

Analysis of Famines Caused by Heavy Floods and Droughts in China

Yonggang Xie¹, Qiang Fu²

(1.College of Economics, Heilongjiang University, Harbin, Heilongjiang 150030, China, xieyg9796@sina.com;

2.College of Water Conservancy & Civil Engineering, Northeast Agricultural University, Harbin, Heilongjiang 150030, China, fuqiang100@371.net)

Abstract: Flood and drought occur almost every year in China, but heavy flood and drought take place every several years or in successive years. We can say that the five thousand year civilization history of China is the history that the laboring people have been fighting against floods and droughts. Reduction of grain production caused by droughts is a slow process since crops become withered because of the shortage of water; but flood makes reduction of grain production or no production at all since crops are destroyed or submerged by floods. It is inevitable to result in famine when heavy flood and drought take place and grain reduces to a certain low limit. A thorough study of the final causes of formation and factors of triggering the heavy famines make it clear that besides of the natural conditions, social factors also play a considerable role of great importance. All heavy natural calamities relate to social internal politic and economic conditions. The loss caused by the variation of natural environment exerts influence more often than not through social political and economic structures. [Nature and Science, 2004,2(2):25-32]

Key words: famine; floods; drought; China

1 Heavy Flood and Drought Resulting in the Reduction of Grain Consuming Level

There are a number of reasons affecting grain consuming level, but whenever heavy flood and drought occur, it is obvious that considerable reduction or loss of grain result in the reduction of grain consuming level. In the year of Wanli Six of Ming Dynasty of China, cultivated areas were 4650 thousands hectares with population of 130 millions. Per capita cultivated areas were 3.6 *mu* (a unit of area = 0.0667 hectares). According to *Daily Knowledge Records* by Gu Yanwu: "The people in Wu region ...couldn't get 3 *dans* (a unit = 1 hectoliter) of cereal from per *mu* in the autumn crop, the least only more than 1 *dan*. The most heavy private rents were as high as 1.2-1.3 *dous* (a unit = 1 decaliter), with the least around 8 and 9 *dous*." According to Wu Hui' estimate, the grain output per *mu* was 2.31 *dans* in Ming Dynasty, converted into 17.15 kilos, but the grain ration for a person per month was only 2.5 kilos. In 1785 of Qing Dynasty, heavy drought covered the whole China, 28 flood and drought station points in the

Fifth Grade were established and the East China and the downstream of the Yangtze River were the heaviest disaster areas. In the previous year, the forty-ninth year of Qian Long (1784), the population of the whole China were 286 millions, per capita cultivated land 2.08 *mu* and the grain output of per *mu* was 33.75 kilos at that time. In 1753, per capita grain ration reduced by 33.8% than usual. Whenever heavy flood and drought occurred, the production of grain reduced abruptly and the loss reflected even obviously. All of there affected the life of the people and the consuming level reduced. For example, in the summer of 1931, Huaihe River was in flood and the grain reduced in comparison with normal years in November as Table 1.

Since 1960s of last century, from the whole world point of view, the agriculture has developed in a large scale and per capita per day population in the world get 2710 calories of heat from farm products. But the supply of food is distributed extremely unequal. In the developing countries, quantity of heat per capita per day is lower than 2000 calories and it reaches 3030 calories in developed countries. In China, from 1986 to 1988, the quantity of heat from food per capita per day is 2637

calories. From 1980 to 1989, among the undernourishment children, the low weight ones were account for 21%, the emaciated ones account for 8% and the

physically underdeveloped ones account for 41%. The consumption of grain from 1957-1988 is listed in Table 2.

Table 1 The reduction ratio of grain compared with usual conditions in november 1931 in Yangtze and Huaihe river calamity area

Regions	South of Anhui	South of Jiangsu	Henan	North of Anhui	North of Jiangsu	Jiangxi	Hunan	Hubei	Average of various counties
Grain reduced in Nov. (%)	27	22	29	32	40	39	37	26	29
Peasants volunteer to exchange labor forces for wheat Accounting for %	98	95	100	89	85	77	88	87	89

Table 2 The consumption of grain from 1957-1989 in china

Years	1957	1961	1970	1980	1985	1986	1988
Calamity year		drought		flood	flood	drought	drought
Consumption (kilos/per capita)	203	153	187	214	254	256	251

Table 2 shows that the consumption of grain in China is not high in recent years, but it would go even lower in heavy flood and drought years. For example, heavy famine happened during 1959-1960, grain ration per capita yearly reduced to 153.5 kilos in 1961 from 203 kilos in 1957. Such big decrease in grain production cannot but enable us to image what would be the terrible result when the grain ration reduced by 25%.

In 1978, the whole country suffered from big drought. The total grain production was 304.75 billion kilos and the population was 958.09 millions. The unprocessed food grain per capita was 318 kilos in which 138.5 kilos were paddy, 54.5 kilos were wheat, 32 kilos were potatoes and the like, 85.5 kilos were corn and 7.5 kilos were soybean calculated in proportion of grain varieties. The above quantity of grain can be converted into 194.5 kilos of processed grain. But in 1979 (a normal year) per capita processed grain ration was 259 kilos, which was 64.5 kilos more than that in 1978 the heavy drought year.

2 Occurrence and Development of Flood and Drought Famine

2.1 The conception of flood and drought famine

The core contents and signs of calamities are the

severe deficiency of grain. Since China is a country in which calamities occur very often, there were many explanations about calamities in ancient China. For example, in *Seven Disasters* Mo Ti explained: "One tenth of crop failure is called hunger; two tenths of crop failure are called drought; three tenths of crop failure are called a bad year; four tenths of crop failure are called deficiency; and five tenths of crop failure are called famine." In *Erya. Yitian*, the saying is "Unripe cereal equals famine; and unripe vegetables lead up to hunger." Western scholar Walter H. Mallory, in his *China-Land of Famine*, make a definition of famine that it is the failure of grain supply because of natural reasons. Deng Tuo explained that "famine is the damage that is initiated by natural destructive forces which bring the attacks on the human life beyond the resistant power of human race; and in the class society, famine is the damage and destruction of social and material life, which is led to by human failure of controlling natural conditions generally because of the dislocation between human and human relations."

All the above mentioned scholars have put their definitions on famine, but the power of human race to resist against natural destroy forces will limited for ever. When calamities go beyond human resistance, the consequences may arrive at a certain extent, surpass

human material accumulation, specially food accumulation, and spread. These consequences are famines. The reasons led up to famine must be emphasized and the nature is still the decisive factor.

In the past, the consequences of flood and drought famines were very serious in China. Maresas, the United Kingdom scholar, made an investigation and research in India and China, and pointed out that famine was the most improper and most terrible form for the nature to restrain the population surplus. He also absolutely stated that the occurrence of famine was inevitable in China. According to the various records in China, if they were reliable, the people in the low class level had been used to maintain a life on the least food that couldn't be less a bit. They preferred to eat the putrid food which the European labors would rather starve than eat. During that period, the law in China allowed the parents abandon their children that speeded up the increase of the population. A state in such condition was inevitable to occur famines as often as not. William Foster deems that flood and drought famines have reduced the land bearing capacity. He stated that the capacity of the earth

to support the people depends rather on its most disadvantageous condition not on the most advantageous condition. Therefore, flood and drought famine is a phenomenon, which runs the parallel reasons of most serious nature and society.

2.2 Particular years and areas of flood and drought famines in china

Based on the analysis of the statistics regarding the grave flood and drought years, the famine years aroused by flood and drought were 174 years from 1470 to 1990. Most of the famines occurred after one or two years of heavy floods or droughts in which aroused by floods were 40 years and aroused by droughts were 134 years. Most of famines occurred in northwest and north China areas where per capita cultivated land was less and per mu grain production was low. For example, where there was China grave famine in Guang Xu period of Qing Dynasty, northwest grave famine in 1928-1930 and the famine of the whole country in 1959-1960. The general situation of famine influenced after 1949 is outlined in Report of Calamity Conditions in China (Table 3).

Table 3 Heavy flood and drought famine conditions from 1949 to 1963 in China

Years	1949	1954	1956	1957	1958	1959	1960	1961	1963
Population suffer from famine (ten thousands)		2443	2014	4134	1979	9766	12977	21813	7083
Escape from home (ten thousand)	179	19	21	60	40	253	209	8	43
Undernourishment disease (ten thousands)					45	302	474	3039	144
Buy and give children		437	568	699	518		10688	666000	421
Abnormal death		475	10012	273	57751	17853	374890	647010	1086

2.3 Characteristics of flood and drought famines in china

The characteristics of flood and drought famines: 1. The history of flood and drought is long in China and that China is a famine country named by Mallory, an American scholar, is in fact not overstated. The records of famines can be found everywhere in china's history. Famine is a component part of China's history. From Shang and Tang Dynasty (c.16th-11th century, B.C.) to the founding of New China, almost every several years a time of famines had occurred; 2. The ranges of flood and drought famines are wide. From the south of Guangdong, Yunnan and Guizhou to northeastern three provinces, from east of coast to west of Shanxi and Gansu desert, everywhere suffered from famines which let up to ten million people death in one time; 3.

Famines were extremely heavy and in the history, there were records that whenever heavy flood and drought famines occurred, "fields were strewn with bodies of starved" and "men eat men"; 4. Comparison with flood famines, drought famines were larger in range, deeper in seriousness, longer in times and repeatedly, for example, heavy droughts in Chong Zhen year of Ming Dynasty, heavy drought in Guang Xu first year of Qing dynasty and heavy droughts of northwest and north China in 1928-1929; 5. The general characteristics of heavy flood and drought famines were shrink and recession of social production, confusion of economic activities, extreme deficiency of people's life information, even dead of population caused by starvation, out of control of society or further social upheaval and changes of regime; 6. The cyclicity of flood and drought has decided the

cyclicality of famines; 7. The northwestern area of heavy flood and drought occurred more times of, and heavier famines; the areas where with frequent and alternate floods and droughts in Henan, Hebei and Shandong occurred flood and drought famines in turns; only when flood and drought lasted for a longer time and the areas of flood and drought covered wide, and famines happened; during the time of sharply increasing of population grave famines increase along; the majority of peasants lived at bottom of society and further, the loss they suffered by natural or artificial calamities were severer than that by the affection of other multiple economic factors; 8. Heavy flood and drought calamities were sometimes accompanied by war, which made famines even worse.

3 Forming Process of Flood and Drought Famines

From point of view of famine extent, the famine caused by droughts lasted longer in time, wider in scale and deader than that caused by floods.

First, people in the center of famine moved peripherally and therefore the area of famine is generally larger than that of the flood or drought calamity. The type of movement and spread is generally in a small range at the beginning of local flood or drought famine. Along with the development of flood or drought, the disastrous range expanded from one county to several counties, or even to more than ten counties. This kind of small areas of famine had one center. The reasons for the famine were mainly local heavy drought, failure of grain, vacuum of storehouse, inefficient government adjustment or short of social relief functions. In such a scale of famine, dead won't too many.

Second, famines in large areas are mainly caused by droughts of river valleys or sustained drought of large areas. For instance, during northwestern grave drought (1928-1929) and Henan grave drought (1942-1943), the large drought-stricken area had no grain produced at all. Such a scale of drought famine was also difficult to be relieved under the technical backward conditions of the past when grain reserves were deficient, government adjustment was inefficient or social relief functions were in shortage.

Third, the reasons of forming nationwide famine were mainly that there were many local heavy drought or flood areas, which sustained a long time and at last

linked together.

4 Main Expressions of Flood and Drought Famines

4.1 Wild herbs substituting for grains being the common phenomenon

During Shaanxi province heavy drought in 1404, "many people dig earth lamb's-quarters to appease their hunger". During northwestern grave drought from 1928 to 1929, someone made an investigation one household by one household and as result listed the following menu for drought-stricken people: chaff, tree leaves or power of edible wild herbs, bleaching clay, flower seeds, poplar sprouts (buds), corncobs, "huangjincai" (steamed dumpling with vegetable stuffing), sawdust, tree pod, sorghum husks cottonseed, elm bark, tree seed, peanut shell, sweet potato vine (to be deemed as the most delicious) and grass roots. Some foods were extreme unpalatable which children were reluctant to eat although they went very hungry. In a cotton producing area of Shandong province, grain production reduced by half and village people ate cereal chaff and cottonseed in 1928. No cotton was seen in cotton market. Calamity conditions in Henan province, Anhui province, Shaanxi province, Gansu province and Guizhou province were continuously heard of afterwards. The whole country had suffered from the heaviest famines for successive years and millions upon millions of people had died. According to Si Chuan Relief Association investigation, in that province, there were a population of 30 millions in which several ten thousands of people had eaten bark and Guanyintu (a kind of white clay), to appease their hunger. In the Road to Exist, William Foget describes that it has become a common phenomenon that part crops that have never been used as edible food have been turned into peasants' most part of substitute food. By estimate in the past hundred years, 100 million people have died of hunger. It's just a fantasy to consider that famine will never happen again. We saw with our own eyes that an ordinary people lie on a street and died, and the suffering he sustained had passed along with. No words can express the life that he and other millions of millions of people like him suffered to. And it is inevitable that thousand upon thousands of people will die like this. These man and women, old and young would be started to death, just like enshrined livestock, on the two sacrificial altars of human uncontrolled birth and wanton abuse of land resources.

During the Yantze River and Huaihe River Flood in 1931, people gathered tree leaves as food to eat. In the upstream of Huaihe River flood of Henan province, flood was most serious and the famine victims starved to death were the most. At the beginning, they ate pea seedlings and grass roots, and afterwards they pull out

wheat seedlings as food to eat at last were exhausted.

In the countryside of Guangxi province in 1933, four households out of ten had no meal but gruel or only ate grass roots and stems of plants as food grain. There is an investigation report, which reveals some real conditions (Table 4).

Table 4 Investigation conditions of food grain in Guangxi country in 1933

Categories	Total production	Eating food grain and gruel for more than 1/2 year	Eating food grain and gruel for more than 1/3 year	Eating food grain and gruel for more than 1/4 year
Landlords	6	1	2	3
Landholding peasants	29	21	6	2
Half tenant farmers	20	15	4	1
Tenant farmers	25	23	2	0
Farmhands	20	18	2	0
Other farmers	4	3	1	0
Total	104	81	17	6

Because of insufficient supply of grain during famine and human body's absorption of standard heat from grain, people even couldn't maintain normal activities, and certainly not take part in physical labor. In respect of grain consumption in China, in general, southern people take rice as their main food while the northern people take wheat as their main grain. But during famine time, the victims' food was not the dear priced rice and wheat, because they even eat high priced rice rarely in normal times. According to D. W. Edwards who worked in Huayang Relieving Association, report, grave drought famine of north China area in 1921, the food of the people in the stricken area ate were chaff, wheat leaves, wood scraps, husk of sorghum, elm barks, soybean cakes and sweet potatoes. In north of China, maize and potatoes played an important role during famine years.

Potatoes were introduced into China in the eighteenth century and maize in sixteenth century which soon became the main food of the Chinese and appeased hunger during famines. In northeast of China, potatoes were always the main food in the four seasons of a year during natural calamities, which were only turned into better conditions after 1979.

4.2 Famines spreading from rural areas into cities along with the Intensity

In 1959, a heavy drought of the whole state scale took place and shortage of grain was a obvious phenomenon. On the markets, rows of stores were cold and cheerless and only fellows in low spirit were sitting

and idling away the time with empty foods shelves asides. There wasn't any nail, rope, shoes, glasses, etc. Wherever you went, you would find people hang their heads down. They rarely went shopping where there wasn't any needle, thread, kettle, pan, etc. From the above records we can see the various respects affected by the shortage of grain. In 1960s, grain rationing was practiced in cities and towns, which kept variations in accordance with different types of work. Senior intellectuals could get some more sugar, fat and meat, which could be converted to 2000 calories value per capita per day. Common intellectuals, such as schoolteachers, absorbed less, around 1800 calories per capita per day. Heavy industrial production workers could get 2500 calories per capita per day, and 17.50-20.10 kilos rice per capita per month. An ordinary worker could get 15 kilograms rice per month. Students could get at most 2000 calories per capita per day. The content of protein and carbohydrate in the supplied food was low. Office workers could get 1500-1800 calories value per capita day, and get 13-15 kilos of rice per capita per month. The conditions of housewives were the worst.

Before the spring of 1961 came a lot of families buried the old parents or grandparents in very simple and crude coffin pits, or buried their own babies in unknown places.

4.3 Short of grain leading up to famine and disaster area diseases greatly increasing.

When famine occurs, the result is terrible. For

example, there is information that gives introductions about the situations happened in China and its neighboring countries. In the grave famine of Indian Bangal province in 1943 and the famine of Henan province of China nearly 400 thousand people died of starvation. "During famines, there was almost nobody taking or thinking about other things except taking about food. No matter where you were and what the original topics were, the talk would finally turn to the content of food". The lest affected age period of famine was the age period of 20-30 years old. Along with reduction of birth rate women had more chances to be a live. A report from Shanxi Governor to Beijing Government at the end of the famine (from 1876 to 1879) dictates: "60% - 70% of the famine-stricken victims suffered from typhoid fever. Something the victors ate aroused ache, which let up to death; large sum of dead bodies were unburied and big packs of homeless dogs ate the corpse or the dead which speeded up the spread of disease. Typhoid fever, typhus and cholera were the main diseases often mentioned in the literature documents at that time." Disease affections on the population could be seen clearly through microanalysis. Through a research of 16 families in Zhejiang, Jiangsu and Anhui provinces during 1400 to 1900 and taking men's birth figures of every five years as coordinate point and getting a curve with comparative fluctuations. The reducing time of family population is just matching the recorded time of occurring famine in the area. As for the reasons of the birth or the reported birth reduction during the famine

period may be as follows: eating being the first demand, lack of sexual, ease of women's menstrual period, families being further reduction of birth figures because of disease binding and increasing abortion.

When the author made the investigation in Yangjia village of Liulin county, Shanxi province, Wang Fulin, 78 years old, told us that in the second half of 1960, the village suffered from starvation and people were dropsy, divorced increasing and many families were scattered." "During this famine, nearly 40 people died in the village."

5 Food Safety Analysis in Flood and Drought Famine Years

Since 1470, many flood and drought famines have taken place in china. The nationwide famine of 1959-1961, in which more than 10 million people were died of starvation is till remaining fresh in people's memories. Food safety questions of flood and drought famine will be analyzed bellow based on the above famine.

6 Flood and Drought Famine Situation in the Whole Nation

From 1959 to 1961 successive nationwide grave drought famines took place, but in the northeastern areas flood disasters were also very severe. The famine-stricken stations and distributing conditions in the whole nation are as the following Table 5.

Table 5 Nationwide famine-stricken stations and distributing conditions

Year	1,2 Scale stations	1 Scale stations	4,5 Scale stations	5 Scale stations
1959	46	13	37	12
1960	33	13	52	8
1961	46	12	47	14

From Table 5, we may learn that from 1959-1961, the stations of scale 1 or scale 5 are both less than 15, but the total stations of 1,2 or 4,5 of flood-stricken or drought-stricken are far more than 25 which are the standard figures of flood years. For example, in 1960, the figures for scale 4,5 reached 52. Because of the real successive and serous disasters for 3 years, the years are named grave drought years. Grain decreasing rate in 1961 was 8.22%, which was the highest since 1949. But misfortunes never come

single that northeastern and southeastern areas suffered from serous flood disasters. Flooded crops of Guangdong province in 1960 reached 310000 hectares and grain reduced by 44 million tons in 1961. Heilongjiang province, the main producing province, grain reduced by 2.3 billion kilos because of flooded disaster in 1960-1961. So, the characteristics of the successive famines are the whole national grave drought disaster accompanied by local flood disaster and long sustaining time.

6.1 Actual shortage of grain

How much grain was actually in shortage in the 3 years famines? First of all, let's have a review of the situation in 1958. The remarks on *Investigation Report Concerning the Questions of Cooking being Stopped and Fleeing from Famines in Guantao county* made by CCCPC to Shandong Provincial Committee and Provincial Government point out: "The grain production of Guantao county last year increased in comparison with that of 1957, but there were still 25% of the cultivated soil suffered from flooded disaster and 16% of the flooded soil completely had no production. All those and adding wrong doing of making a false report and hiding the truth from output let up to the even severer phenomenon than that of 1957. By the end of June, the grain reserved decreased from 21.35 million tons to 18.2 million tons by deduction of 6.3 million tons grain purchased by the state in 1957 and 1958 were 20.86 million tons and 28.43 million tons respectively. But during these years, 23 million tons of grain were supplied for countryside per average year, and 19.5 million tons supplied for towns and the army. The sum of grain purchased by the state in the above two years minus the figures supplied for towns, countryside and the armed forces were only a little more than 15 million tons. The differences between export and import (exports minus imports), were a little more than 4.1 million tons and at the end of June 1957, the stored figures were 18.2 million tons, therefore, by the second

half of 1959, the beginning of famine, the reserved grain couldn't be more than 30 million tons. In the book *Famines in China* written by scholar Penny Kane, as the research result, it reads: "in order to spend the tough year of 1959, peasants ate up their retained grain reserves in 1958, ..." If the saying is the truth, that means by the end of 1959, the remainder of grain held by peasants had been almost eaten up. And what the real situation was then? Remarks on *Reducing Grain Ration Standards of Rural and Urban Population* issued by the Central Committee on September 7, 1960, indicates: "Reserves reduced by 500 tons (statistics at the end of June, 1960). "By the end of June of 1961, grain reserves may decrease to 7.4 million tons." "By 1961, grain reserves for supplying Beijing, Tianjin, Shanghai and Liaoning provinces had almost been vacuumed which came near the risk of being out of stock." (from Chinese Contemporary History, 1989). Then we see that the real situation was even miserable. If we take the consumer level of 1960 and 1961 as in accordance with that of 1959, the gap would be 25 million tons for the three years from 1959 to 1961. In the three years, the reduction of grain output reached as high as 40.37 million tons and per capita reduction of grain output in disaster areas were 223 kilos, which was an amazing high figure. Based on concerning information an analysis of the conditions in 3 years is made and shown in the following Table 6.

Table 6 Analysis of the grain conditions from 1959-1961

Year	Output (million ton)	Reduction of drought (million tons)	Reduction of flood (million tons)	Reduction of flood and drought (million tons)	Population of the nation (thousand)	Disaster-stricken population (thousand)
1959	170	10.805	0.263	11.068	672070	47034
1960	143.5	11.279	2.342	13.621	662070	61974
1961	147.5	13.229	2.447	15.676	65859	64336
Total		35.313	5.052	40.365		

Year	Per capita reduction in disaster area (kilos)	Per capita reduction of the nation (kilos)	Imported grain (thousand tons)	Exported grain (thousand tons)	Difference (export minus import thousand tons)	Real per capita consumer grain ration (kilos)	Consumer grain less than 1959 (thousand tons)
1959	235.3	14.5	2	4157.5	4155.5	203.5	16551.8
1960	219.8	20.6	66.3	2720.4	2654.1	178.5	32929.5
1961	243.7	23.8	5809.7	1355	445.47	153.5	49481.3
average	233.0	19.6					

6.2 The result of the shortage of 4036 million tons of grain

What was the result of the shortage of 40.36 million tons of grain? 40.36 million tons of grain might meet the need of 1692.8 thousand people died of starvation during the famines for 11 years, if calculating in accordance with the consumer level of 225 kilos per capita year. But what makes us feel puzzled is that in the most serious famine year, 1960, the country's exports were larger than imports and the favorable balance of trade was 2.6541 million tons of grain. In the disaster areas, per capita reduction of grain was 233 kilos which figure exceeded the per capita consumer level of that year. From nationwide point of view, per capita actual grain ration of 1960 decreased 12% in comparison with that of 1959, that of 1961 decreased 14% in comparison with 1960, and that of 1961 decreased 25% in comparison with 1959.

Information from different provinces shows that "in 1961, the area in north of Huaihe River per capita grain ration was only 150 kilos of unprocessed food grain; in northwestern area, per capita grain ration was a little more than 100 kilos for 4 successive years from 1960 to 1963." By the end of September 1960, the situation became even terrible, that made the Central Government have to issue *Remarks on Lowering Rural and Urban Grain Ration Standard*: "the whole nation must at once adopt the principle of lowering urban and rural grain ration standard, requesting countryside to eat less, towns also to eat less, areas of bumper harvest to eat less and disaster areas especially to eat less."

7 Lessons Drawn from Famines

From the above analysis, we can get the following conclusions: first, base on the reserves of 30 million tons, 66.207 million population and per capita 0.625 kilos of unprocessed food grain (1960 level), we figure out that the reserves in that period could only afford the population of the nation to eat 70 days; but when per capita normal grain ration decreases 25%-50%, famine could occur with the exception of importing large quantity of grain. Second, the lost quantity of grain caused by flood and drought provided the storage figures with a very reliable safety line. Based on the characteristics of historical successive flood or drought famines and the situation of grain reserves at least for 3 years of natural disasters, the quantity of reserves should be at least more than the sum of the lost grain in 3 years famines. Third, we cannot rely on import too much because various respects of situations, such as international grain market variations and global disasters, influence grain import. Fourth, when per capita decreased grain are over consumer quantity or the lost grain because of disasters are over account of 8-10% of the normal year production (if flood and drought had not happened in 1960, grain production would have been 163.17 tons, but in fact that the disaster of that year let up to grain production decreased 9.8% of an normal year's production), it is inevitable to occur famines as reserved grain is not enough and outside relief is not in time, and in the disaster area society will be instable.