

**Note: Key data/information in this sample page is hidden, while in the report it is not.**

#### 4 Influence of drought on corn yield

In China, both drought occurrence and corn's planting, distribute unevenly, regionally, seasonally and annually. Accordingly, the overlapping or staggering of drought occurrence with corn planting by geographic distribution and seasonal distribution means the significance of impact by drought on corn yield.

By geographic concentration, China's drought affected area overlaps much with that of corn planting area in China. Among the top eight corn planting provinces in China, six are ranked the top six drought affected provinces by average annual accumulative (1990~2011) affected area, and the rest two, Jilin and Liaoning ranked the 9th and 11th respectively.

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In order to figure out the influence of drought on corn yield, correlation analysis is conducted. It is found that drought has an apparent negative impact on corn yield in China on the whole. However, the significance of impact varies from region to region.

Although by accumulative drought affected area from 1990 to 2011, XXX, XXX, XXX and XXX ranked the top four in China, the correlation between drought and corn yield is not that high in these four provinces compared with the rest major regions and China's overall level. Reasons for each province are different.

- XXX: despite its large drought area, Heilongjiang has quite abundant rainfall compared with the water needed for corn growth, with an annual rainfall of about 800mm. Therefore, with its fast expanding irrigated area from 1,079,000 ha in 1990 to 4,776,000 ha in 2011, the impact of drought on corn yield has reduced significantly.
- XXX and XXX have similar reasons for the low correlation: both being large agricultural provinces located in the same corn planting area in China, they have established relatively complete irrigation systems and water-saving mechanism, thus can better cope with drought. Besides, the drought was much less severe in XXX during 1990~2011 than its previous periods.
- XXX: the relatively low correlation in this region is mainly attributed to its fast expanding irrigated area during 1990~2011, from XXX ha to XXX ha, more than XXX% of its total crop planting area in 2011.

The correlation between drought and corn yield in XXX is completely different from the rest major corn planting provinces, weakly positive correlated, meaning the corn yield will be higher if there's drought in XXX. That's because the rainfall amount in XXX, averaged above XXXmm annually, is much more than adequate for corn's growth. It would have been better for corn's growth if it is dryer in XXX.

It is also found that the correlation between drought and output is much XXX than that between drought and XXX, though XXX than that between drought and XXX.

Besides, compared with other types of natural disasters, drought has the strongest correction with corn yield, that is to say, among all disasters, drought causes the largest damage to corn yield. That's because China's major corn planting areas are also areas with largest drought affected areas and drought is the major natural disaster threatening their corn planting.

It is also found that the correlation between drought and output is much weaker than that between drought and unit yield, though stronger than that between drought and planting area.

Table 4-2 Correlation between drought and corn unit yield in China, 1990-2011

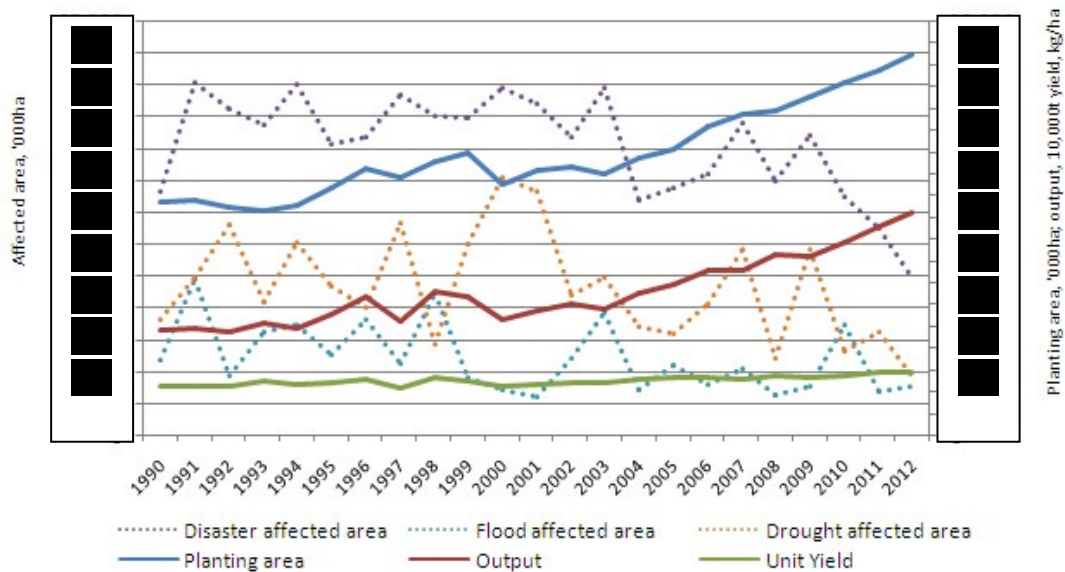
Region	Coefficient of correlation, data 1990~2011
China Total	-XXX
XXX	-0.58
XXX	-XXX
XXX	-0.56
XXX	-0.52*
Shanxi	-XXX
XXX	-XXX
XXX	-0.32
XXX	-XXX
Sichuan	-XXX
XXX	XXX

Note: 1. As the unit yield before 1990 had much bigger increases for reasons like planting technology or corn varieties, the impact of drought on corn unit yield is not significant. Therefore, the years from 1990 to 2011, a period when unit yield increase was relatively stable, are selected as sample years for correlation analysis.

2. \*: For XXX the sample years are from 1991 to 2011, as its drought area in 1990 was exceptionally low, less than 1/4 of its historic average level, thus is not used.

Source: CCM

Figure 4-3 Changes of drought affected areas, corn yield and output in China, 1990-2011



Source: National Bureau of Statistics of China, CCM