

# EM-tech has been in China for ten years

Wei-jiong Li Yong-zhen Ni

(Resources & Environment College of China Agricultural University, Beijing, China 100094)

**Abstract:** It is just ten years since EM- tech was introduced into China.

In this article the author let us know the developing course of EM-tech in China by his personal experience. With the help and support by Japan International Natural farming Research Center, APNAN and professor Tero Higa, the author and his Chinese crafts exerted themselves to make EM get a great success in testing, demonstrating and popularizing in the fields of the planting, breeding and environmental protection in over 30 provinces, cities and municipalities during the past ten years. EM-tech has been using and popularizing in China in the following aspects:

1, In the planting industry, the appliance of EM-tech is used in wheat, maize, rice, sugarcane, rapeseed, tea, cucumber, eggplant, tomato, cabbage, capsicum, beanstalk, apple, pear, grape, orange and etc., also some products being up to the standard of China Green food are developed and produced;

2, In the breeding industry, they are broiler, egg chicken, duck, cow, ox, sheep, pig, rabbit, fish, crab, shrimp, eel, turtle and etc,

3, In the environmental protection, focused on the appliance of the deodorization of garbage and sewage, the reduction of the flies and the purification.

4, Based on the success of the appliance research of EM-tech, primary study and probe have been done yet in the effect mechanism.

Key words: 10 years, EM-tech, Appliance Research, China

Invited by Dr. Hiroshi Umemura, Trustee of Japan International Natural Farming Research Center in 6-8, 1992, I went to Matsmoto Natural farming Experimental Station of Nagano county, Japan for the advanced studies. It was first time whereat I got to EM-tech at that time. From then on, I came to know the magical functions of EM-tech after I experienced near 3 months from testing & researching the EM manure and visiting some related places. After coming back from Japan, My wife, Madam Ni Yongzhen and I had the determinations to start the appliance research of EM in China in order to serve the development of agriculture, animal husbandry production and countryside economy in China. Fortunately, we had enjoyed the strong support of my tutor, academician of the Academy of Engineering of China, Professor De-hui Xin. Actually, at the beginning we met many difficulties when started our works, we had no money, staffs, proving grounds as well as real original testing data. We had to borrow money and testing ground in the countryside or farm where were far about 100km from our university for EM testing in the crop and greenstuff. In order to save money, we had to get our working place by bike instead of by bus, and sometimes lived in the farm. Under such difficult circumstances and conditions, we spent about 2 years on having the tests for tens of times in pig, chicken and other poultry, wheat, maize, cotton, eggplant, cucumber, tomato, pea, spinach and some others. We finally got a series of credible testing data and testified primarily the functions of EM-tech in increasing production & harvest and improving their qualities. EM-tech should have a wide appliance foreground potentially in agricultural fields in China.

We could say our success also underwent great pains. As was well known that the crop was in natural environment to grow, so it was sometimes suffered a lot of losses from unpredictable factors such as flood, drought, hailstone, plant diseases and insect pests and etc. Additionally, we were often denigrated by some rumors made by some companies and/or persons for the purposes of their own benefits. We still endured various pressures from our university and society for several years. For instance, some persons with prejudice or less understanding to EM-tech made rumors bespatter us, which even misled the National Security Department to question us. EM-tech was actually good for our country and our people, but ridiculously regarded as a threat to national security. Furthermore, we were ready well for holding “97 Fifth International Conference on Nature Farming” was forced to cancel, that gave us big hurts both in our bodies and spirits. The integration of academic disputes and powers made us be discriminated twice as much. Consequently the signboard of our EM-tech Lab was picked off, the funds of our science and study aided from international orgs. were moved for other purposes and we were forced to leave

our EM-tech Lab.....

However, we never lost our confidence in facing such difficulties. Through our own efforts and practice in several years, we finally testified that EM-tech was a kind of biology technique that could make human the continuous development, and the ecological agricultural technique needed in China too. So we still insisted on propagandizing EM-tech to the farmers and instructing their application publishing the related articles in magazines and journals. We never tried to stop the spread and research of EM-tech.

During the past ten years, by the efforts of the crafts and I, we have got great achievements in popularizing EM-tech appliance in China, which is as follows:

1. Set up the testing and demonstrating places in the majority of provinces and municipalities in China.

In Aug. 1994, Mr. Cheng-guang Ma, a famous correspondent and chief editor of Internal Dept. of Xihua News Agency, led on a Investigation Delegation of China Ecology Agriculture to look into the EM appliance in Japan. My wife, Madam Yong-zhen Ni was just one member of this delegation. After comeback, Mr. Cheng-guang Ma published an article with the topic of “fantastic EM-tech”. It was the first time for Chinese official publication to introduce the magical functions of EM-tech in increasing agricultural production, deodorizing dejecta, protecting environment and improving product quality to Chinese people. At the same time, also in this article introduced my wife and I had been specializing in working at EM test and research. This news evoked a huge repercussion throughout the country. From Nov. 1994 to present, we have received thousands of writings, calls and visitors interested in EM-tech appliance. In order to meet such urgent demands, we started to set up the EM testing and demonstrating grounds by stages and batches all over the country. Many testing and demonstrating grounds were founded till summer of 1997 where the test was involved in the fields of the planting, breeding and environment protection. According to our primary statistics, over 100 of universities, academies and other science and study units engaged in the EM test and research, more than 10 EM plants were established with the production capacity of 5000—10000mt annually;

The utilized times of EM reached millions of hectares in the planting, ten millions of livestock in the breeding. Accumulative turnovers reached billions RMB Yuan totally. A connected sequence of scientific research, production and appliance has come into being basically.

2. EM-tech has got a great breakthrough in some appliance research fields.

During the past ten years, in addition to go ahead for the wider tests in the appliance effect, we were also focused on the following studies:

In the planting industry, EM bacteria agent has obvious functions in protecting against plant diseases and insect pests and facilitating the growth. If you use 0.4% of this dilute EM agent to irrigate in the period of the seeding of amaranth, rape, maize, radish, pea and ect. You will find it has very distinct functions in stimulating the growth.

Under the circumstances of not using the pesticide and fertilizer completely, we could get high harvest of 16.83mt/per ha. in Huabei area of China for adopting EM organic manure; if you combine the use of EM organic manure with the irrigation of the dilute EM agent, the output of vegetable would increase by 10%-30%, highest by 135% compared to the common. Meanwhile, the products you produce are harmless, such as the quality of this kinds of wheat, maize, cucumber and other crops reach and even exceed the national green foodstuff standard, some have been sold in Beijing market and welcomed by many consumers. Furthermore, decreasing the use of the fertilizer and pesticide not only reduced the production costs, but also improved soil, prevented the environment from the pollution.

In the breeding industry, EM had the unique and magical functions of the deodorization and the reduction of the flies that made people feel novel and fresh. According to the test & study, if utilize EM-tech comprehensively, the death rate of livestock would decrease by 15%-35%, highest by 80%; production would go up by 8%-16%, highest over 20%; deodorization of the livestock pens would reach 42%-70%, the reduction of the flies over 80%. Combining the designs of the engineering with the biology measure could purify the sewerage of the breeding & aquaculture farms, and solve the problems of the long-term environmental deterioration in the breeding & aquaculture industry of China. Regarding EM-tech as the basis to utilize agriculture ecology engineering principle and technique comprehensively, we cooperated with China Green Food Corp. to study and produce the products of pork\_broiler\_eggs accorded with the national green

standard. It was the first time to produce green livestock products in China, so China Green Food Corp. specially held a press conference for these results. The cholesterol of EM eggs can reduce 82%, fat cut 73%, protein can increase by 56%. Though the price of EM eggs is 4-5 times as high as that of the common eggs, they have been presented in Beijing market for 5 years and quite popular now.

In the environment, we cooperated with Beijing Haidian District Environment Sanitation Research Institute from 1997 to 2000 to use EM-tech to deodorize the dump and reduce the flies, deodorization reached 86%, reduction of the flies got 90%. We finally have settled the problems of the long-term pollution of the dump, and then improved the environment and obtained good profits both.

In the research of EM effect mechanism, we also have done a lot, and revealed the cause of EM magical functions directly and indirectly.

In the planting industry, through analyzing the changes of physical properties (fall of unit weight of soil, increase of soil granular structure and raise of exchange capacity of soil cation), chemical properties (increase of organism, raise of quick-acting nitrogen, phosphorus and kalium), biological properties (increase of beneficial micro-animal breeding group, microbe changes), we have revealed the principium that EM-tech could improve the soil, raise the ability of crops against disease, promote nutrition transformation, thus to use EM-tech can increase the output, decrease the usage of fertilizer and pesticide, improve the quality of products.

In the breeding industry, if dispose the feeds by EM, the protein, useful changes can take place in amino acid, vitamin, activated enzyme and other physiological activated materials. For example, the contents of amino acid can have an increase of 8%-28%, as to vitamin, especially B family can obviously raise, VB1 can increase by 4 times among them. If feed the poultry on this feeds, their immunity apparatus growth can develop very well, such as index of broiler's thymus, spleen and bursa of Fabricius are obviously higher than the common poultry. The feeds also have the characteristics of quick absorb of nutrition, high transformation of feeds, and the dropping trend of PH Value being evidently lower than the common. As the acidification directly affects PH Value of alimentary canal, it can enhance activity of enzyme. It also can adjust the micro-ecological balance due to the changes of the microbe area of the alimentary canal, such as raise the contents of the lactic acid bacteria and other useful bacteria group, reduce the colon bacillus and other harmful bacteria, even to zero. Of all these results have proved EM have the effect mechanism in raising the feed usage ratio, enhancing the poultry immunity, deodorizing the dejecta, increasing the product quality, improving the environment. According to this effect mechanism, replying on micro-ecological engineering principle and Chinese resources & production characteristics, we sieved out scientific prescription and production technology, took EM effective microbe as main bacterial ingredient to create organic manure of biological activation, feeds additive of biological activation, and deodorizer. Some have applied for the patent, and promoted the popularization of EM in China.

To sum up and exchange the experience timely, transfer the information and draw on each other's merits, we assisted to translate and publish a book of "The Revolutionary Technology of Saving Earth" written by professor Tero Higa. We also compiled and published two books of "EM-tech appliance research" and "EM-tech appliance & research", published over 40 theses about EM-tech in the newspapers and periodicals.

### 3. EM-tech will impact and promote the new development of ecological agriculture in China.

In recent ten years, we worked together with technologists in agricultural and stockbreeding industry, did a great deal of EM-tech appliance test in the crop like wheat, maize, rice, potato, naked oats, soybean, pea and etc., vegetable like eggplant, capsicum, tomato, cucumber, celery, spinach, cabbage, cauliflower, rape and etc. Fruit like apple, pear, orange, peach, plum, and cotton, sugarcane, tea and mulberry; breeding like prawn, broiler, egg hen, pig, cow, ox, common carp, soft-shelled turtle, earthworm; in the environment like disposal of dump, live sewage, organic sewage and toilet, deodorization of livestock and reduction of the flies. The applicable results of EM are very similar all over the country.

In 1999, Hebei Provincial Science Commission organized an appraisal meeting for our research achievement. Mr. Qi-guo Zhao, famous Pedologist and Academician of China Academy of Sciences (CAS), Mr. Lian-fu Liu, chairman of China Green Food Council and former director of Agriculture & Reclamation Dept. of China Agricultural Ministry, and other authoritative persons in China participated this meeting. The authorities identically took for our achievements reached

“keep ahead in China, advanced level in international ”, and issued an Achievement Certificate for us.

When we held the first EM-tech training school in China, few of 34 students from different provinces believed EM-tech had such magical functions, but they all were shocked greatly by EM-tech after they visited hen house with EM feeds raised. From then on, the use of EM-tech in China has been developing unobstructively like dominoes. More and more people have liked and accepted EM though some authorities from executives and/or academe still have less understanding, even argued against EM. Exhilaratingly, with the common efforts by our crafts and us, EM-tech was used fast in the testing, demonstrating and extending in the planting, breeding and environmental protection in over 30 provinces, cities and municipalities of China, and acquired the evident productive, economic, ecological and social benefits.

Former Vice Minister of Agriculture Ministry of China expressed the support of EM testing in China when he had an interview with Professor Tero Higa, UNDP had designated EM used in Poverty Alleviation Program in north-west areas of Sichuan Province.

For the time being, EM-tech has been reported in a lot of papers, magazines, Central and Local TV stations, many theses in the appliance of EM also had been published in various academic periodicals and magazines.

In the ecological agricultural construction, EM-tech has become a kind of successful biology technique with high technology. It will play a very important role in developing Chinese agriculture and raising the level of countryside economy.

In the past ten years, EM-tech has brought the profound influence upon Chinese agriculture for its introduction, test, demonstration and popularization in China successfully. Academician of China Engineering Institute, Mr. De-hui Xi once evaluated EM highly that it would be one of three kinds of Japanese techniques in the 20th century that could produce the greatest influence in China. If keep on the popularization and appliance of EM-tech, it will make invaluable contributions towards Chinese agriculture and other industries. Compound bacteria agent was made and developed fast in recent 20 years, EM invented by Mr. Tero Higa is an outstanding one. The wide appliances of EM are a dauntless attempt and breakthrough in the theory and practice of microbiology, ecology and biology. EM has yet widened many technologists' fields of vision in the world and made the traditional microbiologists a big shock. Meanwhile, as a kind of methodology and technique EM has impelled the development of microbe compound agents in the world, and will make great benefits in the production, economy, society and ecology with its popularization and appliance. Undoubtedly, EM will leave a brilliant page in the developing history of biological technology.

#### **References (omit)**