Research on Sustainable Development Strategies of The agriculture of Hebei Province

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Abstract. This paper introduces the Changes in agricultural production of Hebei Province from 1949 to 2011,firstly.Then We analyzed the factors that influence the sustainable development of Agriculture.Finally, we put forward some development proposals.We hope to have reference to the other provinces of the sustainable development of agriculture .

Analysis on Agricultural Production Status

The grain production level was rather low before, and only 53.13 kg of grains were produced per acre in the whole province at the age of 1949. And then with the increasing development of marketing economy, the grain production level has been enhanced also. During the period of 1995 to 2011, the average production throughout the whole province has increased from 267.10 kg to 336.47 kg, and the overall production has reached to 2.739 million tons and 3.1726 million tons.

Chart 1 Sowing Area, Overall Yield and Yield per Acre in Hebei Province

Year	Sowing Area （10 Thousand Acre）	Overall Production (100 Million Kg)	Yield per Acre （Kg/Acre）
1949	10864.35	46.95	43.20
1995	10244.25	273.9	267.40
1996	10705.95	278.95	260.53
1997	10649.1	274.67	257.93
1998	10958.55	291.75	266.20
1999	10854.15	274.63	253.00
2000	10378.05	255.11	245.80
2001	9943.35	249.18	250.60
2002	9726.6	243.58	250.40
2003	8766	238.78	267.80
2004	9005.1	248.01	275.40
2005	9360.3	259.86	277.60
2006	9407.55	278.06	295.60
2007	9252.3	284.16	307.13
2008	9237.15	290.58	314.60
2009	9324.75	291.02	312.07
2010	9423.3	297.59	315.80
2011	9429.15	317.26	336.47

In accordance with the social requirement variation, the grain quantity should also be some enhanced. In 1949, sowing area of wheat was 23.657 million acres throughout the province, with 36.5 kg produced per acre, 0.864 billion kg in total. And in 2011, sowing area of wheat was 35.9415 million acres, with yield per acre enhanced by 9.7 times and overall yield by 14.8 times.

Chart 2 Sowing Area, Overall Yield and Yield per Acre of Wheat in Hebei Province

Year	Sowing Area （10 Thousand Acre）	Overall Production (100 Million Kg)	Yield per Acre （Kg/Acre）
1949	2365.65	8.64	36.53

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1995	3750.90	106.03	282.67
1996	3886.80	113.91	293.07
1997	4081.05	133.07	326.07
1998	4146.00	125.36	302.40
1999	4094.85	128.05	312.73
2000	4018.20	120.80	300.60
2001	3869.70	112.27	290.13
2002	3674.40	109.95	299.27
2003	3289.35	101.88	309.73
2004	3242.25	105.32	324.87
2005	3565.65	115.03	322.60
2006	3756.75	118.97	316.67
2007	3618.60	119.37	329.87

In 2011, sowing area of rice was 1.245 million acres (increased by 2.2 times than that of 1949), throughout the province, with 483.27 kg produced per acre (increased by 1.9 times than that of 1949), 0.602 billion kg in total (increased by 19.4 times than that of 1949).

In 2011, sowing area of corn was 45.537 million acres (2.44 times than that of 1949), throughout the province, with 360.07kg produced per acre (7.82 times than that of 1949), 16.394 billion kg in total (19.04 times than that of 1949).

The development of grain yield drives our life improvement. In 2011, the total population in our province has reached 72.4 million, and the per capita grain quantity has reached 438.2 kg, which was 2.9 times of that in 1949. Among that, the total per capita quantity of both wheat and rice has reached 184.57 kg, enhanced by more than 6 times than that of 19499 (29 kg).

Problems Exited in Agricultural Sustainable Development

Low Yield

It is calculated that the total sowing area of grain at the age of 2010 was 94.233 million acres (5.72% of that of whole country), ranking the 6th; yield per acre (rice, wheat and corn) was 325 kg, 43 kg less than the national level of 368 kg); the total yield was 29.759 million tons (5.45% of the national level), ranking the 7th.

Unstable Yield

During the period of 1985 to 2011, there were 10 years (37%) when the total grain yield was lower than that of the last year, among which 3 years with ever decreasing yield (1986-1987, 1991-1992 and 1999-2003). Especially speaking, in 2003, it decreased 3.59 million tons than that of 1997.

Unstable Production

Due to differences in nature, economy and technology, the grain production capability is very unstable. In 2011, there were 27 counties with 300 kg (19.3% of that of Hebei Province), 44 counties with 300-400 kg (31.5% of that of Hebei Province), 69 counties with over 400 kg (49.2% of that of Hebei Province). What's worse, differences between different terrains were also large then.

Quality of Grain cannot Fit the Social Development and our Life

In Hebei Province, sowing area of high-quality wheat was only 41%, 55% lower than the national average level. High-quality wheat mainly refers to hard ones with high nutritional quality and processing quality, owning full seeds and high flour yield.

Factor Analysis on Barrier in Agricultural Sustainable Development

Farmers Have Little Enthusiasm to Grow

With the development of comedy production, there are throughout the province totally 20%-30% of famers work out, especially in developed suburbs, for increasing of prices of the materials for

agricultural production has drove the production costs. It is reported that the agricultural cost for each acre has increased by more than 12 times, say, from 22.19 yuan in 1978 to 285.8 yuan in 2010; income gap between agriculture and industry has expanded too; furthermore, because the unreasonable price ration agriculture and industry, low socialization service level and so on all drive week production increase potential, unsatisfying benefit and farmers' decreasing enthusiasm.

Frequent Natural Disasters

From 1995 to 2006, there were at average 27.71 million acres of lands encountered natural disasters per year (7.95 million acres in 2006). During the period of 207 to 2011, we speeded the construction of farmland water conservancy works, which better the irrigation capability and deduced the percentage of the disaster areas (7.2 million acres in 2011 with 0.9 million acres decreased for natural disasters). Besides, the water resource is rather short. It is calculated that the usable water resource in Hebei Province in 2011 was only 15.72 billion m^3, but we usually need 27.3 billion m^3 of water each year.

Sowing Areas of Grains Decrease

From 1949 to 2011, sowing areas in the whole province decreased from 108.64 million acres to 94.29 million acres (decreased by 13.2%) and the per capita sowing area decreased from 3.52 acres to 1.30 acres etc.

Analysis on Agricultural Sustainable Development Strategy in Hebei Province

Though we are faced with series of problems, the basic strategy to solve agricultural sustainable development is to improve the production capability and enhance the supplying stability.

Perfect Agroecological Environment and Develop Agricultural Resources Unreasonably

We should always pay our attention to protect farmland, solve the problem of water shortage, develop dry farming and enhance water utilization rate. We should in details enhance infrastructure construction and improve production situations. At first, we should protect farmlands, making sure of enough sowing area, to develop efficient agriculture and keep the stability of grains production and supply & demand balance. Secondly, we should improve production capability by bettering low and middle yield lands. Then, we should highly develop agricultural ecological chain and ecological agriculture, to achieve the virtuous circle in agricultural ecological system. At last, we should protect the environment by retain forests, lakes and grasses in lands unfit tillage.

Conduct Comprehensive Development to Achieve diversification of Grain Variety

When our requirements and needs towards food change, it is necessary to increase the supply making use of various resources, or it will results in gap in supply & demand. At the same time, we should also expand the food sources in accordance with our facts, to correctly lead citizens' food consumption.

Reasonably Lead Grain with Feed Production

There currently exist lots of problems in grains with feeds: Firstly, the production of feeds depends on that of grains. Secondly, the feed structure was simplex without enough protein feed, thus leading decreasing animal husbandry production efficiency. Hence, we should plant enough feeds, establishing new agricultural sowing system by transferring the binary system with grain-economic crops to ternary system with grain-economic crops-feed.

Make Fullest of International Agricultural Products Market

It is necessary for us to import some grain varieties with high quality and low price, aiming at addressing the unbalance between variety shortage, non-harvest and regional demand. In addition, we should improve the grain production quality and develop high-quality grains to fit the new national situation after being a member nation of WTO.

Accelerate Agricultural Technical Improvement and Enhance Technological Contribution

Grain Safety should cover meaning in 2 aspects, i.e. quantity and quality. At first, we should make efforts to enhance agricultural strength with technology by actively arranging research institute and technical staff to perfect agricultural technologies, selecting products with high quality, yield and high efficiency, and building better breeding bases. Furthermore, we should promote new technologies and new achievements. We should predominately develop & use resources, updating

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varieties and make use of relevant technologies, to promote technological achievement & advanced technologies and facilitate the transformation from the traditional agriculture to the modern one. Finally, it is significant for us to further establish and complete rural science & technology network and enhance and promote technological administration and service on the whole.

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