Introduction

Since China's historic economic reforms in December of 1978, the absolute gross value of China's annual agricultural output has increased more than four and one half times (Figure 1). Over the same period, per capita rural incomes have increased five fold, while farm incomes in some coastal areas have increased ten-fold (China Statistical Abstract 2004 107). At the same time, grain output increased only 41.3%, with production increasing from 304.77 million metric tons in 1978 to 430.70 million metric tons in 2003 (China Statistical Abstract 2004 116). Grain production, while growing, is growing at a significantly slower pace than the remainder of the agricultural sector.

Based on official published statistics and field surveys of fruit and vegetable farmers, government officials, and managers of wholesale markets conducted in June and July of 2004, this article has two goals. Firstly, it reviews the post-1949 early communist era history of China's agricultural policy. Secondly, it summarizes a number of contemporary issues in the agricultural sector including the stagnating domestic grain production, and the increasing importance of non-grain products to the rural economy. Rapid adoption of new crops and technologies as

![Interior picture of a Carrefour Superstore in Qingdao, Shandong Province. Carrefour SA (France) currently has 53 “hyperstores” in China. This store was significantly larger than a standard WalMart in the U.S. but has a similar layout and purpose. Walmart now has 48 “superstores” in China with plans to open another 42 stores by the end of 2006.](image1)

![Orchid Greenhouse near Pingdu City, Shandong Province (85 km. north of Qingdao City). This cooperative orchid farm operated six greenhouses similar in size to the one pictured. Orchids from this business were exported largely to Japan and South Korea.](image2)
well as access to new markets has transformed China's agricultural sector, one farm at a time. Domestic markets ranging from classic "open air" vendors to lavish food displays at prestigious supermarkets or Wal-Mart offer Chinese consumers more products of better quality than at any time in China's long history. As importantly, there has been an explosion of firms exporting agricultural products including fruit juice, fruits, vegetables, seafood, processed meats, essential oils, tea, and traditional medicine plants. China's rapidly increasing exports have challenged parallel producers in the United States and the European Union while threatening domestic producers in South Korea, Japan, Australia and the nations of Southeast Asia.

Given that in 1986, while a student at Nanjing Agricultural University, I still received ration coupons that entitled me to 1 kg. of pork and .5 kg. of cooking oil per month, China's emergence as a major global exporter of agricultural products seems to me a spectacular turnabout worthy of attention. Prior to a discussion of current trends and important products and institutions, a summary of China's post 1949 agricultural history and trends will place the remarkable present in appropriate context.

A Brief History of Communal Agriculture

Throughout most of China's long history, farmers living in distinct...
agricultural regions had very different experiences and histories. After 1949, however, the great "experiments" of Mao Zedong forged the experiences of China's farmers into common forms, shaped and tempered by his unique vision of Chinese communism. Until Mao, the Uygur nomad from Xinjiang Province and the small holder producing vegetables in suburban Shanghai had virtually nothing in common. After his incredible efforts directed at the radical reorganization of agriculture, these very different peoples all became members of China's great rural proletariat. In the afterglow of the 1949 Communist Revolution, Mao Zedong and his agricultural advisors understood that immediate land reform was critical to any further consolidation of power (Teiwes and Sun 1993). The revolution was rural-based and agrarian and needed the support of the farmers to survive in the early years. Land reform, agricultural reorganization and the eradication of rural poverty and servitude were important tenets of the revolutionary movement, leading to both the victory and the consolidation of power by the Chinese Communist Party (CCP). As the communist armies and cadres (political and administrative functionaries who are communist party members) extended their control over various areas of China in the late 1940s, one of the first policies implemented was the confiscation of land from landlords and the redistribution of this land to poor peasants. While short lived, land reform was quite popular, and the leaders of the CCP, including Mao Zedong, became the heroes of rural China. Riding this wave of popularity, the CCP quickly promoted collective farms by creating demonstration farms and political propaganda. In 1958, during a Mao-inspired mass movement known as the "Great Leap Forward", the collectives were merged into even larger units that came to be called communes (gongshe). Any understanding of China's current agricultural sector must begin with an appreciation of the underlying troubles of the 1950s, 1960s, and early 1970s. For a quarter century, until the economic reforms of 1978-1979, the communes and their sub-units, the production brigades (shengchan dui) and the lower-level production teams (shengchan dui) were the fundamental political, social, and economic units of rural China.

The formation of these units represented a victory of sorts for the more leftist advisors to Mao Zedong, with implications reaching far from the farm. Deng Zhihui, champion for a slower pace of reform, had been a chief advisor to Mao on agricultural reform up until this time. Deng Zhihui was ousted as Mao was convinced by others that production could be radically increased if the masses could be "mobilized" over a matter of years rather than decades (Teiwes and Sun 1993). Along with massive education campaigns and rallies, reluctant peasants were "re-educated" to better perceive that working for the greater good of society was the ultimate goal of their lives. Initially, all private plots and all privately owned livestock were taken from farm families and became the property of the collective. Many of the old functions of village government were integrated with the administration of the communes—ostensibly to make the entire system more seamless and efficient. Chinese rural society, the product of millennia, was transformed in months with heartbreaking results. Most scholars, in and out of China, now agree that the pace of change was too great, too radical, for the support of the peasants to be maintained. Production and morale fell abruptly amidst the confusion that largely came from a lack of clear policy directives from Beijing. If the "Great Leap Forward" campaign (1958-1960) was too extreme and flawed by bureaucratic bungling, the end came with help from a series of natural disasters in 1959-60. Local cadres were afraid to report their failure to increase production, and took to building "Potemkin" silos to show visiting officials their "success" at increasing output. Sadly, the silos were often empty. When commune cadres were ordered to distribute grain in 1959 and 1960, there was nothing to give away. After a period of internal debate and conflict within the Communist Party, there was a relaxation of controls over "household plots" controlled by each family. Farm output and food grain production finally rose to pre-Great Leap levels by the mid-1960s. Unfortunately, before the folly of the "Great Leap" ended, more than twenty million lives were lost—mostly in rural areas. At their peak, commune farms incorporated 90% of China's arable land. In 1973, there were approximately 50,000 communes in China. This number had decreased from around 74,000 in 1963, but this was due to an increase in the scale and size of the average commune (American Plant Studies Delegation 1975). Communes ranged in size from 25 to 130 square kilometers and averaged 15,000 members. The commune system was a fundamental aspect of Mao Zedong's vision of a strong and locally self-reliant rural China, which would in turn serve as the foundation for the modernization of the entire nation. The commune system could not be more different than the freewheeling capitalism and technical sophistication that are hallmarks of the farm sector in many developed areas of China today.

The peasants initially supported Mao Zedong's egalitarian vision of a classless rural China organized under the commune system, but their enthusiasm faded over time. The decades of hardship and deprivation, including the tragic "Great Leap", destroyed the collective dreams of prosperity couched in equity held by most rural Chinese. In the mid 1980s, one farmer from Haimen County in Jiangsu Province summed up the Commune Era to me in this way: "Under Mao, we were equal—but only equally poor". The commune era was not merely a failure because of production and distribution issues. Most people in rural areas did not like living under the commune system. The amount of social control over each person's activities by the many xiao ganbu or "little cadres" is frequently cited as one of the worst features of the collective farming system, along with a lack of privacy.

Another frequent criticism was that there was often very little work to do, thanks to bureaucratic bungling and a scarcity of arable land. Stories of how poor scheduling and organization reduced efficiency and production abound. The memory of one farmer sums this up nicely. Over a beer in the late 1990s, he recalled days in his youth where 15-20 workers stood around a half-acre of paddy that they were supposed to weed, smoking different types of leaves for five or six hours to see which plants tasted the most like the tobacco. The actual weeding took 10-15 minutes. They smoked leaves until they ran out of matches. On returning home eight hours later, they told the production team leader that they had finished the field. Nonetheless, the entire group was sent back to the same field the next day to complete the task. This time they had no matches. After a while you don't ask any questions, you go where you are told to go and you wait until you are told to come back.

There were important successes during the commune era, notably in farm mechanization, the expansion of irrigation systems, organic agriculture research, ...
multiple cropping systems, and plant breeding programs (Muldavin 1998). However, these successes were too few, spaced too far apart, and touched the lives of too few people too lightly.

**The Responsibility System (Baogan Daohu) Transforms Agriculture**

Of the many rural reforms that developed from the Third Plenum of the 11th Party Congress of December 1978, the most important was the implementation of the “Responsibility System” which returned land to the control of individual families. Although the actual amount of land available to each household under the Baogan Daohu system varies by location, a rule of thumb is that each household will have around 5 to 10 mu (.33 to .66 ha). This sea change in policy best represents the radically different model of agricultural production championed by China’s new leader, Deng Xiaoping. The “Responsibility System” represented only the first stage of reform for the agricultural sector and showed that the Chinese Communist Party was taking a markedly different approach from that of Mao Zedong. The Responsibility System reforms were not implemented immediately in all parts of China. Some provinces such as Sichuan and Jiangsu began reforms earlier, while poorer provinces such as Shaanxi, Gansu, and Ningxia Hui Autonomous Region were later. By the mid-1980s, almost all of rural China was operating under the new system.

The “Responsibility System” re-established the household as the basic unit of farm production in rural China (Liu and Wu 1986). Based on negotiations, each farmer contracts a specific amount of land from the village or township authorities. Initially, contracts were allowed for only a limited number of years, often up to seven. To encourage investments in land improvement, the term of contract now typically extends to twenty or even thirty years. Farmers can also sub-contract land from other farmers and negotiate the terms of these exchanges privately. At present, farmers have virtually complete control over crop selection, crop management, and sales decisions. The policy shift was also significant in that from the outset, China’s leaders accepted that there would be clear “winners and losers”, both in terms of regions and individuals, as the new policies expanded and took hold. After December of 1978, the mantra was “to each according to their ability” which is very different from Mao’s ironic paean that “each would receive according to their needs” (Du 1986 11). Despite the very cautious beginnings of the rural reforms in 1978 (summed up as “walking barefoot across a fast-moving stream with a rocky bottom”), virtually all aspects of China’s rural economy have dramatically changed in the last 25 years.

Within a decade of their inception, reform programs such as the “Responsibility System” revitalized China’s moribund rural economy and rekindled the great spirit of the Chinese people. The mean annual growth rate of China’s Gross Domestic Product (GDP) has been over eight percent since the reforms began in 1978 (Brown 1997; Lardy 2002; Zhu 1997).

Of course, there are problems with the current system that China’s rural planners must correct (Brugger and Regular 1994; Kojima 1993; Lardy 2002; Veeck 1991). The constant redistribution of small plots limits efforts to effectively mechanize agriculture. Irrigation systems in some locations, once maintained by commune workers, have fallen into disrepair since the farmers now think of these as public property and are reluctant to devote personal effort to their maintenance. Inorganic fertilizers are often over-used, as are farm chemicals—leading to water pollution, ground pollution, food contamination, and many cases of food poisoning. The “green food” (organic) movement emerging among urban consumers is one response to these problems, providing yet another new opportunity to farm households.

There are new problems with labor exploitation that have emerged after the reforms that should also cause concern. In affluent areas along the coasts or the peri-urban areas of major cities, “farm” households employed in lucrative factory work “import” labor from poorer provinces for seasonal work on their land. Typically, these farm migrants manage the entire crop but receive only some percentage of the profits of sale and/ or some portion of the crop. Agreements are often informal and can be terminated abruptly for minor reasons or petty disputes. The lives of these temporary farm laborers can be quite grim and these “visiting workers”, usually from poorer provinces or regions, have few legal protections. When asked about the precarious lives of these new farm migrants, most easterners simply say their lives are better off—even as they are—they if they were back in the villages of west and southwest China. Capitalism certainly trim the sails of an economy, but additional social ills ultimately emerge in the wake. Recently, a group of citizens in Chongqing (Sichuan) formed an association to help protect the rights of migrants in that city and its suburbs. China is changing and often times these important social changes are overlooked.

**Grain Production in Contemporary China**

Grain supply has been a politically charged topic for China, domestically and internationally, for more than five decades. Initially, information on annual grain production and grain stocks constituted closely held State secrets. Reform in the 1980s made public these concerns and illuminated underlying policy debates about agricultural reform. Again, there were improvements in grain supply, but they paled in comparison with the production of non-grain crops for domestic and international markets. National grain production in 1952 was 163.92 million metric tons (mmt). This rose by 118.81 million metric tons to 282.73 mmt in 1977. During these 25 years of the Commune era, annual gross grain production grew by 2.8% (Figure 2) (Kueh 1995 310-311). For the same time period, China’s total population grew by 2.7% (China Statistical Yearbook 1997 69). Prior to the adoption of reforms in the agricultural sector, food production was just barely keeping up with population growth.

In sharp contrast, national grain output on the eve of the reforms in 1978 was just over 304 million metric tons. This grain output peaked twenty years later at over 457.06 million metric tons in 2003 in the face of cheaper imports from the U.S., Canada, Brazil, Mexico, and other nations that lowered domestic prices for grain (China Statistical Yearbook 2003 158). At the same time, area sown to grains declined considerably since the peak years in the 1950s (Brown 1997 84-88, Zhu 1997 109-110). Increased output can be credited to increased yields coming from improvements in varieties, better field management, greater inputs of farm chemicals including inorganic fertilizers, better irrigation systems, and field plastic for weed control and moisture retention in the north (Figure 3). The liberal use of subsidies for inputs and direct transfer payments to farmers willing to produce grain for sale have also been important in maintaining grain stocks (Rozelle, Veeck, and H uang 1997; Rozelle and Sumner 2003). Aver age grain yields rose from 2,783 kg/ha in 1979 to a record 4,953 kg/ha in 1998. In
2002, mean yield was 4.885 kg/ha (China Statistical Yearbook 2000 386; China Agricultural Yearbook 2003 159). Despite a significant reduction in the area sown to grain, for the years from 1977 to 1999, the mean annual growth rate for total grain production was 3.46% while population continued to grow at 2.7%.

While recognizing these steady improvements, in the mid 1990s critics pointed out that China was no longer self-sufficient in grain, and argued that a growing dependence on imports signaled a new challenge for the global grain trade (Brown 1995, Smil 1993). Lester Brown's now-famous book Who Will Feed China? rallied an unorthodox consortium of China watchers, ecologists, doomsayers, and critics of the World Trade Organization (WTO) and global trade who feared massive importation of grain by China would spiral the cost of wheat and corn beyond the outstretched hands of the world's poor. History has proven these fears to be ill-founded, but the publicity associated with Brown's book actually helped frame China's domestic debate about grain self-sufficiency. Conservatives in China used the popularity of Brown's thesis to force a debate that continues to the present. The question is not "Can China Feed Itself?" but "Should China Feed Itself?" It is interesting that while many nations with large populations including Brazil, Egypt, Japan and Korea routinely import upwards of thirty percent of domestic foodstuffs, speculation on the effects of China's much larger potential imports placed the country in another category of concern. Such views presuppose grain production should be a primary goal of China's agricultural planners, and that success in other areas is somehow secondary to this goal.

However, like Mark Twain's first death, the anticipated "crisis" associated with China's grain shortfall was grossly exaggerated. In fact, from 1994-1996, China averaged 98% self-sufficiency in grains. Forecasts by Huang suggest in 2005 China will still continue to meet from 88 to 96% of domestic demand, figures that he predicts will hold through 2010 (Huang et al 2003 73). In 2002, China was actually a net exporter of wheat, much to the chagrin of American farmers (Lohmar 2004). Regardless of annual fluctuations in production and imports, most researchers believe that one way or another China will meet the lion's share of domestic grain demand at least for the coming two decades. Past projections have often been quite incorrect, and the long-term import trend for China is very unclear.

Unfortunately, for the last decade, low grain prices on the international market depressed both China's domestic grain prices and farmers' enthusiasm for growing grain. Herein lies the root of the dilemma. China's agricultural sector has never been more productive in terms of gross value, but grains are clearly the crops of last resort. If farmers have a comparative advantage in any other crop or activity, grain production will stagnate until there are sound economic reasons for shifting land, labor, and capital back to grain production. This is a source of constant frustration to agricultural planners and extension personnel in China, as elsewhere in the world. Charged with limiting the decline in area sown to grain and keeping grain supplies up, these officials get little support from local governments that gain greater revenues from the production and processing of higher value crops.

In response to these concerns and to stimulate grain production throughout the last decade, the Beijing government stepped up the subsidies paid to farmers growing grain, and required a marked reduction in local land taxes and usufuct fees on land (Zhao 2004). The types of subsidies and other payments used by local and provincial governments vary considerably from place to place. Even with fairly consistent payments to grain farmers in many areas, increases in production last only as long as the incentives. Considered the most ambitious program to date, a new policy was instituted in May of 2004 that was projected to cost 150 billion yuan ($18 billion) to "fire up the zeal of farmers for better grain production" (Zhao 2004). In addition to subsidies and a propaganda campaign, monies will be spent to repair and update rural infrastructure and irrigation networks. These actions will undoubtedly help, but represent a very significant drain on China's domestic budget while offering only a temporary "fix".

Under the responsibility system, China's farmers are producing record
amounts (and value) of food and other farm products. As China's farmers in the post-WTO era seek comparative advantage, they arrive at the same conclusion as all of the world's other small-scale farmers. Lacking the extensive land of the American, Argentine, Mexican, Canadian, or Brazilian grain or soybean farmer, they must intensify production to survive, producing products that require a large amount of labor. From the mid-1990s onward—even before China was admitted to WTO membership—the anticipated impact of cheap WTO-justified grain imports loomed heavily over China's small grain farmers. They sought alternatives based on local conditions. As a consequence, the production of labor-intensive crops such as fruit, vegetables, meat, and aquacultural products skyrocketed in China in the past decade (Figures 4-6). Prices for many of these products remain mercurial as one might imagine with so many farmers entering and exiting the market from year to year. However, as the domestic markets for any given product grow saturated, entrepreneurs emerge to start export firms and ship these products to all corners of the world. Of course, these crops can be potentially more profitable but also more risky to produce as well as prices fluctuate dramatically throughout the season. More capital is required to raise high quality mint than corn or rice, and more is lost with a poor crop. Yet, four or five years of profit from grain can be made in a single year with mint (and dozens of similar crops). In the face of stagnant grain prices and a doubtful future, China's farmers are often willing to gamble on non-grain crops, hoping for good weather, high prices, and a bit of luck. Amidst all of these lives, supply and demand convenes, and ultimately reaches market equilibrium. How ironic that this most pristine, perhaps mostDickinsonian form of capitalism would occur for the fruit and vegetable growers living in a communist country. The many protections available to U.S. or EU farmers by way of crop insurance, disaster relief, and the myriad payments available via farm programs in these advanced nations, are not available to China's small farmers.

The transformation of China's agricultural sector did not come about simply because China's farmers shifted their labor and resources from grain production into more labor-intensive crops. Accompanying this shift was a virtual production revolution that included new farm equipment, greater post-harvest processing resulting in more value-added...
products, new forms of ownership, radically different sales and marketing channels, and greater exports of more products to more nations.

Technological innovations included the development of new varieties and new products (“baby” vegetables, introduction of Bell Peppers, Prickly Pear cactus), as well as far more sophisticated greenhouses, hydroponic production technology, post-harvest processing and packaging equipment, and a range of more efficient irrigation systems. Increasingly sophisticated greenhouses may be fully hydroponic with remote sensors to control temperature, humidity, and even irrigation water temperature. Many are heated with propane, but the old methane caps have been resurrected for this as well. New, more efficient irrigation systems including drip and center-pivot are commonly used throughout the country. As these new technologies diffuse through the farm sector, imported equipment is slowly being replaced with locally manufactured equipment. This provides more off-farm jobs while also creating more part-time farmers with more money to spend on new production technologies for new crops—but also more on home furnishings and food. As in the United States one hundred and fifty years ago, China’s agricultural sector is providing both consumer demand and low-cost labor allowing for the emergence of a new vibrant rural manufacturing sector.

In addition to the adoption of often world-standard production technology, new forms of ownership emerged with the increasing number of local factories and firms processing and marketing these new crops. Once, it was nearly impossible for farm families to get loans beyond the value of next year’s crop. What a different a little profit makes! In the past decade, both foreign and domestic capital has flowed to many corporate or collective farms and

Two scenes of the largest wholesale produce market in Qingdao City. This market is dedicated to fruit, vegetables and seafood, with seafood being the most profitable. The market has 10,000 square meters of covered space, and each day 60,000 customers (wholesale and retail) visit the market. (June 2005, Gregory Veeck)
factories to process these products. Factories owned by true voluntary collectives or local governments (TVEs or township, village enterprises) are most common, but there are privately owned firms as well as joint ventures and fully owned foreign firms as well. There are considerable profits to be made in food products, especially those products that can be exported to Japan, South Korea, the United States or the nations of Southeast Asia. Dried, canned, and fresh mushrooms and fungi, flash-frozen vegetables, pepper and garlic sauces, honey, boxed pasteurized fruit juices, juice concentrate, frozen shrimp, prawns, and crayfish, soy sauce, black vinegar, and tea are just a few of the products from China found in almost any nation of East and Southeast Asia. Chinese exports to the US of honey, crayfish, apple juice, and garlic have all lowered the US domestic prices—reducing retail prices while angering US farmers. Trade disputes aside, the flexibility of Chinese farmers to identify new potential crops and products and emerge as important exporters of these products is truly remarkable, especially given their history under the commune system.

The production of virtually all higher value non-grain products such as fruit, vegetables, melon, livestock, and aquatic products have all grown at 9% per year or more for twenty-six years (Murphy 2003, World Bank 1997) (Figures 4-6). All of these fruits, vegetables, meats, and fish add up to a much better diet with significant health dividends for all Chinese citizens, as well as potentially better opportunities for farmers. Chinese people have a more reliable supply of high quality food and more choices than at any time in history.

There are many more benefits from China's more diverse and sophisticated agricultural sector including: 1) better jobs with higher pay as more products are processed or semi-processed locally in often collectively owned township or village enterprises, 2) greater tax revenues for local education and public works, 3) foreign capital, technology, and business expertise stemming from joint ventures aiding local communities and improving local businesses; 4) and finally as locally-produced farm inputs grow more sophisticated, labor grows more skilled—creating more opportunities for jobs.

For individual farmers, there are also certain dangers in shifting to new crops. As farmers move away from grain, there is more risk. Prices for non-grain crops shift daily and markets are more distant. Not only is transporting vegetables or fruit to market more expensive, but farmers must select the best place for sales or face dramatic price drops. Given a transport system burdened by bottlenecks and cronyism, long-distance sales of fruits, vegetables, or flowers certainly have the potential for greater spoilage if one ends up at the wrong market or cannot find affordable transport.

Once arriving at the wholesale market to sell the products, there is a very good chance that the fruits or vegetables will be checked for pesticide and fungicide residues and, sometimes, even salmonella. In all large eastern cities such as Beijing, Shanghai, Nanjing, Shijiazhuang, and Qingdao, every truck of vegetables is tested for chemical residues and some bacteria. Produce that fails is confiscated and destroyed. The turnaround for these tests for each truck is not to exceed 24 hours and is usually completed within 2-3 hours. Smaller cities have not reached this level of sophistication, but China's large cities have always been the vanguard of change. By comparison, most farm produce sold at farmers markets in the United States is never tested.

The expansion of potential markets requires better information on markets and prices. As a consequence, the amount of information available to China's farmers and extension leaders has risen dramatically due to the publication of price information in traditional print media, radio, and television, but also on the World Wide Web. Many of these wholesale markets have their own websites for the convenience of sellers and buyers (see Made-in-China.com for an interesting example). Farmers living in proximity to large cities or within the almost continuous band of prosperous cities and towns of the coastal provinces have the highest rural incomes while more remote, less commercialized, interior provinces report the lowest incomes (Figure 7). In this sense, the inequity of space plays out in yet another way in the contemporary Chinese landscape.

Future Issues

For China's farmers, the last 25 years has been a remarkable journey, transforming many from commune worker to entrepreneur to price setter in the global marketplace. There is every reason to assume China's agricultural sector will continue as it has for the past quarter century. Higher value crops and products that allow greater value-added via processing will dominate both land use and regional investment in those areas that can produce them profitably. Baring any new draconian regulations, grain will be produced just where von Thunen Chemical Testing Center near the organic produce section of the Carrefour “Hyperstore” in Qingdao City, Shandong. The sign promises a refund of twice the value of the product if chemical residues are found after customers administer the test by rubbing a test strip across the vegetables they wish to purchase (Qingdao, Shandong, Juky 2005, Gregory Veeck)
mobilized over WTO concerns, are better at the same time, farmers in many nations, will come with greater international trade. are typically smaller and less able to weather the dramatic price fluctuations that vegetables are sure to be worse. Producers over the growing trade in flower, fruits and trade is often fractious, emerging disputes every nation. While the international grain more risky, and so more contentious in Korea this year were 315% of the cost of the vegetables. Tariffs on garlic placed by South Korea and Japanese rejection, on producers. Examples in 2003-04 include domestic fruit, flower, and vegetable exports to other countries. Exports stabilize for the domestic producer. Trade disputes related to agricultural exports will increase as other nations come under pressure to protect domestic fruit, flower, and vegetable producers. Examples in 2003-04 include South Korean and Japanese rejection, on phytosanitary grounds, of garlic and dried red pepper; U.S. unilateral tariffs on frozen crayfish, shrimp, and EU bans on shellfish and a variety of mushrooms and vegetables. Tariffs on garlic placed by South Korea this year were 315% of the cost of the garlic! Perishables are more profitable, but more organized than at any other time in recent history.

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