

International Agricultural Technological Change and Its Impact on Japanese Agriculture: Problems, Prospects, and Policy

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**Summary of
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The first section in the presentation explains that Japan faces a grave crisis in the World Trade Organization (WTO) negotiations in the Doha Development Agenda round that has just begun. Japan's food self-sufficiency rate is now 40 percent, meaning that only 4 out of 10 calories consumed are produced domestically and it seems that as a result of the negotiations it could be forced much lower. Options are described.

One of the options, and the second main subject of the presentation, is to radically change production methods by greatly utilizing a combination of science and knowledge power. "Science power" means the creation and adoption of advances from modern science such as new seeds, fertilizers and machinery. "Knowledge power," on the other hand, is the application of a person's brain to obtain synergy from the other factors, such as combining machinery with the fruits of science. Examples are use of computers to develop least cost and most profitable crop systems, determine optimal input use, calculate benefits of niche markets, evaluate ways of contracting labor rather than simply relying on household members, etc. In brief, knowledge power means creative identification of problems, imaginative conceptualization of options, the innovative positing of solutions, and skillful evaluation of them. Without question Japan's climate, geography, population density and resultant agricultural structure are great impediments to effective application of knowledge power.

It is concluded in the third, and last, section that Japan's educational system is the greatest barrier to its agriculture entering the "science and knowledge power era." The system affects Japan's manufacturing and services sectors as well as agriculture, and consequently

this section is of particular interest to scientists in all specialties. The difficulty is that Japanese students are not even minimally taught to identify problems, conceptualize them, and posit solutions. This is because curiosity, a desire to think and ability to analyze situations in a problem solving way have increasingly been shoved aside at all levels of the educational system. They are the principal components of “knowledge power,” and thus there is a very high barrier to the synergy from combining science and knowledge power. Depressingly, because of what can be termed the “contemporary Tokugawa era educational system,” no matter how much students in higher education might *want* to think creatively and analytically, and to express their opinions, they simply cannot because they have been taught from pre-kinder that demonstrating such an attitude will result in their being pounded down, like that proverbial nail sticking up. The saddest part is there seems to be no interest in changing the system from one producing robots specifically trained to memorize for exams, to the conceptualizers needed in a global society.