Agriculture development in our country faces the limited arable land resource which is further continuously reduced. The increasing shortage of land resource restricts the agriculture development. This difficulty is, moreover, intensified by acute shortage of water resources and fierce competition between agricultural departments and non-agricultural departments. Meanwhile, in our country intensified agriculture ecosystem with high input and high yield will remain the most important ecological mode for agricultural production in the future. Therefore, future agriculture development not only needs fundamental breakthroughs on increasing production technology, but also needs the upgrading technology on resource saving agriculture and arable land production capacity. These technologies may support and secure the transformation of agriculture from traditional model to resource saving model.

5.1 Development Requirement, Significance and Tendency

5.1.1 Requirement and Significance of Technological Development

1. Faced with severe shortage as well as degrading quality of arable land resources, the government should devote energetic efforts to alternative technologies for increasing arable land area, improving production capacity, and establishing a land-saving agricultural production system.

Scarcity of arable land resources and the degrading quality have already become the major restraining factors for agricultural production. By the end of 2008 the total arable land area of the whole country was 1.826 billion mu with a per capita coverage of 1.38 mu (total population was 1.328 billion by the end of 2008). The net reduction amount was 290,000 mu, which was 50% of that in
2007, indicating that the tendency of arable land reduction has been basically curbed. In recent years, although the government has adopted measures in protecting the arable land from loss through judicial land management and new arable land resources exploitation, newly reclaimed land in place of occupied fertile land has resulted in a fall in production capacity. In addition, the national agriculture development is also faced with increasingly soil degradation problem\[1\]:  
2. Serious soil erosion. Soil erosion area of cropland has reached approximately 48.67 million hectares, making up 38 % of the total arable land area.  
3. Large contaminated arable land. According to incomplete statistics, approximately 150 million mu arable land in our country has been contaminated to varying degrees, in which 32.50 million mu has been contaminated by sewage irrigation, 2 million mu by solid waste and physical damage. They mostly happen in relatively developed area.

2. With unbalanced supply and demand on water resources and uneven spatial and temporal distribution of water resources in our country, the situation of water resources is severe in future, and there is an urgent need to establish a water-saving and high-efficient agricultural production system

The agricultural production in our country has been threatened by the imbalance between supply and demand, uneven spatial and temporal distribution, as well as low utility ratio of water resources\[2-4\]. With total amount of water resources reaching 2,800 billion m\(^3\) in our country, per capita share of water resources was only 1,927 m\(^3\) in 2006, which is only 42% that of 1950, close to the international alarm level of 1,700 m\(^3\). Affected by monsoon climate, rainfall mostly takes place in summer, which easily increases the odds of draught in spring but flood in summer. The dramatic variation in rainfall often results in serious floods and low water of rivers. At present, with uneven distribution of water and soil resources, the Yellow River, the Huaihe River, and the Haihe River basins are most known for their water stress. In the three river basins, the land area accounts for 13.4% of the total in China, arable land is 39%, population is 35%, but water resources is only 7.7%, with less than 400m\(^3\) per mu for arable land. However, inland river basins in northwest China have 35% of total land area, 5.6% of total arable land, 2.1% of total population and 4.8% of total water resources in our country. Northern China owns more than one half of wheat output and 1/3 rice output of our whole country, and its total grain output accounts for more than 1/3 of national output, but the water resources per capita accounts for only 1/7 of the country. Yangtze River in south China and Northeast China are the main production bases for rice. Under global climatic change, a number of river basins such as Yangtze River and Yellow River are now faced with the following problems due to the decreasing supply from melting glacier of riverhead: drastic runoff decrease in low water period, increasing flood disasters, and increasingly difficult irrigation. The risks and threats posed by abovementioned problems all lead to crop yield reduction\[5\].