

“The importance of environmental questions in the development of agriculture and rural areas”

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Abstract:

China has made considerable progress in the domain of agricultural and rural economic development. Nevertheless, the application of obsolete ideas, concepts or development models has led to a series of 10 serious environmental problems that have cropped up over the development period.

(1) Widespread groundwater pollution: the amount of pesticides and chemical fertilizers used in farm production is excessive and residue in the soil constitutes the principal source of groundwater pollution. Each year, 1.31bn million tonnes of pesticides are used in China. An average of 224.8 kg of nitrate fertilizers are consumed per acre. The accepted international limit is 115 kg per acre, but 17 provinces exceed this limit.

(2) Desertification: China had 1.74m square kilometres of desert land, which represents 18.1% of its territory. Direct losses related to desertification have been estimated at more than 54bn yuan (about 5.2bn euros).

(3) Soil erosion and surface runoff: This kind of erosion currently concerns a surface area of around 150m acres in China, or a sixth of its territory in nearly a thousand districts.

(4) Water shortages: The average amount of available water per person is quite low in China and the geographic distribution of water resources is unequal. In a year with average precipitation, the water shortage may reach 40bn m³. Water wastage is therefore quite serious in China. In most farm areas, submersion irrigation and wild flooding are still practiced. Irrigation methods that conserve water are only used for 35% of the irrigated surface area.

(5) Destruction of wetlands: demographic and economic pressures are a direct threat to wetlands and their biodiversity. Out of 376 wetlands selected for a recent study, 114 are threatened by land clearing or other short-sighted transformations, 98 are threatened by environmental pollution, 91 by the excessive exploitation of their biological resources, 30 by sand and mud silting and 25 by irresponsible use of water resources.

(6) Air pollution: Over the past few years, air pollution caused by the burning of straw and other agricultural residue has seriously affected the surrounding areas. According to the State Environmental Protection Agency (SEPA), straw burning is on the rise.

(7) Home waste management: 41% of Chinese villages do not have a centralised water distribution system; 96% have no sewage system or water treatment system. In 70% of Chinese villages, farm animals and villagers cohabit; 90% of villages still use dry-pit latrines (that do not use water); 90% have no means of fighting fires; and 89% have no waste collection or waste treatment system.

(8) Animal-related waste: the accelerated development of industrial breeding has caused a steady and worrisome increase in animal-related pollution. The total amount of animal-related waste is now greater than industrial solid waste.

(9) Polluted food products: pollution and toxic substances due to groundwater pollution are causing the passive contamination of food products. This contamination coexists with active; man-made pollution from agricultural production.

(10) Industrial pollution: This kind of pollution comes mostly from rural companies who generally have no environmental protection or pollution treatment systems.

The lack of scientific and technological means is the main cause of the various problems cited above. Supplying those means should efficiently improve the ecological environment and eliminate pollution at its source. These scientific and technological means are the key to solving these

problems. There are many technological domains that can improve or solve the environmental problems caused by agricultural development and the development of rural areas: these include the protection and the restoration of the natural environment, recycling of farm waste, clean (and rational) agriculture, and food safety surveillance and control. Because the development of agriculture and rural areas has been slow, public investment will be necessary in order to introduce these scientific and technological means.

During nearly 20 years of reforms, various methods of introducing agricultural techniques have been implemented. The principal methods are the following:

- (1) The setting up of specialised projects to promote development and the application of techniques that are adapted to the needs of rural areas.
- (2) The deployment of experimental units in selected areas to promote the intensive application of state-of-the-art technology and turn these zones into examples.
- (3) The organisation of preventive research to provide technical support for environmental problems related to the development of agriculture and rural areas.
- (4) The promotion of a social environment and a system that focuses on adapting techniques to rural areas.

China has already begun technical and scientific orientation work since the tenth five-year plan with the objective of resolving environmental problems related to the development of agriculture and rural areas, but there is still a lack of research as well as strategic and systematic provisions. Investment and state support have not been as forthcoming as expected and the application of certain techniques is still problematic. The author's thesis is based on a "vision of rational development" within the framework of building a "harmonious society." It is about proposing real solutions for the technological development of agriculture and rural areas. Examples of these solutions include the reinforcement of research in social sciences, the deployment of the "Spark Programme" for promoting major scientific and technical projects, increased education for farmers and greater investment in infrastructure.

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