

# Overview of sweetpotato production in China

Yi Wang  
CIP-China Liaison Office in Beijing

## Summary

- Sweetpotato production in China
- Sweetpotato consumption in China
- Major constraints for sweetpotato production and use in China
- Research institutional work in China
- CIP MTP and its potential contributions to Chinese sweetpotato production

## 1. Sweetpotato Production in China

China is the largest sweetpotato producer in the world. According to FAO, more than 85% of the world sweetpotato production is Chinese. China dominates world sweetpotato production. In fact Chinese sweetpotato production trends drive world potato production trends. The following figure shows Chinese sweetpotato general production in relation to world production.

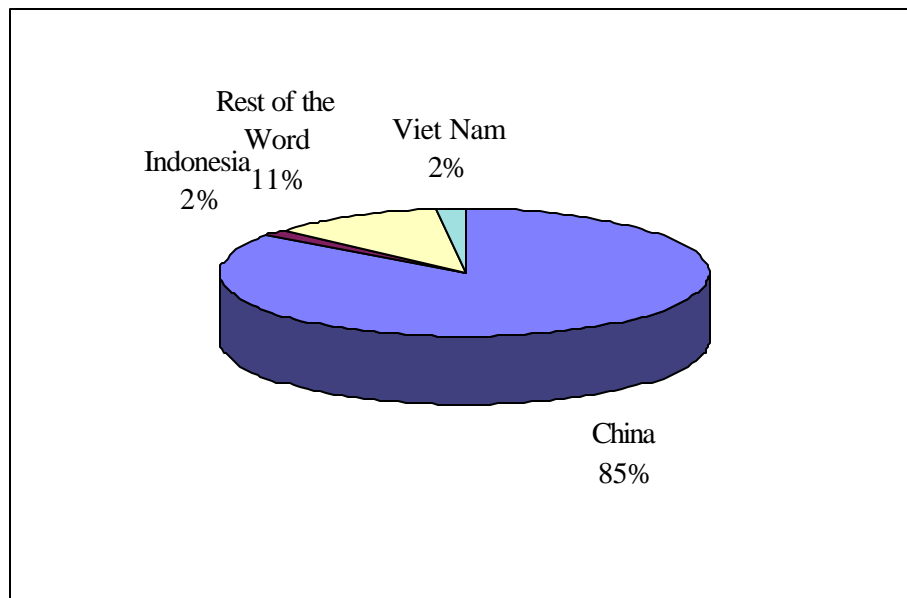


Figure 1. World share of sweetpotato output of the largest producers, 1992-1994.  
FAO / CIP, 1996

Sweetpotato yields in China are high relative to world levels, but varies markedly from 5t/ha to 40t/ha in different regions of China. The following table shows the sweetpotato production, harvested area, and yield for selected countries and years, places Chinese sweetpotato production within an international context.

**Table 1. Production, harvested area and yield of sweetpotato in selected countries, 1992-1994.**

Major sweetpotato-producing countries	1992-1994			Average annual growth rate		
	Production (000t)	Area (000ha)	Yield (t/ha)	Production (%)	Area (%)	Yield (%)
World	124053	9199	13	0.7	1.1	1.8
Developed countries	1900	107	18	-4.4	-4.5	0.1
Developing countries	122153	9092	13	0.9	-1.0	1.9
<b>China</b>	<b>105004</b>	<b>6328</b>	<b>17</b>	<b>0.9</b>	<b>-1.6</b>	<b>2.5</b>
Vietnam	2525	392	6	2.5	1.6	0.9
Indonesia	2038	217	9	-1.3	-2.5	1.1
India	1155	138	8	0.5	-0.1	0.6
Uganda	2011	460	4	4.2	3.5	0.7
Rwanda	1021	161	6	2.2	2.5	-0.3
Burundi	629	103	6	1.6	1.8	-0.1
Kenya	627	64	10	4.6	2.9	1.7
Brazil	619	60	10	-2.7	2.9	0.1
Argentina	279	22	13	-0.9	1.6	0.7
Cuba	213	55	4	0.3	0.7	-0.4
Japan	1197	53	23	-5.5	-5.9	0.5
USA	546	33	17	-0.8	-2.6	1.9

Source: FAO /CIP 1996

Production growth rate in last decades is about 0.9%, but sown area declined in the same period with the rate of -1.9% (FAO 1995). Reasons for the decline in sweetpotato are directly attributable to institutional reforms since 1978 that allow a broader scope for farmers decision-making, and increasing procurement prices for fine grains and economic crops of higher values. Hence this causes shifts from lower-value crops as sweetpotato to higher-value crops as rice, cotton et al.. But very recent data as below indicate that a bottoming out in the decline (table 3). Some data on sweetpotato production in China are listed as follow. Regional disparity in sweetpotato yields indicates the potential for increase in low-yield areas.

**Table 2. The sweetpotato production in China in recent years (1982-1996)**

Year	Planting area (1000 ha)	Production (10000 ton)	Yield (ton/ha)
1982	6908.5	10957.5	15.9
1983	6839.9	12095.0	17.7
1984	6426.7	11397.5	17.7
1985	6094.4	10343.0	17.0
1986	6174.8	10016.5	16.2
1987	6277.8	11443.0	18.2
1988	6306.4	10452.0	16.6

1989	6274.4	10468.0	16.7
1990	6255.6	10385.5	16.6
1991	6199.0	10443.0	16.8
1992	6061.6	10587.5	17.5
1993	6133.2	11301.5	18.4
1994	6062.6	10252.5	16.9
1995	6084.1	11742.5	19.3
1996	6061.7	12380.5	20.4

Source: Yearbook of China Agricultural Statistic 1983 -1997.

**Table 3. The sweetpotato production in different regions in China in 1996<sup>[1]</sup>**

Region	Planting area		Total production		Yield	
	(1000 ha).	Rank	10000 ton	Rank	(ton/ha.)	Rank
Sichuan	1416.1	1	2594.0	1	18.32	17
Henan	660.1	2	1515.0	3	22.95	8
Shandong	522.2	3	1711.0	2	32.77	2
Anhui	500.8	4	1161.0	4	23.18	7
Guangdong	472.1	5	960.0	5	20.33	13
Guangxi	322.5	6	275.0	13	8.53	25
Hunan	302.8	7	465.5	9	15.37	21
Fujian	287.5	8	647.0	6	22.50	9
Hebei	265.1	9	519.5	7	19.60	15
Hubei	212.0	10	407.5	10	19.22	16
Guizhou	183.0	11	244.0	14	13.33	22
Jiangsu	180.6	12	479.5	8	26.55	4
Jianxi	159.4	13	318.5	11	19.98	14
Hainan	145.3	14	182.0	16	12.53	23
Zhejiang	114.0	15	307.5	12	26.97	3
Shaanxi	109.2	16	238.5	15	21.85	11
Yunnan	84.3	17	98.5	18	11.68	24
Shanxi	55.2	18	114.0	17	20.65	12
Liaoning	43.3	19	78.4	19	18.12	18
Jilin	6.0	20	14.0	21	23.33	6
Inner Mongolia	5.2	21	17.5	20	33.65	1
Beijing	5.1	22	13.0	22	25.49	5
Heilongjiang	4.7	23	8.0	23	17.02	20
Tianjin	2.9	24	6.5	24	22.41	10
Shanghai	1.7	25	3.0	25	17.65	19
Total	6061.0		12378.4		20.42 <sup>[2]</sup>	

[1] Source: Yearbook of China Agricultural Statistic 1983 – 1997

[2] The average yield of sweetpotato in China in 1996.

## 2. Sweetpotato consumption in China

The main consumption of sweetpotato in China is as an industrial raw material, as a livestock feed and as a food in China. Sweetpotato has several historical uses: as a

food security crop; as a staple crop in poor mountain areas, and as livestock feed. On-farm consumption has always been very high. Most sweetpotato production areas are likely to be low-income, nutritionally poor areas. Because sweetpotato like other root crops yield high food value per area sown, they are favoured in the areas where food security is a primary concern. Same as potato, this can be enforced by a record high sown area during and after the famines of 1959 to 1961. More recently, as production of fine grains has developed rapidly in most regions, the role of sweetpotato has changed, and it is becoming less important as a main food source in general, it remains a major energy source for the very poor people in some areas of China.

Accurate composition of utilisation is difficult to assess because of fragmentary data and high disparity among provinces. General speaking, most sweetpotato is used for industrial processing and animal feed, a small portion for human food. Poor areas use more sweetpotato for direct or indirect food. Marketing and utilisation patterns for sweetpotato have undergone drastic changes since the reform in 1978. The structure of demand has changed as incomes have increased, with sweetpotato food use declining and industrial and feed use increasing. Utilisation is now directed toward high value use, such as industrial processing, animal feed, and processed food products even in the poor areas of this country.

### **3. Major constraints for sweetpotato production and use in China**

The constraints for sweetpotato production and use in China may be divided into three major sets: production constraints; postharvest constraints and utilisation constraints. Production constraints affect sown area and yield; postharvest constraints affect the efficiency of marketing and storage; utilisation constraints affect demand for food, feed, and processing. A sketch of the constraints is presented in the following table 4. The major biotic constraints for sweetpotato production are: quality of sweetpotato cultivars; pests (weevil, leaf beetle) , diseases (viruses, black rot, root rot and bacterial wilt), and nematodes. CIP has been helping China in improving sweetpotato production by effective co-operation with national scientists, and this will be reported by Prof. DF Ma, Mr. XD Guo, Mr. HM Li, Mrs. JY Xing, and Mr. LM Zhang, and Ms XY Zhang.

**Table 4. Major constraints for sweetpotato production and use in China**

Category	Factors	Constraints
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Production	Yield	Cultivars Seed quality Pathology Cultural practices (extensive) Input access (fertiliser, water) Land quality (very poor) Cropping shifts
	Sown area	Cropping composition shifts Relative commodity prices land quality (poor)
Postharvest	Storage	Facility technology (temperature) Handling ability (treatment) Cultivars (pathogen resistant) Pathogens
	Marketing	Access to transportation Access to quality storage Information availability
Utilisation	Industrial demand	Food processing Alcohol beverage Pharmaceutical demand
	Feed demand	Demand for livestock products Relative prices versus others Lack of effective markets
	Food demand	Staple (poor areas) Non-staple (snacks)

Lack of well trained scientific personnel, lack of efficient extension service, and low government budgets are also the constraints. Help from CIP and other international research centres are of importance.

#### 4. Research institutional work

Because sweetpotato is grown over broad areas of China, breeding goals are determined by widely local conditions. General goals are high yield, superior quality (dry matter, starch, beta-carotene, protein), resistance to diseases and pests, earliness, tolerance to poor conditions, and wide adaptability.

Major research efforts are going on in Jiangshu (XZSPRC), Shandong (SAAS), Sichuan (SAAS), and Beijing (CAU). The leading institution of the research network is Xuzhou Sweetpotato Research Centre in Jiangshu province. Of total sweetpotato sown area in China, about half is planted to the varieties bred there. Xushu 18 by itself accounted for about 30% sweetpotato sown area in China.

## 5. CIP MTP and its potential contributions to Chinese potato production

The introduction to CIP MTP and project priority setting is listed in the appendix. Following is the priority projects for sweetpotato and involvement of Chinese scientists in the projects. The priorities for sweetpotato set by CIP are also the very important issues for sweetpotato research in China. Please pay your attention to the goals of the researches, that is the emphasis on concrete, measurable outputs. This is the goals for the subprojects in China too.

**Table 5. CIP priority project for potato R&D and involvement of Chinese scientists**

Priority	Projects	Subprojects in China
8	Control of Sweetpotato Viruses	+
9	Integrated Management of Sweetpotato Pests	-
10	Postharvest Utilisation of Sweetpotato	+
11	Breeding for High Dry Matter in Sweetpotato	+
12	Global-Sector Commodity Analysis & Impact Assessment for Sweetpotato	+
14	Sustainable Land Use in the Andes	-
16	Conservation and Characterisation of Sweetpotato Genetic Resources	-
17	Conservation and Characterisation of Andean Root and Tuber Crops	-

