



AGRICULTURE

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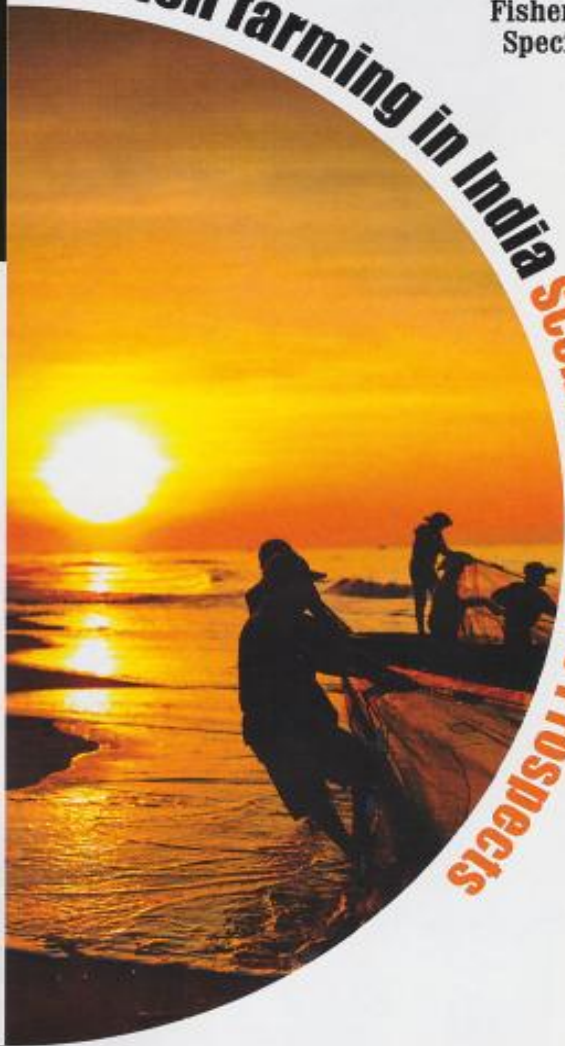
Masanobu Fukuoka
Pioneer of Natural
Farming in Japan

Japanese Agriculture

Lessons on
Sustainability &
Responsibility

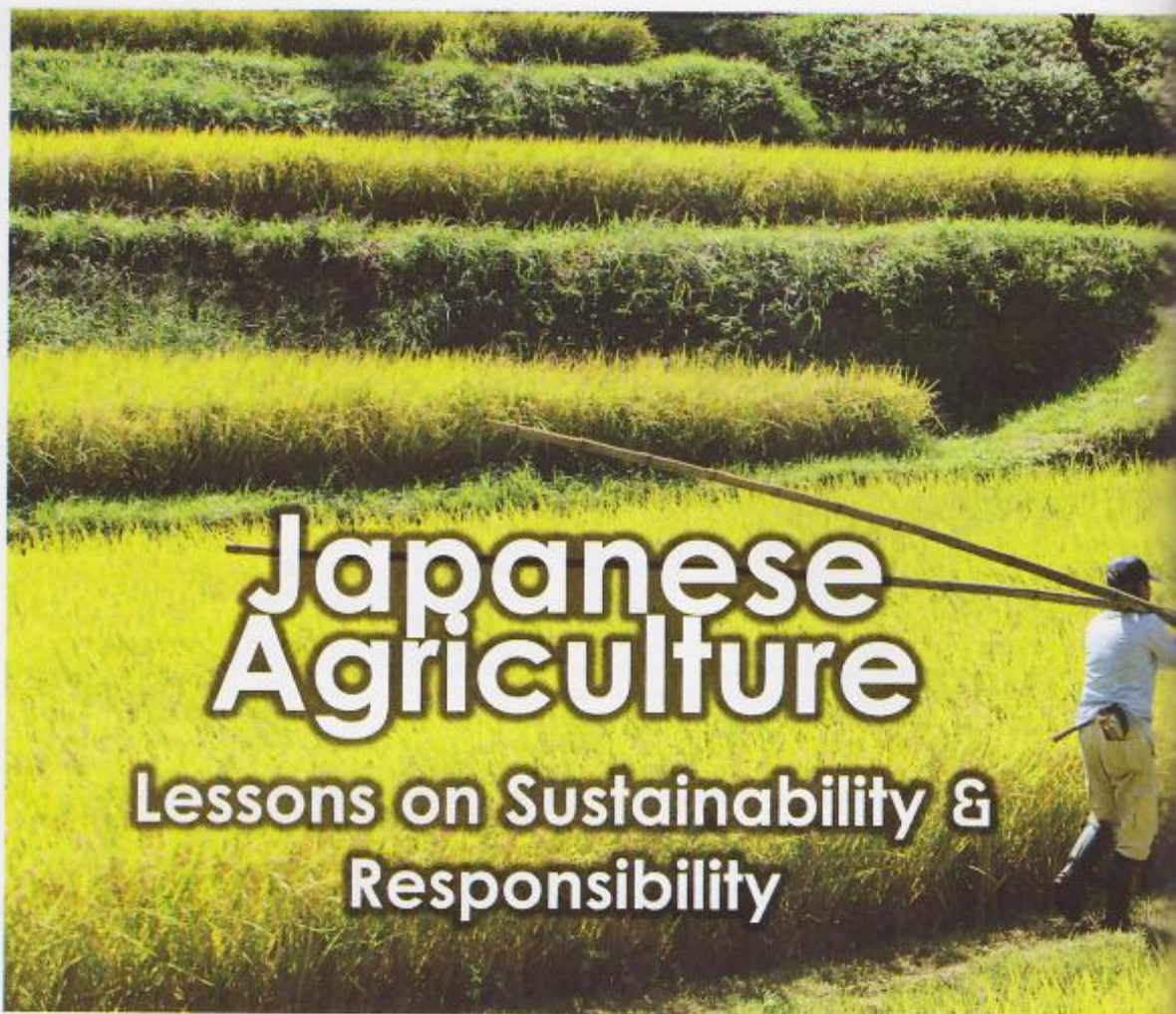


Fish farming in India
Scenario & Future Prospects



Importance of
Hygienic Processing
of Fish

Organic
Aquaculture



Japanese Agriculture

Lessons on Sustainability & Responsibility



Vipin Saini

Executive Director
Agro Chem Federation of India

It is time, agriculture needs to be recognized more than just a means of growing primary products. It needs to be linked to commerce and industry, in order to add value to those products through processing and distribution services. A broad-based, deep-rooted partnership linking agriculture, trade and industry, with an emphasis on tie-ups with small and medium-sized enterprises (rather than large corporations), would foster the development of local brands capable of market success.

Let's walk you through the various initiatives the Japanese adopted to attain more from less. Let the journey begin

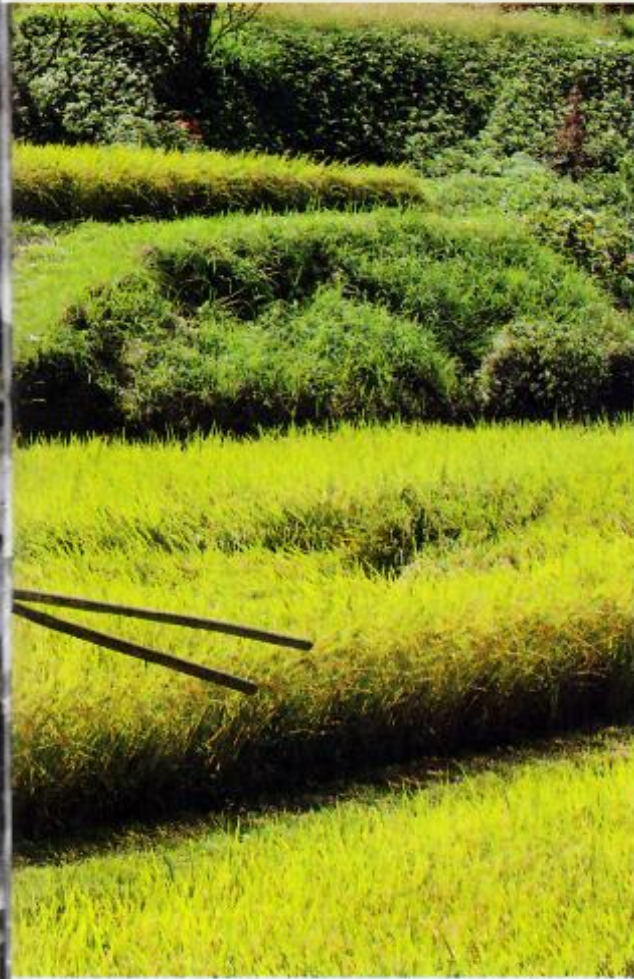
To achieve these goals, Japan's 3 Point Strategic journey towards globalization of its Agriculture was introduced. Highlights of the strategic plan are :

Key Concepts to Change the Structure of Japan's Agriculture

- Japanese Agriculture to target global markets
- Establishing Food Production Base Areas to Ensure a Stable Food Supply.
- Integration Plans for the Effective Use of the Total National Land Base.
- Use Agriculture to Revitalize Local Economies.
- Implement Food Security Policy from Two Perspectives: Stable daily supply of food, and a possible severe food shortage due to emergency conditions in Japan.

Mid- to Long-Term Measures

- Assemble 1.5 Million hectares of Land into 10,000 Core Farms in Food Production Base. Areas measuring about 100 hectares each.



“ Trends in global food markets offered the Japanese agricultural sector an opportunity to move from protectionism to proactive innovation

are scarce, so is landmass. Limited farmland and other agricultural resources had to be used effectively by all. At a time when agriculture is being buffeted by many changes, not only as a means to provide food but also as an industry offering the potential for growth, a growth that could contribute to international markets establish “Food Production Base Areas”.

The use of agricultural resources and environmental conditions more effectively requires the involvement not only of people in rural areas but those in cities as well, and the government should develop measures to ensure that involvement and to raise awareness among city dwellers of the importance of their involvement in a rural-urban partnership.

In Japan, the use of sewage sludge and composted sewage sludge is gradually increasing. They are applied not only to agricultural land, but also to golf courses, parks, etc. The presence of heavy metals and pathogens poses a major problem for such utilization of sludge. Composting is a traditional method of sewage treatment. Laws have been introduced and guidelines prepared for proper and safe use of these materials by farmers.

At a time when environmental preservation is a major issue in almost every aspect of life, greater emphasis will have to be on making sludge and compost hygienically acceptable with minimum contamination from pathogenic organisms and heavy metals. The advantages of using sludges as fertilizer for improving and sustaining soil fertility and crop production are multifold. Variability in the quality of sewage sludge or sewage-sludge compost is rather large owing to differences of source, treatment methods, additives used, fermentation method, etc. However, as demand and commercial production increase, it becomes necessary to demonstrate product quality in terms of C, N, P, Cu and Zn contents, pH etc., as information for farmers. Certification tags have made farmers aware of the importance of quality in sewage products. Most local governments have recommended standards for application of sewage-sludge compost to crops in diverse soil conditions. Taking into consideration these recommended values, tentative national-standard quantities for application to crops were prepared by the Association for Utilization of Sewage Sludge as recent as in 1994.

However, at a time when environmental preservation is a major issue, greater emphasis is

- Designate the Food Production Base Areas as Special Economic Zones for Deregulated Farming.
- Establish Financing Policies to Encourage Production, and waive off loans of effective farm managers.
- Introduction of a Land Use Plan that Emphasizes Optimal Use of Farmland and the Surrounding Environment.
- Establish within the Prime Minister's Office a Pan-Ministerial Organization Responsible for the Economic Security of the Japanese People.
- Use Japan's Agricultural Technologies to Help Eliminate Food Problems in the World.

Key Measures for Urgent Needs

- Develop Agriculture-Commerce-Industry Partnerships to Create New Employment Opportunities in Farming Villages.
- Assistance in training of young professionals, for promoting Agricultural Exports.
- Demonstrate Leadership in Guiding WTO Agricultural Negotiations to a Successful Conclusion

Japan in particular where natural resources



Duck- Fish Culture

Duck –fish culture is an integrated fish farming method in China, Hungary, Germany, Poland, Russia and some parts of India. As a biological ecosystem, a fish pond provides an excellent disease free environment for ducks. In return ducks consume juvenile frogs, tadpoles and dragonfly etc. and thereby make a safe environment for fish. Ducks are known as the living manuring machines. Its droppings go directly into the pond, which in turn stimulate growth of natural fish food organisms. Ducks also help in releasing nutrients from the soil of the ponds, particularly when they agitate the pond shore areas.

Fish-duck culture is a highly profitable method as it enhances the animal protein production in terms of fish and duck per unit area. In India, the most commonly used duck breed for this method is 'Indian runners'.



Public acceptance for use of sewage sludge and composted sewage sludge in agriculture plays a crucial role

required to be placed on providing hygienically acceptable sludge and compost with minimum contamination from pathogenic organisms and heavy metals, so that the benefits as fertilizer, increasing and sustaining soil fertility and crop production, may not be compromised.

Recently, policy-makers in Japan have focussed their attention on improving the competitiveness of the agricultural sector by directing some important payment programmes, as well as reforming land regulations to make it easier for farms to increase in size. These efforts are a good start in the process of putting agriculture in Japan on a competitive footing, but to be successful, this approach will need to be reinforced by additional reforms that address the market distortions that adversely affect the efficiency and competitiveness of the sector. Barriers to competition will need to be lowered, first among farmers themselves, and ultimately with other economic sectors and internationally.

Japan imports a significant proportion of its total food supply, making food security a

prominent policy objective. The two main routes to improving food security are improving the efficiency of domestic production and trade agreements that ensure stable trading arrangements. Quantitative targets for food self-sufficiency are useful for measuring progress, but should not become an impediment to needed reforms. Domestic food that is more competitively priced for the consumer and a reduced amount of waste in the food chain will also bring improvements. There are indications that Japanese agriculture can survive and thrive in a more open marketplace. Its ability to produce high-quality and specialised products for domestic and foreign markets is a key comparative advantage that can be exploited. Following that competitive advantage will mean that the sector has still more change to accomplish, and what form agriculture will take in the future is difficult to say. It is clear that enabling this change by providing greater opportunities to farmers to operate in a more open and competitive environment is essential to securing the long-term growth and competitiveness of agriculture in Japan.

Vipin Saini Executive Director Agro Chem Federation of India

Use of pesticides in Japan can be traced back to the 1600s. The use of whale oil onto fields as a method of exterminating leafhoppers have been known since 1670, indicating the beginning of pest control in Japan. Up until the mid-19th century, these primitive types of pest control were the only methods used in Japan coupled with prayers to ward off insects.

The Pesticide Industry started to develop in the late 19th century, when various products began to be introduced from overseas, such as lime sulphur, bordeaux mixture and other copper agents as well as pyrethrum insect powder, nicotine and other natural products. Arsenic compounds and chloropicrin became industrialised in the early 20th century, by the 1930s a good foundation had been laid for the pesticide industry.

Research and development continued in the West on new synthetic pesticides even in wartime, while Japan lagged behind in its technological developments. It was not long after the introduction of DDT, BHC, parathion and other synthetic pesticides that it started producing similar products domestically.



Long-term toxicity testing and environmental impact evaluation became required practice for registering pesticides. Testing methods became stricter with the introduction of Good Laboratory Practice (GLP) for pesticides

A snapshot of Pesticide Development in Japan

By the 1960s, Japanese chemical industry companies had attained competency to develop their own new pesticides. MAS, the first domestically-produced fungicide, hit the markets in 1959, followed by MAF, an improved version, two years later and then MEP, an insecticide. Other major pesticides also emerged, such as cartap, an insecticide, blasticidin, an antibiotic, IBP, benthocarb, a herbicide, and giberellin, a plant growth regulator.

By the 1970s, Japan's period of rapid economic growth had come to an end and the country was experiencing a time of stable growth. While the pesticide industry also continued to grow during this time, it underwent dramatic changes. The Agricultural Chemicals Regulation Act was amended in 1971, adding "protecting human health and conservation of living environment" as considerations to ensure "safety of use". Long-term toxicity testing and environmental impact evaluation became required practice for registering pesticides. Testing methods became stricter with the introduction of Good Laboratory Practice (GLP) for pesticides. These changes meant that the socially-problematic

pesticides of the past were phased out and replaced.

Japanese companies continued to develop new chemicals, resulting in the emergence of:

- Insecticides (fenvalerate, buprofezin and hexythiazox)
- Fungicides (thiofanate-methyl, isoprothiolane and probenazole)
- Herbicides (pyrazolate, sethoxydim and fluazifop-butyl).

While the next two decades saw a major paradigm shift in the pesticide industry, it grew to the point where it was turning over more than ¥400 billion in a year. Japanese companies have thus continued to create new chemicals with a number of advantages.

Japanese agriculture is foreseen never fail while it is surrounded by high-income consumers who make their purchases assured of freshness and high quality. Pesticides are a huge part of this. Japanese companies will continue to produce new, world-class chemicals, is what is expected.

