

开创中国农业新局面 道路探索

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中国农业科技出版社

前 言

从某种意义上讲,本书是1998年笔者所著《中国农业结构变革机制研究》工作的继续。

世纪之初,中国农业正处在历史性转折时期。如果说近一个世纪以来我国农业现代化基本内容为引进与应用现代农业科学技术为主,传统农业技术与现代农业技术体系在实际生产中总体为简单拼接,两利相权取其重的话,新的历史时期将更多地体现为一种传统农业体系精华与现代农业科学技术有机的神形融合。这是全农业系统科学化的必然过程。由前农业现代化阶段进入新阶段是一种历史进程。期间既有量的积累,也有质的飞跃。世界各国因历史原因与区域特殊性,农业基础各异,现实不同。因此,某一具体历史时段各国面临的任務及其任务性质也不同。但历史要发展,农业要进步,人们最终将探索到符合自己历史需要的农业发展道路的。就中国而言,如何在现有农业基础上,陡然突破原有格局,使我国农业生产进入新阶段,是一个战略性问题。1984年我国人均粮食占有量达到396kg,这标志着温饱问题已经基本解决。农业结构即已经面临战略性调整的客观要求。经18年连续量的积累,今天的中国农业结构变革正面临质的飞跃的强烈要求。

纵观世界农业可以看出,1950年后,世界发达国家农业养殖业产值比重迅速达到50%左右,并一直保持在高位水平,新兴经济国家与地区最近30年中养殖业比重持续提高,我国1978年改革开放以来畜牧业长足发展,特

别是东南各省经济快速发展地区养殖业水平亦向高位推进。由如此丰富的农业发展史实可以推断,养殖业持续发展,向 50% 的产值比重逼近将成为我国农业结构实现战略性调整的目标。以养殖业快速增长为主要特征的农业结构调整将体现为量的扩张与结构优化两方面特征。具体而言,与今天的农业相比,未来我国农业将具有四方面特征:第一,未来农业总量将明显高于今天的水平;第二,养殖业在总规模与比重两方面将显著高于今天的水平;第三,种植业在规模总量上将高于今天的水平,种植业中饲料作物生产部分,特别是绿色饲料生产比重将突出提高,整个种植业产值比重将有所降低;第四,种养业结合的密切程度大大提高。这就是我国农业中长期结构变革的目标模式。

农业结构变革是物质生产的变革过程。我国农业结构要由现实模式转变为目标模式,就必然在种植业与养殖业中产生一系列根本变革。未来我国种植业生产的基本道路是在保证基本粮食生产供给前提下,自力更生,走精饲料、绿色饲料、秸秆饲料三结合生产道路。精饲料调整方面要注意持续增加总量,大幅度增值,将增加高能量、高蛋白质、高特种氨基酸含量的三高饲料作物生产作为基本途径。要特别重视包括玉米生产与薯类生产在内的能量物质生产;绿色饲料生产要扩大生产种质资源,增加品种,大幅度扩大面积,致力于提高单产。要突出增加饲料蛋白质生产目标,注意以人工栽培为主,草地资源利用走保护性资源利用道路;秸秆饲料要注意减量增值,科学加工调制。通过以上努力,完成具有中国特色的粮食作

物、饲料作物、经济作物三元结构体系。养殖业生产则应当走节粮型养殖业生产道路。其调整内容分饲料利用结构调整与家畜种、品种结构两方面。饲料利用结构要逐步实现猪禽生产利用精饲料与绿色饲料配合模式,草食家畜生产利用绿色饲料、秸秆饲料、精饲料模式,水产养殖利用绿色饲料与精饲料模式。家畜种与品种调整基本方向是努力增加利用绿色饲料能力强的家畜种与品种比重。具体为增加草食家畜比重,特别要注意增加奶牛与肉羊生产。增加鸭、鹅、火鸡等利用绿色饲料能力强的禽类生产比重,等等。最终建成具有我国特色的养殖业生产体系。

江河滔滔,必有源头。山峦巍巍,始于化处。由我国现行农业生产体系一跃而步入全新农业发展状态就必然要有第一步,然后是第二步,……。发展建立1亿吨鲜奶生产规模的奶产业将作为我国农业结构战略性调整的“先导产业”,从而带动整个农业系统变革。奶业之所以具有如此功能的基本理由是:第一,具有显著经济效益。1亿吨规模的奶业建设,通过与1亿吨以上规模饲草产品的草业联动,将带来农业1万亿元左右人民币的年农业生产增值,这相当于1998年农业总产值40%的增值。如此规模的经济效益,将为农业建设与农村发展注入新鲜血液,使农业生产突破现有僵持状态,启动农业结构战略性调整巨轮滚动向前。第二,具有普遍生产意义。从海南省到黑龙江,从传统农区、半农半牧区到牧区,从小型生产到规模生产,奶业的发展具有在生物学可能性、经济可行性、社会适用性。因此,一旦实施建设,就可以在农业系统

产生整体作用,推动建立新兴农业系统结构;第三,具有持久建设意义。首先,1亿吨规模的奶业建设意味着我国奶牛规模要在现有500万头基础上发展到1500万头~2000万头,年产奶量规模就是以224万~297万吨为计,尚需要30~40年时间。其次,即便是在1亿吨规模奶业建成之后,我国国民人均奶产品消费水平仅为62.5kg,仍然低于目前的世界平均水平。届时仍将具有发展必要性。这奠定了奶业作为国民经济战略性产业的基础。第四,除去以上意义之外,奶业的兴起还具有以下意义:这将使我国奶业总规模位居世界第一或第二水平,一举摘掉长期以来我国奶业落后帽子,从根本上改善国民膳食营养不良状况,增强国民体质,优化农业资源利用结构,缓减生态环境压力,进一步提高农业系统效率,推动实现农业现代化。

我国农业系统素以多样性著称,这在新的历史发展时期将依然十分重要。奶业启动必然导致草业联动,它们与各地原有系统经过有机嵌合,加之奶业经济效益、社会效益、生态效益拉动与促进,必将把我国农业带入欣欣向荣的发展局面。从这一意义上讲,奶产业的兴起犹如一马当先,由此将引发农业领域各业奋发向上、万马奔腾的发展局面,推动农业、农村实现现代化,推动农业历史车轮滚滚向前。

以上认识归结起来就是:农牧结合将成为我国未来中长期农业结构战略性调整的主旋律,奶业建设将成为“先锋产业”,绿色饲料产业将异军突起。

本书收录了作者1997年以来的近5年中先后参加黄

淮海平原农牧结合主导工程产业化生产技术支持体系研究(1996~2000),21世纪前期农村科学技术发展与对策研究(1997~1998),20世纪中国自然科学发展回顾——《农学卷》,农业科技发展纲要“区域农业专题”(1999),南阳市农业结构调整发展规划(1999),青刈黑麦、紫花苜蓿产业化生产技术集成试验示范(2000~)等项目工作。多次参加学术会议完成的研究报告与论文34篇。其中除14篇已经发表外,其余20篇均为第一次发表。全书分为五篇,分别为农业现代化,植物业建设,动物业建设,农牧结合建设与农业环境建设。作者热切希望读者提出宝贵意见,共同研究。

作者在研究过程中得到了国内外众多农业科学家、农业管理工作、农民群众的支持,谨表示最诚挚的谢意。本书在出版过程中,程霞同志曾参与稿件审校,作了大量工作,在此表示感谢。

胡跃高

2001年8月5日于绿苑

Preface

This book is the continuation of *Research On The Mechanism Of Agricultural Structure Transforming In China*, which was published in 1998.

China agriculture is being in a historical transforming period at the primary part of 21st century. Generally speaking, the main content was to introduce and utilize modern agricultural science and technology, and pieced together traditional agricultural system and modern agricultural system, tried to benefit social system in China agriculture modernization in last century. And it will be more fuse essence of China traditional agriculture and modern science and technology in nature in the future. This is the inevitable process of agricultural system scientifically progress. It is the historical progress process from pre-modern agricultural period to the new phase. There is not only the accumulating of quantity of process, but leaping in nature during this time. There are differences in agriculture in the world for historical reason and regional specialty, as well as fundamental difference. Thus, different country faces different task and the nature of the task in special period. However, history has been developing forever, we believe, mankind will have sought the developing way required by history

itself in agriculture finally. Mentioned to China agriculture, it is a strategic problem to find a way out of a stalemate in today's agriculture completely, and enter a new period in agriculture development. The possession quantity of cereal per capita reached 396kg. It is a important signal that means China have solved food problem. And we faced rejecting the strategic task of agricultural structure since then in nature. But we have not solved the problem until today in a whole point. Therefore, China agricultural structure is faced a strong requirement to leap to a new phase through 18 years accumulation of different problem continually.

Scanning the value ratio of animal industry in whole value of agriculture in developed countries reached around 50% rapidly since 1950, and it has been kept much more stable in a high level for recent 50 years, considering the fact of animal industry developed continually in new economic countries and regions in recent 30 years, and recalling the huge progress in animal husbandry since "the open policy" in 1978 in China, especially in south eastern part of China, we can make a conclusion; the animal industry will further develop, and reach for around 50% value ratio of total agricultural value. It will become a major melody in symphony of strategic rejecting agricultural structure in China. Chinese population is still increasing in a

relatively huge amount in future. Thus, the agriculture structure adjusting, that is in a main characteristic of rapid development of animal industry, will be embody both increasing quantity and improving structure. To analyses concretely, future agriculture in China will possess 4 characteristics compare with today: (1) Future total output will be much more than today's level in agriculture system; (2) The whole production and the value ratio of animal husbandry will be much more than today; (3) The whole scale of plant production will increase clearly, while feed crop production, especially forage production will increase remarkably in crop production part, and the value ratio of plant production will continually decrease at the same time; (4) The degree of cooperating relationship between animal industry and plant production will be stronger than before. They are forming a target model of reforming agriculture structure in China in a middle and long term.

Agriculture is a true industry. Therefore, it will be a material change process in transforming agricultural structure. In order to realize target model from present model of agricultural structure in China, an essential improvement will be happened in both plant production system and animal industry.

The basic way to solve the feed problem in plant production system is self-sufficient, and combining with

concentrate feed production, forage production, and as well as crop straw production. In detail, more attention should be paid to increase the total production and improve the quality at the same time of concentrate feed, especially in increasing the production of feed energy, protein, and special amino acid, like lysine. Therefore, maize, sweet potato, and potato production should be continually put in a important position; Forage production will be expressed to add crop species and varieties, increase the production area, and try to raise the productivity. On other hand, forage protein should also be paid more attention, while the artificial forage production and the legume forage crop need to be given special concerning. The nature grassland resource in China will need to be utilized properly for ecological conservation purpose; mentioned to roughage-crop straw, the major direction will be decrease quantity and increase quality, and enhance processing technology progress of roughage. There will be forming a three crop type system with Chinese special characteristics in cropping system finally, concentrate feed crop, forage crop and economic crop through all the work mentioned above. On the other hand, Animal industry production should follow the way of concentrate feed saving. There are 2 aspects of concrete content, including to regulate feed utilization formula and adjust animal species and

variety structure. First of it, we will form a formula of concentrate feed combining with forage for swine and poultry production, a formula of forage plus crop straw and concentrate feed for herbivore, and forage plus concentrate for fishery. Second, the adjusting direction will be try to increase herbivore ratio in whole animal industry for their more strong utilization ability of forage. For example, to increase herbivore ratio as more as possible, especially to increase dairy and sheep or goat production at present. We need also to increase duck, eel, and turkey production, etc, and form a animal industry system with China special characteristic.

There always is a origin source for any river, and so do mountain. So that there will be first step certainly and then second step....., when China agriculture leap to totally new state from present status. Developing and constructing an 100,000,000 ton fresh milk scale dairy industry will be taken a leading industry in strategic adjusting of China agricultural structure. And whole agricultural system will enter new stage influenced by dairy industry thriving.

What is reason of dairy industry possessing so much function: Firstly, economic efficiency is quite well. 100,000,000 ton fresh milk scale dairy industry plus 100,000,000 ton commercial hay scale forage industry

led by former will value 1, trillion yuan RMB additional value above present level, that means 40% value increase of total agricultural income in 1998. So much economy efficiency will be like to input huge fresh blood into the agricultural construction and countryside development, support to break the state at present, and initiate the giant wheel of strategic adjusting of agricultural structure to move forward. Secondly, it could be adapted in most area of China. It has been proved that dairy industry production is very efficiency in social, economy and ecology from south to north like Hainan and Heilongjiang, from east to west such as Beijing Xinjiang, Ningxia, in different production style like traditional agricultural area, nomadic herding area, the marginal area between last two area, from small household to large farm, etc. Therefore, once to realize the construction, whole agricultural system will be influenced, and new structure will be formed and set up at the same time; Thirdly, It is with a long construction significance. First of all, the target of 100,000,000 ton fresh milk means to enlarge dairy herds scale greatly, from 5 million at present increasing to 15~20 million finally, raise a lot of product of milk like 224~297 million ton each year. It needed to be kept developing continually for 30~40 years. And second even then products will have reached 10,000 million ton scale,

every one Chinese will consume 62.5kg each year, which is lower than average world level at present. That means still have enough room to develop during that time. So that dairy industry is a strategic industry in agriculture structure construction; 4th, Apart from above description, dairy industry have following special significance; to rank on the top part position of total milk products in the world; to significantly improve Chinese poor diet with low animal product, so as to strong Chinese people's health; to use agricultural resource more suitable, and then relax today's ecological pressure in China; to further increase the efficiency of agricultural system, and enhance the realization of China agricultural modernization, etc.

It is very famous that the diversity of agriculture is very rich in history in China. It is even more important in today's development. The initiation of dairy industry will certainly lead a of joining development of prataculture. They together will fuse local agricultural system, plus the strong force of their giant economy, social and ecological efficiency, will bring China agricultural enter a thriving state. From this point to speaking, dairy industry will be just like a leading horse, its' marching forward will bring all branch working hard for the prosperity of agriculture system, forming a development state of thousands of horse

running forward, enhance to realize China agricultural modernization.

As a summary of above, a conclusion is formed as follows. The harmonizing development between plant industry and animal industry will be a main melody of the symphony of strategic adjusting of agricultural structure in a middle and long term in China; Dairy industry will become a leading industry in future agricultural leaping in China; Forage production will be like a black horse emerging in the race of agricultural system development.

5 years research work was mainly collected in this book since 1997. It is enclosed "Research on the supporting technology system of industrialization of harmonizing development between plant production and animal industry" (1996 ~ 2000), "On the science and technology development in countryside in primary part of 21 century "(1997 ~ 1998), "Recall the development of nature science in China in 20 century (agriculture volume)" (1998 ~ 2001), "The outline of agricultural science and technology development-regional agricultural development program " (1999), " The agricultural development design of Nanyang city " (1999), "The trial and demonstration of technology integrated of forage rye and alfalfa industry "(2000 ~), etc. There are 34 papers and reports collected in this

book. 14 papers has been published among them, others are first time to be published. The order is ranked 5 parts. Part 1. Agricultural modernization; Part 2. Plant industry construction; Part 3. Animal industry construction; Part 4. The harmonizing development between plant industry and animal industry; Part 5. Agricultural environment construction. Writer really hope reader find problem and discuss, and do research work together.

A lot of help from agricultural scientists, agricultural manager, and farmers both inner and out of China, here I would like to express my truly thanks to all of them. Miss Cheng Xia did much work on this book during compiling process of the book, a lot of grateful for her help.

Yuegao Hu
Aug. 5, 2001

目 录

第一篇 农业现代化

关于将 1 亿吨鲜奶产量作为我国奶业中长期建设目标的建议 …	
.....	(3)
20 世纪中国农业现代化基本历程	(16)
我国农业若干基本战略问题认识	(34)
中西方农业体系比较及其持续发展展望	(41)
加入 WTO 后我国中长期农业发展对策	(49)
我国农牧林结构调整趋势与基本建设方针	(56)
论农业创新发展	(63)
青年人要准备担当 21 世纪的重任	(65)

第二篇 植物业建设

我国未来中长期耕作制度变革动因与学科布局	(73)
论我国种植业三元结构建设基本战略问题	(83)
关于大力建设草业,推动我国农业结构调整的建议	(91)
我国草地区域科技需求与发展方向	(96)
黄淮海区青刈黑麦栽培及发展前景	(113)
90 年代青刈黑麦栽培生产研究进展	(118)
论我国绿色饲料产业建设基本战略问题	(126)
论绿色饲料产业建设的动物学基础	(136)
当前我国苜蓿产业形势与建设任务	(148)
世界绿色饲料产业科技发展趋势与我国绿色饲料产业 建设战略认识	(155)

论黄淮海区青刈黑麦产业化生产的基础·····	(164)
------------------------	-------

第三篇 动物业建设

再评“秸秆畜牧业论”·····	(175)
农户饲养条件下添加紫花苜蓿干草对奶牛产奶性能的影响 ·····	(183)
21 世纪初中国畜牧业科学技术发展战略研究 ·····	(188)
畜牧业优质高产高效技术·····	(194)
南阳市畜牧业生产结构调整规划研究·····	(199)
要将奶牛业列入我国重大农业基础建设计划·····	(221)
关于建设沧州市 1000 万只肉羊主导产业的建议报告 ·····	(226)
沧州市优质肉羊产业建设若干认识·····	(233)
增强沧州市优质肉羊产业竞争实力的技术措施·····	(236)
河南省豫东地区蛋鸭产业化生产情况的调查报告·····	(244)

第四篇 农牧结合

论农牧结合规律及其对当代我国农业的作用趋向·····	(259)
农牧结合技术体系发展趋势·····	(266)
论 21 世纪初中国草业与奶业协调建设战略 ·····	(279)

第五篇 农业环境建设

认真治理农业环境污染·····	(287)
中华民族应着手迎战水资源危机·····	(290)