Province, is planted by traditional cultivation techniques in a loose sandy loam fluvo-aquic soil (chao soil) formed by long-term erosion and deposition. Besides fresh goods, Lixian Ma Shan Yao also refer to the dried goods, including dried yam strips and chips. The fresh yam are selected as raw materials, then peeled and sliced into pieces by manpower or machine, dried by machine or directly in the air.

For the fresh goods of Lixian Ma Shan Yao, there is three cultivars: Bangyao, Ziyao and Xiaobaizui, and each feature is as follows.

1. Bangyao: The tuber is cylindrical in shape, 35-60cm in length, not less than 3.5cm in diameter; long dense fibrous roots; thin tawny integument; crisp white flesh, thick mucus; daintily sweet

and mild but flavorful tingling taste after cooking; water content 75-85% (3 months after harvest).

2. Ziyao: The tuber is cylindrical in shape, 50-80cm in length, not less than 1.5cm in diameter; sparse fibrous roots; dark-brown integument, purple speckles on the light-colored integument; fibrous flesh texture, white transverse section, abundant starch contents; deliciously sweet taste after cooking; water content 75-85% (3 months after harvest).

3. Xiaobaizui: The tuber is cylindrical in shape, 40-70cm in length, not less than 1.6cm in diameter; thin fibrous roots; thin hazel integument; soft floury flesh; deliciously sweet taste after cooking; water content 75-85% (3 months after harvest).

Dried Lixian Ma Shan Yao includes both yam strips and chips.

1. Yam strips: made of fresh, peeled and dehydrated yams; approximately cylindrical shape, smooth, uniform in size; yellow-white, crisp taste, water content 6-8%.

2. Yam chips: made of yam strips, sliced, 0.25-0.4cm in thickness, with the same characteristic flavor as yam strips.

III. Defenition of the Geographical Area

Lixian County has an total area of 345 square kilometers, including 7 townships and towns along the Zhulong River,

namely Qudi Township, Liushi Town, Baoxu Town, Nanzhuang Town, Liwu Town, Guodan Town and Baichi Town, etc Nanzhuang Town, Liwu Town, Guodan Town, and Baichi Town.

IV. Proof of origin

Yams, the raw materials, are collected from protected planting bases. Enterprise records on raw materials can clearly give detailed informations, such as the location of protected planting areas, the location of storage, purchase time, yield and so on.

Manufacturing enterprises establish the normative record system and product traceability system from raw materials to finished products.

There are batch numbers on the packages of both fresh and dried yams (yam strips and chips), accurately giving information, such as manufacturer, planting areas, packaging or production date and so on.

V. Production Method

1. Soil condition: sandy fluvo-aquic soil is selected with pH 7.4-8.9, organic matter content not less than 0.78%.

2. Seedling selection: The healthly, unscarred outside yams is choosed as seedling, and then cut into pieces

(75-100g per piece). Or the disease-free and strong young plants of yam can be used.

3. Planting time and planting density: The planting time is during April 15 to May 15. For the planting density, Bangyao cultivar shall be not more than 75000 plants per hectare, Ziyao cultivar shall be not more than 90000 plants per hectare and Xiaobaizui cultivar shall be not more than 120000 plants per hectare.

4. Shelving: some A-brackets or fence-type frames, about two meters high, should be build timely before sprouts emerge.

5. Pruning sprouts: select a strong bud, then remove other buds promptly if there are many sprouts.

6. Water and fertilizer management: The field moisture capacity should be kept between 60%-70% during the whole tuber growing period, without watering after mid-September.

7. Harvest: Harvesting time should be after October 15.

8. Storage: Only the qualified tubers through inspection are stored for Lixian Ma Shan Yao.

9. Processing of yam strips and chips: The qualified fresh yams are then washed, peeled, and dried directly for yam strips or washed, peeled, sliced and dried for yam chips.

VI. Link of product characteristics to the geographical

area

1. Natural factors

(1) Soil condition: So far, Lixian Ma Shan Yao has been cultivated for more than 2000 years, which is related to the geographical region of Li County. Because it is located in the Bohai Bay Basin and the central of depressed west plain in central Hebei of North China. The landform is a plain consisting of alluvial and diluvial depositions from the Quaternary period. The land gently tilts and has no significant fluctuations, but is high in the southwest and low in the northeast. The average altitude is 15.6m and the slope of the land is very little (0.03-0.01%). The Zhulong River runs through Li County, so a particular geology and soil are formed. Li County is located in a deposition zone of North China with many soil depositions of the Quaternary period, and most soil is a sandy fluvo-aquic soil from countless Zhulong River floods. 37% of cultivated land is sandy soil in the whole county. sandy alluvial fluvo-aquic soil is the majority soil in the yam-producing areas. The soil layer is deep and loose with a good permeability, so it is good for cultivation. Most soil fertility reaches a moderate level. Soil nutrients in plough layer include: organic matter 0.78%, total-N 0.065%, total-P 0.076%, Olsen-P 0.9mg/kg, available K 91 mg/kg and soil pH 7.4-8.9, which ensures that Lixian Ma Shan Yao has

many beneficial features, such as symmetrical shape, short tapered ends, long tubers, thin integument, sparse fibrous roots, smoothness and no tumors on the tuber. More important, protein content in Lixian Ma Shan Yao is typically higher than others.

(2) Climatic condition: Li County is located in the eastern monsoon warm temperate semi-arid area. The frost-free period is 177 days per year, average annual rainfall 471mm mainly concentrated from June to August, and average annual evaporation 1837.4mm. Adequate light and heat resources are extremely beneficial to the growth of yam. In addition, high quality water and convenient irrigation condition assure many features of Lixian Ma Shan Yao, such as better medicinal properties and taste, higher protein content, lower sugar, more mucus, less moisture and so on.

2. Human factors

The local producers use traditional methods, such as A-brackets, tripods and tetrapod supports and so on, ensuring that each yam can obtain adequate light and heat in the process of its growth. Because of the soil conditions, flexible watering schedules and rapid soil drainage, the soil holds generally moist and diseases-free during growth period.

3. Historical origin

Compared with other cultivars of yams, the mild but flavorful tingling taste makes Lixian Ma Shan Yao well known, and is called the famous “Ma Shan Yao”. Cultivation of Lixian Ma Shan Yao has a long local history, and many yams have been widely planted since ancient times. So far, many legends, stories and poems about yams have been told by many people. For example, “Merchant Fanli stayed at Liushi town and the beautiful woman Xishi tasted the yam”, “A sickly and weak daughter of Mr. Bai in Hu village, changed into a beautiful and healthy palace maid after eating the yam”, “Emperor Qianlong passed by Li County on his way to the South and his liegeman, Mr. Ji Xiaolan, wrote a well-known poem on the yam”, etc.

VII. Inspection Body

Lixian County Bureau of Quality and Technical Supervision

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VIII. Labelling

Any package must have product name, grade, standard number, trademark, special marks of geographical indication products, manufacturer name, detailed address, production place, net weight and packaging date, etc. And then the writing on the label should be clear, complete and accurate, in both Chinese and English.