

Compilation Logic, Data Calculation and Release Specification of China Agricultural Products Supply and Demand Balance Sheet

Ruixi Dai¹, Shiwei Xu^{1,*}, Yi Zhang²

¹Agricultural Information Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, China

³China Institute of Scientific and Technical Information, Chinese Academy of Tropical Agricultural Sciences, Haikou 571101, China

*Corresponding Author: Shiwei Xu

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Abstract

By compiling the agricultural products supply and demand balance sheet, it is possible to clearly grasp the current status of a country's agricultural supply and demand and its future development trends. However, as a large industrial sector, agriculture industry produces a variety of products, and each has different supply and demand characteristics. In addition, compilation of agricultural products supply and demand balance sheet has a late start in China, so there have been many issues in the compilation of domestic agricultural products supply and demand balance sheet. By analyzing the supply and demand characteristics of China's main agricultural products, it is considered that in compilation, supply and demand balance sheet roughly covers cereals, meat, aquatic products, fruits and vegetables and other categories. By combining China's actual situation based on the original compilation standard, relevant improvement design can be put forward, and finally the specific items required in the compilation of supply and demand balance sheet for each type of agricultural products can be decided. In addition, this paper also gives detailed illustration of the main data sources and data usage methods for compiling supply and demand balance sheet, and lists some sample agricultural products supply and demand balance sheet and release specifications to provide a reference for the compilation of China's agricultural products supply and demand balance sheet.

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I. INTRODUCTION

Food is the first necessity of the people. To solve the problem of eating and guarantee stable supply of agricultural products is the top priority for stabilizing people's livelihood. To well hold one's bowl, one should first get a clear picture of family property and have a clear understanding of one's own inventory, production and consumption status. This is where the significance of compiling agricultural products supply and demand balance

sheet lies^[1]. As a tool table that intuitively reflects changes in agricultural products supply and demand, supply and demand balance sheet provides an important reference for measuring whether a country or a region's changes in agricultural product supply and demand are maintained within a safe range^[2]. At present, regardless of international organizations represented by FAO and UNCD or other countries like the United States, the European Union, and India, supply and demand balance sheet is chosen as the main tool to measure the supply

and demand status. In China, agricultural products supply and demand balance sheet is also used as the main means to reflect changes in the supply and demand of agricultural products. However, due to the wide variety of crops, it is difficult to access some agricultural product supply and demand related data, and insufficient data is grasped for supply and demand characteristics of some small-variety agricultural products. As a result, at present, only some important agricultural products in China have ready-made supply and demand balance sheet, while supply and demand balance sheet for most other agricultural products still needs to be improved, so the requirement of making overall judgment on Chinese agricultural products supply and demand status cannot be effectively met. Therefore, on the basis of the domestic existing supply and demand balance sheet, clarifying the logical relationship between agricultural products supply and demand characteristics and compilation of supply and demand balance sheet by combining the actual supply and demand characteristics of Chinese agricultural products will not only provide some reference ideas for the compilation of Chinese agricultural products supply and demand balance sheet, but also mean important significance for guaranteeing stable supply of agricultural products in China^[3].

II. DEFINITION AND STRUCTURE OF AGRICULTURAL PRODUCTS SUPPLY AND DEMAND BALANCE SHEET

Supply and demand balance sheet is not exclusive to agriculture. In fact, supply and demand balance sheet is initially applied in finance, which is then gradually extended to fields such as energy and natural resources. Taking into account factors such as current energy supply and demand status, energy improvement policies, energy industry revolution trends, and factory retirement policies, Huang Yophy et al. (2011) used the LEAP model to predict the future energy demand and supply pattern in Taiwan, and made relevant recommendations for policy formulation in Taiwan's energy and climate

fields^[4]. Geng Jianxin et al. (2017) explored how to compile China's forest resource asset balance sheet, and believed that it should cover both the stock and flow information to eventually form a complete set of sheet system, rather than merely a simple report^[5]. Later, as supply demand balance sheet can well meet a country's requirements for stabilizing the supply and demand of agricultural products, supply and demand balance sheet enjoys continuously extended applications in agriculture.

Agricultural product supply and demand balance sheet is to provide a detailed description of the supply and demand of agricultural products in a country or region within a certain period (usually on a one-year cycle)^[6]. By compiling the supply and demand balance sheet, it is possible to show variation trend of supply and demand of a certain agricultural product in the country. By analyzing changes in supply sources and consumption types, it is also possible to access information such as the country's local production level, import dependence and internal consumption structure, which plays an important role in assessing the country's current agricultural development level, formulating future agricultural development plans, issuing relevant support policies, and providing monitoring and early warning of agricultural information^[7]. S. Ziegler (2010) used the food supply and demand balance sheet compiled by FAO to estimate the trade scale of wild animal meat in Central Africa based on the elasticity of substitution between food and meat, thereby assessing the pressure in protecting local wildlife resources^[8]. In the context of constantly rising hay prices in the United States, Tosha L. Opheim et al. (2011) compiled supply and demand balance sheet for hay, pointed out that the drought in the southern United States and trade factors are main reasons for the continuously increasing hay price after in-depth analysis of changes in hay supply, which provided an important reference basis for stabilizing hay price at that time^[9]. Darrel Good et al. (2015) compiled the 2015/2016 corn supply and demand balance sheet on the basis of the 2014/2015 corn supply and

demand balance sheet in the United States, and predicted the price trend of corn based on it^[10]. In addition to illustrating the supply and demand status of agricultural products, supply and demand balance sheet can also play a role in other related fields. For example, in terms of national nutrition security, Sara E Wuehler et al. (2005) measured absorbable amount of zinc in food consumption at that time based on the US food supply and demand balance sheet, compared it with the theoretical requisite amount to assess the risk of insufficient zinc intake in the United States at that time^[11]. S. Sasaki et al. (1992) used the food supply and demand balance sheet compiled by FAO in 1979-1981 to estimate the amount of various saturated and unsaturated fatty acids ingested by residents in 19 countries daily, and studied the relationship between these data and residents' physical situation, concluding that there is a significant relationship between food intake and the incidence of epidemics^[12]. Nonetheless, although supply and demand balance sheet can exhibit its own reference value in many fields, at some point, it may also be inconsistent with reality because of some uncertain factors. Sam Desiere et al. (2018) evaluated the current status and future trends of meat and fish demand of residents in the Sahara Desert in Africa based on FAO's food supply and demand balance sheet and LSMS household survey data. The results show that the food supply and demand balance sheet has accurate calculation results in terms of meat consumption, but differs from the actual results in fish consumption^[13]. Shenggen Fan et al. (2002) also pointed out that different calculation methods have different degrees of emphasis on different explanatory variables, there are also certain differences in macroeconomic assumptions, calculation methods of demand and supply elasticity, trade scale prediction. This explains why supply and demand balance sheets prepared by different agencies have different predictions on some data^[14]. At present, although there are some authoritative guidelines and practical experience for reference in the compilation of

balance sheet in the academic world, each sticks to his argument in the specific preparation framework and calculation method^[15], which also illustrates the importance of preparing reasonable and rigorous specifications for supply and demand balance sheets from the side.

In general, agricultural products supply and demand balance sheet is presented in the form of a table, with the horizontal axis as the year and the vertical axis as the index system. There are two types of years on the horizontal axis, one is the crop year, and the other is the calendar year. Where, crop year is determined according to the major growing season of agricultural products in a country^[16]. Statistics by crop year can better reflect the supply and demand characteristics of agricultural products, but data collection is difficult. Calendar year is calculated in Gregorian year. Although it cannot be well matched with the production and demand characteristics of crops, various official main statistical data are calculated in calendar years, so difficulty in accessing data is lowered. Year is mainly divided into three stages. The first stage is the historical stage, which is statistics of the data already existing in the year of occurrence, i.e. statistic value. The second stage is the current stage, that is, the current year's data. Due to the long agricultural production cycle, the time to prepare the balance sheet may just fall in the cycle, some actions have not yet occurred, but can be calculated based on the previous data. For example, the output of cereal crops can be calculated based on the planting area and the number of seeds. Since part of the data for this year is derived by calculation, it is generally called estimate value. The third stage is the future stage. All actions in this stage have not occurred, but only serve as a prediction of the future, so it is called forecast value, which is a trend judgment on the future supply and demand of agricultural products based on factors such as future climate change, domestic price fluctuations, and international trade environment.

The establishment of the index system on the

vertical axis is to establish specific calculation indexes based on the supply and demand characteristics of each agricultural product. This is also the main content in compilation of the entire supply and demand balance sheet. The compilation content of the index system mainly includes two parts. One is to determine each specific index in the index system, and the other is to measure the established specific indexes. The index system mainly consists of three main contents. One is supply volume, the other is consumption volume, and the third is inventory. Where, supply volume includes annual new output, opening inventory and import volume for the year; consumption volume includes domestic consumption and export volume for the year, closing inventory is calculated based on opening inventory and difference between the supply and consumption volume of the year^[17]. Among the above indexes, opening inventory, closing inventory, and import and export volume are applicable to every agricultural product, but because production methods and consumption methods differ for different types of agricultural products, new output and domestic consumption volume has different measurement indexes and calculation methods, while clarifying the production and consumption modes of each agricultural product is also the key to compiling supply and demand balance sheet.

III. COMPILATION OF SUPPLY AND DEMAND BALANCE SHEET

Compilation Principle of Supply and Demand Balance Sheet

The compilation of China's agricultural products supply and demand balance sheet is first to establish a specific supply and demand equation, then, according to the principle of equal supply and demand, classify the various specific indexes based on supply and consumption to establish a balance equation. By comprehensively considering the production and consumption modes of China's main agricultural products, a general equation of supply and demand can be established, which is expressed

as follows:

$$P_i + I_i + S_{bi} = C_t + L_i + O_i + S_{ei}(1)$$

Where, P_i means domestic output, I_i means import volume, S_{bi} means opening inventory, C_t means consumption volume, L_i means losses, O_i means export volume, S_{ei} means closing inventory.

Where, the difference between S_{ei} and S_{bi} is the difference between supply and demand in the year, that is, the balance. Where, consumption includes direct consumption and indirect consumption. Direct consumption generally refers to food consumption, such as ration consumption or fresh food consumption. Indirect consumption includes feed consumption, industrial consumption, seed consumption, other consumption and losses, etc. On the basis, fine-tuning can also be made according to unique consumption patterns of individual agricultural products. For example, soybeans can transform industrial consumption into squeeze consumption. It should be noted that due to different consumption modes, the same type of product may exist in different forms at different stages of consumption, so unification is needed. The best way is to trace it back to the original form of the product and make conversion in proportion^[7]. For example, the initial production form of rice is shelled, and hull weight is calculated in yield measurement, but in food consumption, it is in the form of rice, so it is necessary to convert the rice consumption volume to unhusked rice consumption volume according to a certain proportion, and then match it with the production end. Agricultural products such as wheat and flour, soybean and soybean oil should also be converted according to this principle.

Formula (1) is a general supply and demand equation for agricultural products which is established based on the principle of equal supply and demand. Specifically to each agricultural product, classification is needed according to different supply and demand characteristics, and then the specific indexes should be refined. This

paper roughly divides agricultural products into cereals, meat, aquatic products, fruits and vegetables and other categories. Cereals include rice, wheat, corn, soybeans, potatoes, etc.; meat includes pork, beef, lamb, poultry, etc.; aquatic products include two major categories of breeding and fishing aquatics; fruits and vegetables include various specific varieties of fruits and vegetables, and the rest agricultural products are classified into other categories. Then according to the supply and demand information generated from the production, circulation, and consumption of various agricultural products, a specific supply and demand balance sheet is compiled.

Compilation of supply and demand balance sheet for cereal agricultural products

The specific supply and demand status of cereal agricultural products are shown in Figure 1. At the production end, production volume is determined by yield per unit and planting area. At the consumption end, the consumption of cereal agricultural products mainly includes ration consumption, feed consumption, industrial consumption and seed consumption, which is mainly due to the characteristics of cereal agricultural products. Ration consumption is the basic function of cereal products. In addition, grains are transported as processing raw materials to other industries. When transported to the agricultural sector, they will be used for feed consumption, and when transported outside the agricultural sector, they will be used for industrial consumption. Seed

consumption is a unique consumption type of cereal agricultural products. Compared with other crops, due to production requirements, some cereal agricultural products will be retained in the next production cycle as seeds. Such feature makes seed consumption a unique index in the supply and demand balance sheet of cereal agricultural products. Based on the above analysis, the equation for the supply and demand of cereal agricultural products can be compiled as follows:

$$P_i + I_i + S_{bi} = C_t + L_i + O_i + S_{ei}(2)$$

$$C_t = C_{et} + C_{ft} + C_{it} + C_{st}(3)$$

C_{et} means ration consumption, C_{ft} means feed consumption, C_{it} means industrial consumption, C_{st} means seed consumption. It should be noted that the term ration consumption is derived from the three staple foods with Chinese characteristics, including rice, wheat, and corn. For non-staple grains, it should be written as food consumption according to international practices.

It is worth mentioning that, in terms of loss, it refers to the loss caused by harvest, transportation links. The reason why the loss of harvest is also included is that in China, output of agricultural products is calculated based on climatic conditions of the year and input of production factors such as pesticides, chemical fertilizers and manpower. The output is not the harvest output, but the theoretically calculated total output, so it is necessary to exclude the harvest loss.

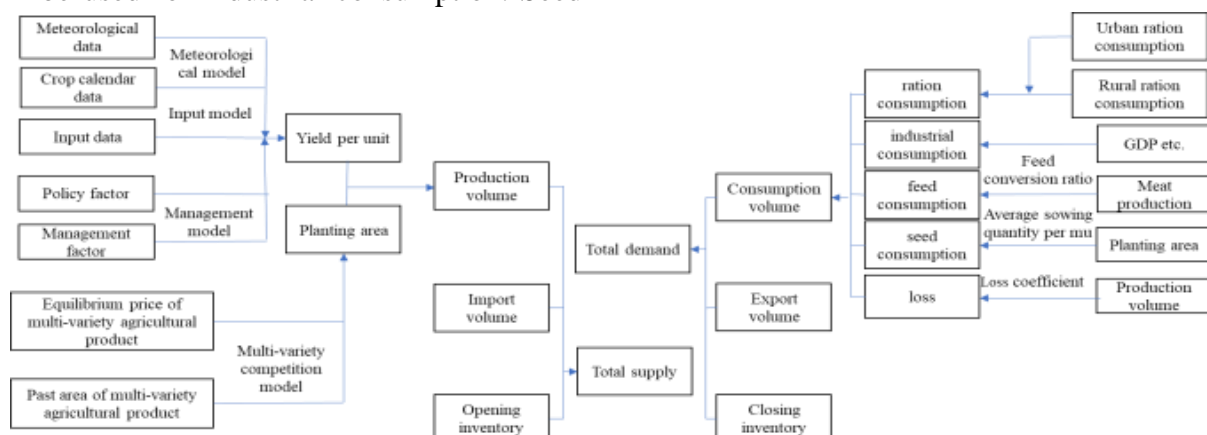


Fig 1: Supply-demand profile of cereal agricultural products

Compilation of supply and demand balance sheet for meat agricultural products

The specific supply and demand status of meat agricultural products is shown in Figure 2. Compared with the supply and demand equation for cereals, the supply and demand equation for meat has not changed much at the supply end, but the calculation of production volume has changed to carcass weight multiplied by slaughtered number. At the consumer side, ration consumption is changed into direct consumption, and feed and industrial consumptions are abolished and converted into processing consumption, which is used to measure the consumption volume of cans and other meat processed products during the production process. Considering that there is no harvest in meat agricultural products, and losses during the circulation and warehousing are relatively small, they are uniformly classified into

other consumption and are not calculated separately. Based on the above analysis, the supply and demand equation for meat agricultural products is as follows:

$$P_i + I_i + S_{bi} = C_t + L_i + S_{ei}(4)$$

$$C_t = C_{dt} + C_{pt} + C_{ot}(5)$$

C_{dt} represents direct consumption, C_{pt} represents processing consumption, C_{ot} represents other consumption.

In addition, it should be noted that in the breeding industry, the final product will be divided into a variety of commodities, meat is only one of them, and there are also fur, bones, etc., so when compiling meat supply and demand balance sheet, principle of uniformity should be strictly followed throughout the links, and only meat products are calculated separately.

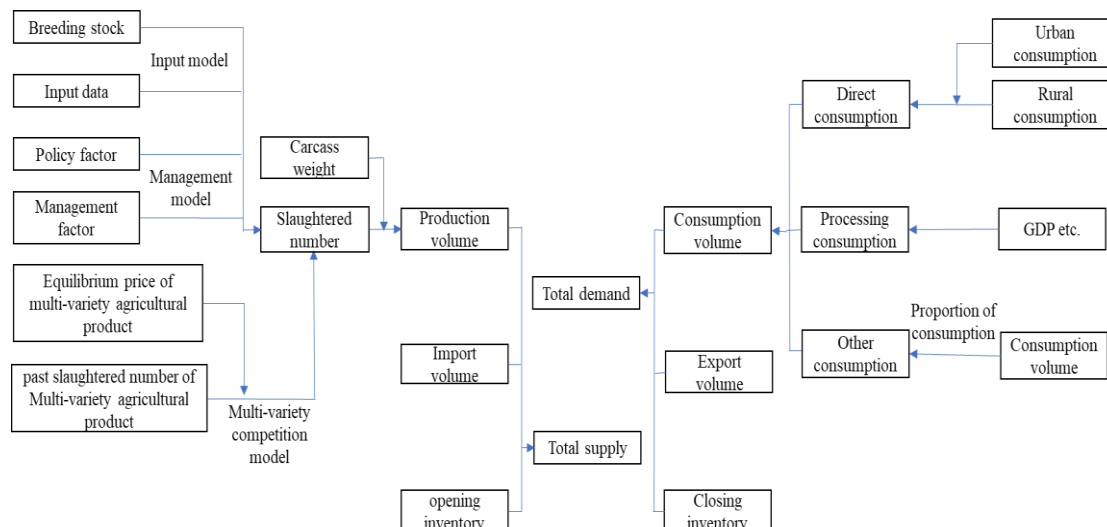


Fig 2: Supply-demand profile of meat agricultural products

Compilation of supply and demand balance sheet for aquatic products

Aquatic agricultural products have similar supply and demand profile with meat agricultural products, specifically as shown in Figure 3. The difference is

that the production volume of aquatic products mainly derives from breeding and fishing aquatics. In addition, as this type of fresh agricultural products is perishable, other consumption is changed into loss in terms of consumption volume.

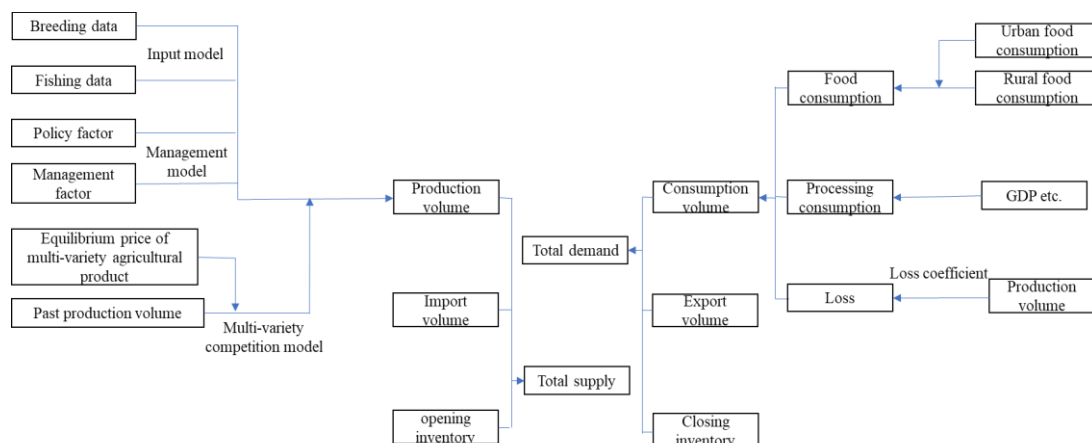


Fig 3: Supply-demand profile of Aquatic products

The supply and demand equation is as follows:

$$P_i + I_i + S_{bi} = C_t + L_i + S_{ei}(6)$$

$$C_t = C_{dt} + C_{pt} + C_{qt}(7)$$

C_{dt} represents direct consumption,
 C_{pt} represents processing consumption,
 C_{qt} represents other consumption.

Compilation of supply and demand balance sheet for fruit and vegetable agricultural products

The supply and demand of fruit and vegetable agricultural products generally involves links

including planting, harvest, sorting, circulation, consumption. The specific process is shown in Figure 4. Compared with the above products, direct consumption of fruits and vegetables is defined as fresh food consumption according to its characteristics. At the same time, due to consumption and processing, fruits and vegetables have extremely high loss rate compared with other agricultural products, and the loss is difficult to control, so it is listed separately.

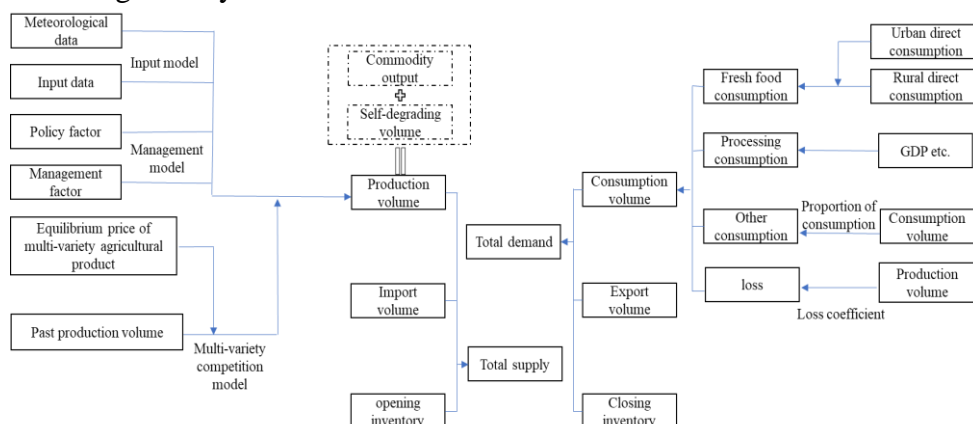


Fig 4: Supply-demand profile of fruit and vegetable agricultural products

The supply and demand equation for fruit and vegetable agricultural products is as follows:

$$P_i + I_i + S_{bi} = C_t + L_i + O_i + S_{ei}(8)$$

$$C_t = C_{nt} + C_{pt} + C_{ot} + C_{st}(9)$$

C_{nt} represents fresh food consumption, C_{pt} represents processing consumption, C_{ot} represents other consumption. In addition, because vegetable

agricultural products have specific losses generally known as self-loss such as abandonment, water loss, and rot due to links of harvest, sorting, storage, transportation, sales, the production volume S_{bi} of vegetable agricultural products will be decomposed into self-loss and commodity output.

Compilation of supply and demand balance sheet for other agricultural products

In addition to the four types of agricultural products listed above, there are many varieties of agricultural products difficult to summarize in compilation of supply and demand balance sheet due to difference in supply and demand relations, but they can all be treated in accordance with the basic principle of equal supply and demand. First of all, calculate uniformity indexes of such agricultural products including import, export and inventory; second, based on their production characteristics, domestic producers should determine whether the derived production volume is the theoretical output value or the actual output value, and provide general output calculation formula; next, analyze the demand characteristics of this type of agricultural products, first determine whether they have direct consumption capacity based on whether they have edibility, and then determine the detailed indirect consumption categories based on different uses of the agricultural products in industrial processing fields; finally, establish the supply and demand equation, adjust the data on both sides of the equation according to the basic principle of equal supply and demand after completion of the above steps, make reasonable judgments on the loss and residual amount, etc., to ensure scientificity and completeness in compilation of supply and demand balance sheet.

Data Sources of Agricultural Products Supply and Demand Balance Sheet

To compile agricultural products supply and demand balance, diverse data is required, involving multiple aspects such as production, consumption, trade, etc. Therefore, in data search, it is necessary to collect extensively and draw upon each one's strengths. Generally speaking, there are three main sources of data for the supply and demand balance sheet. The first is macro statistics represented by statistical yearbooks and industry reports, such as "China Statistical Yearbook", "China Food Processing Yearbook", and "China Light Industry Yearbook", "Food Development Report", etc.; the

second is the data acquired from field research; the third is the data derived from remote sensing technology. Due to the diverse data sources, the data calculation principles and methods may differ for each source, so it is necessary to select the most appropriate and effective data source after multiple comparisons to guarantee validity of the supply and demand balance sheet.

Generally speaking, it is relatively easy to access supply-side data in the supply and demand balance sheet. The production volume and import data can generally be accessed from government agencies such as the Bureau of Statistics and Customs. The production volume can also be calculated by looking up the production scale and unit output separately. To ensure accuracy in data acquisition, import data can also be supported by data from international agencies.

Consumer side data is difficult to access mainly because of abundant consumption categories and too many links from production to consumption. Therefore, in the case of incomplete data, it is possible to make calculation by multiple ways from different perspectives on the basis of the existing data, and finally judge the final result based on expert empirical value. Normally, direct consumption can be mastered through three methods: macro statistics data, population and production-end calculation. Where, the macro statistical data generally comes from various statistical yearbooks or industry reports. Since editorial bodies have different statistical calibers for various indexes, the same index will have big deviations in different statistical yearbooks or reports. Therefore, macro statistical data should also be selected scientifically. In terms of population, the adopted calculation mode is population multiplied by per capita consumption, but affected by various factors, population of different regions has different consumption of agricultural products. Thus, to improve accuracy, it is necessary to calculate by urban or rural areas or by different provinces. The calculation mode for the production side is reverse

deduction method, which is to calculate factory processing amount of the agricultural products in the year as the final market consumption. For instance, ration consumption of wheat can be calculated through the total production capacity and operation rate of the nationwide flour processing plants that year. The data of industrial consumption can be accessed through enterprisesurvey or conversion of processed products. For example, wine consumption of wheat in industrial consumption can be calculated from the total production of wine and wheat amount required for wine production per unit. Seed consumption can be derived through sown area and seed consumption per unit area. Sown area can be acquired through macro statistics and remote sensing technology. Acquisition of seed consumption per unit area needs survey in various regions due to great regional differences. Calculation of feed consumption is complicated. Although it can be converted from meat feed ratio which is superior to the industry average in some large-scale breeding enterprises, the feed formula is a commercial secret, and precise meat feed ratio is unavailable. However, these enterprises have a high market share and huge feed consumption, so conversion simply by general meat feed ratio is not recommended. Based on

comprehensive considerations, it is possible to combine field survey and statistical data to obtain the accurate value. As loss involves many links, macro-statistics generally exclude loss and remote sensing technology is not a good option to acquire loss, the most suitable way is to access it through survey, and then use empirical value as comparative evidence.

IV. SAMPLE SUPPLY AND DEMAND BALANCE SHEET AND RELEASE SPECIFICATIONS

Sample Supply and Demand Balance Sheet

According to the above introduction to the compilation principles of agricultural products supply and demand balance sheet, the Chinese agricultural monitoring and early warning team of the Institute of Agricultural Information, Chinese Academy of Agricultural Sciences, compiled some sample agricultural products supply and demand balance sheet based on various data and CAMES model. However, China's macro statistics take calendar year as the standard, so all the compiled sheets are in calendar year. Here, the detailed sheet is listed for reference by selecting wheat, pork and vegetables as representatives.

Table 1. China's wheat supply and demand balance sheet in 2018-2022
(unit: 10,000 tons)

Category	2018	2019	2020	2021	2022
Production volume	13143	13186	13112	13092	13091
Import volume	310	343	379	411	438
Consumption volume	12663	12758	12896	13026	13159
Ration consumption	8896	8933	8979	9021	9063
Feed consumption	1246	1271	1307	1350	1400
Industrial consumption	462	465	477	479	480
Seed consumption	1467	1502	1545	1589	1633
Loss	591	586	589	586	582
Export volume	28.6	38	40	40	39
Balance change	755	734	555	438	332

Table 2. China's Pork Supply and Demand Balance Sheet in 2018-2018.

(Unit: 10,000 tons)

Category	2018	2019	2020	2021	2022
Production volume	5404	5040	4650	4890	5110
Import volume	119	170	210	170	150
Consumption volume	5507	5197	4848	5042	5241
Direct consumption	3625	3439	3383	3521	3616
Processing consumption	1633	1480	1208	1265	1370
Loss	250	278	257	256	255
Export volume	15	13	12	18	19

Table 3. China's vegetable supply and demand balance sheet in 2018-2018

(unit: 10,000 tons)

Category	2018	2019	2020	2021	2022
Production (field output)	70014	70989	71753	72914	73754
Self-Loss	16439	15979	15744	15705	15656
Commodity output	53575	55010	56009	57209	58098
Import volume	49	55	55	57	57
Consumption volume	52287	53245	54437	55512	56415
Fresh food consumption	22366	22556	23140	23737	24345
Processing consumption	12207	12353	12649	12913	13147
Other consumption	5790	6047	6193	6288	6399
Loss	12105	12289	12455	12573	12524
Export volume	1125	1158	1200	1243	1288
Balance change	211	661	426	511	452

Release of Supply and Demand Balance Sheet

Since some values in the supply and demand balance sheet are predicted values, when the supply and demand changes due to factors like production conditions, product prices, trade environment, etc. some values in the supply and demand balance sheet also need changes accordingly. Hence, supply and demand balance sheet is released once monthly and fine-tuned every month according to the actual situation at that time.

In addition, mainly due to different production seasons of different agricultural products, the key time nodes differ in the release of each agricultural product supply and demand balance sheet. Generally speaking, there are two main key nodes in release, which are sowing month and harvest month. Some agricultural products without specific

sowing month or harvest month need to be discussed separately. Taking wheat as an example, the key nodes for the release of supply-demand balance sheet are May, June, November, and December of each year. Where, June and December are the wheat planting period, whose focus is to track the production of wheat in the current season; May and November are the wheat harvest period, whose focus is to adjust wheat supply and inventory. In the remaining months, corresponding predictions and judgments should be made based on the policy situation at that time and changes in domestic and foreign situations.

Interpretation of Supply and Demand Balance Sheet

Interpretation of the supply and demand balance sheet mainly involves two parts: estimation and

forecast. Taking the wheat data in 2019 and 2020 in Table 3 as an example, the interpretation is as follows:

This month's estimate is that, in 2019, China's domestic wheat production is 131.86 million tons, an increase of 430,000 tons from last year. Import volume remains low at 3.43 million tons. The annual new supply is 135.29 million tons, a decrease of 760,000 tons from the previous year. In terms of consumption, the annual domestic consumption is 127.58 million tons with a slight increase of 950,000 tons from last year. Where, ration consumption, feed consumption, industrial consumption, and seed consumption all show increase by varying degrees, and the loss is slightly reduced. Only 380,000 tons are exported, and the annual total consumption is 127.96 million tons, an increase of 1.044 million tons from last year. Seen from the perspective of supply and demand, China's wheat has basically maintained a stable trend.

This month's forecast is that, in 2020, the domestic wheat production will decline slightly, with a total output of 13.12 million tons. Wheat import will rise slightly, but still remains low at 3.79 million tons. The annual new supply volume is 134.91 million tons, a decrease of 380,000 tons from the previous year. In terms of consumption, the annual domestic consumption is 128.96 million tons, an increase of 1.38 million tons from last year, mainly due to the increase in ration consumption, feed consumption and industrial consumption. In terms of export, China's wheat still does not show significant export advantages and export capabilities, with merely 400,000 tons exported. The annual total consumption volume is 129.36 million tons, an increase of 1.4 million tons from last year.

V. CONCLUSION

Compilation and release of supply and demand balance sheet can help agricultural workers understand supply and demand changes of agricultural products more clearly and conveniently. At present, internationally, supply and demand

balance sheets have broad applications not limited to the grasp of supply and demand status of agricultural products, but it is also extended to many other fields. However, at present, the compilation and application of supply and demand balance sheet is still in its infancy in China.

According to the general rules for the compilation of agricultural products supply and demand balance sheet, coupled with the unique conditions of China's agricultural product supply and demand, agricultural product supply and demand balance sheet is compiled roughly according to cereals, meat, aquatic products, fruits and vegetables and other categories. Based on supply and demand characteristics of each product type, the specifications for compilation of supply and demand balance sheet are illustrated and improved in light of the actual situation in China. In addition, the data sources required for compilation of agricultural products supply and demand balance sheet and the calculation methods for various specific indexes are illustrated.

At present, the compilation of domestic agricultural products supply and demand balance faces certain difficulties, mainly for two reasons. One is because the design of specific indexes in the supply and demand equation does not match the actual supply and demand status; the other is because the lack of relevant statistics or survey data results in data distortion in supply and demand balance sheet. Therefore, when compiling supply and demand balance sheet, we must first improve the setting of statistical indexes, understand the supply and demand characteristics of the agricultural products according to the industrial chain direction of production, harvest, circulation, and consumption, and then provide a tailored set of statistical index systems. Secondly, it is necessary to improve the calculation methods of various statistical indexes. For different types of indexes, it is necessary to calculate separately from the perspective of raw material consumption or finished product output based on multiple data sources such as macro data

and survey data to form multiple measurement methods. The final measurement results should be compared and analyzed to improve accuracy of the measurement results. Finally, all departments should work together, communicate more and make comparative analysis to improve data reliability, thus providing favorable support for the compilation of supply and demand balancesheet^[18].

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