Citrus is originally from Asia. China is one of the earliest countries to culture citrus and has more than 4000 year's Citrus culture history. In China, citrus is mainly cultured in Southern China among nineteen provinces. Nowadays, China ranks the first and third places in terms of its planting area and yield in citrus, respectively. This paper presents the current production and research of citrus in China.

Planting Area and Yield

In recent years, the planting area of citrus in China has been slightly decreased and will remain the same for the next certain years (Table 1). The reason for the decreasing was due to the low efficiency of some orchards and marketing. The orchards with low yield and poor quality fruits have been taken out. The yield per hectare in China is only 1/2 compared to that in the world so far. One of the main objectives we want to achieve is to increase the yield per hectare in the near future.

Species Cultured

The species resource of citrus in China is numerous. For cultivation, the conventional species currently cultured in China is *Citrus reticulate* Blanc, followed by *Citrus sinensis* Osbeck and *Citrus grandis* Osbeck in terms of their planting area and yield (Table 2). China is one of the few countries which produce *Citrus reticulate* more than others. That makes the citrus production in China mainly for fresh fruit market and juice making. The species ratio in citrus culture across the world is 17:68:9:6 for *Citrus reticulate*, *Citrus sinensis*, *Citrus grandis*, and others, respectively. According to the present production, ecologic condition, local customer's favor, and advantage in China, the production of citrus will keep *Citrus reticulate* as the main species in the future. To follow up the trend in the world, the planting area of *Citrus sinensis* will be increased in some extent with the decreasing of the planting area of *Citrus reticulate*. And the ratio would be 50:40:9:1 for *Citrus reticulate*, *Citrus sinensis*, *Citrus grandis*, and others, respectively.

Organic Fruit Cultivation

China has joined the World Trade Organization. To change the poor fruit quality image and increase the amount of export is one of the urgent tasks to

The grade one is of the soil without any pollution. The grade two is of the soil with less pollution, then light pollution with the heavy metal ion content higher than the standards (Table 3), and medium pollution and heavy pollution with the trees showing toxic symptoms. Only the soil in grade one and two can be used for organic fruit production.

The water used for organic orchard irrigation must be clean and non-toxic and meets the standard of GB5084-92 (Table 4). The water can be divided into three grades according to the index. The orchards for organic fruit production have to be set up away from the pollution source. And the air quality has to be checked to meet the standard of GB 3095-82 (Table 4).

Research Advance

Research has been carried out in the Universities and Institutes. The topics focus on species preservation, new varieties selection, genetics, biotechnology, etc. In recent years, Chinese researchers have been making much progress in protoplast culture, somatic hybrid, gene transformation, evaluation of hybrid progenies, and virus free plants generation and propagation. Deng Xiuxin (1995) isolated protoplasts from the tetrad of 'Hirado Buntan' pummelo (*C. grandis*) and fused it with the embryogenic suspension protoplasts of 'Valencia's sweet orange (*C. sinensis*) by PEG induction. Deng Xiuxin *et al* (1996) observed the pollen fertility of somatic hybrids via protoplast fusion. Yi Hualin and Deng Xiuxin (1998) obtained triploid plantlets from the cross between allotetraploid somatic hybrid (as pollen parent) and mono-embryonic diploid citrus type. Xiao Shunyuan and Zhang Wencai (1995) reported that the RFLPs of rDNA in citrus could be used as molecular markers to assess the genetic diversity of citrus and its related genera and clarify their evolutionary relationship. Gao Feng *et al.* (1990) studied the transgenetic system *via Agrobacterium tumefaciens* mediated and obtained the callus and regenerated buds from leaf with the expression of *npt*II and GUS gene. Chen Shanchun *et al* (1996) used epicotyls and cotyledons from 15-day-old *in vitro* seedlings of Jin orange, Xinhui orange (*C. sinensis* Osbeck) and Shatian pummel (*C. grandis*) infected with *Agrobacterium* strain SE harboring binary vectors that contained synthetic antibacterial peptide D (AP-D) gene of *A. pernyi*, *npt*-II gene and nos gene. The evaluation on nos activity and Southern blot analysis verified that the nos gene and AP-D gene had already been integrated into the genome of transgenic plants.

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Table 1: The planting area and yield of citrus in China

Year	1994	1998	2001	2002
Area (hm^2)	1124000	2034700	1323700	1406600
Yield (t)	6806000	17747000	11607000	11098000
Yield/Area	6.06	8.72	8.77	7.89

Table 2: The yield of different species in citrus production in China (Year 2001)

Species	Production (t)	% of total
C. reticulate	8749497	75.4
C. sinensis	1351970	11.6
C. grandis	1381640	11.9
Others	123893	1.1
Total of Citrus	11607000	----

Table 3: The heavy metal ion content in soil for the organic fruit cultivation in China

Heavy metal ion (Mg/kg)	**Index**	
	pH<6.5	**pH 6.5~7.5**
Cd	≤0.3	≤0.3
Hg	≤0.3	≤0.5
As	≤40	≤30
Pb	≤250	≤300
Cr	≤150	≤200
Cu	≤50	≤100

Table 4: Standards of irrigation water and orchard site air quality for organic fruit production in China

Irrigation water		Air quality	
Treatment	**Index**	**Treatment**	**Index**
pH	5.5~8.5	TSP (mg/m^3)	≤0.30
Hg (mg/L)	≤0.001	SO_2 (mg/m^3)	≤0.15
Cd (mg/L)	≤0.005	NO_2 (mg/m^3)	≤0.12
As (mg/L)	≤0.1	F (ug/ m^3)	≤7
Pb (mg/L)	≤0.1	F ($ug/ m^3 \cdot d$)	≤1.8
Cl (mg/L)	≤250	----	----
F (mg/L)	≤2	----	----
CN (mg/L)	≤0.5	----	----