PART TWO
MONITORING OF AGRICULTURAL PRICES

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The index of farm-gate prices of agricultural products measures changes in the prices received by farmers for the agricultural products they supply. In theory, ex-farm prices are monitored when products are *first marketed.*

2.1. – A marketing system undergoing major change

Agricultural products are sold in many different ways according to the nature of the goods, the diversity of production systems, the geographical distribution of production and consumption areas and the requirements of processing. If they were uniformly sold each week in bulk in the farmyard, we could survey a sample of farmers who would provide similar answers that could be incorporated into a simple calculation method. In actual fact, there are many marketing models, with the content of the recorded prices varying considerably from one marketing channel to the next. Some products, such as cereals, milk and beet, are not widely sold in physical markets because the authorities were worried about organising their trade or because producers soon organised themselves into cooperatives that handled storage or processing.

This is why, apart from poultry and cow's milk, the IPPAP does not depend on specific surveys but on prices collected by bodies – interprofession, agencies, market news services – that are directed towards information from farmers.

Agricultural markets

Transactions in which merchandise is moved from producers towards users constitute a *market*. There is a world market for wheat, coffee, petroleum and, on a smaller scale, a market for tomatoes and pork.

These transactions are extremely diversified, depending on the products' destination :

- fresh local consumption
- sent to a wholesale market in a large city centre
- collection by the processing industry
- collection by the trade
- sent by a group of producers
- sold through a broker
- export ...

Some of these transactions take place in a *physical market.* The traditional physical market is a place where, during a specific period, buyers and sellers meet and goods are traded. There are various stages with different functions :

- farmers' markets where farmers sell their products,
- wholesale markets where deliveries are centralised in an area of consumption,
- retail markets open to consumers.

Some markets have more than one function. The wholesale market for agricultural produce at Rungis south of Paris is mainly a wholesale market supplying retailers but produce is sent from here to markets abroad, regional farmers meet on the floor of the market and the purchasing centres of mass distribution operate logistical bases there.

There are two types of physical market regarding the way transactions are carried out :

- markets for private sales
- Dutch auctions

The market for private sales is the traditional market. Sellers display their goods on a stall or bench. Transactions take on a personal nature, between a seller and a buyer.

Dutch auctions operate on a system of bids of descending value. The price, displayed on a dial, is reduced until a buyer stops the bidding and takes away the lot. If the price falls below a threshold called the withdrawal price, the seller can refuse to sell. First used in the Netherlands at the end of the XIXth century and called the Veilingen system, it was introduced into Brittany where it was used in most transactions in the fruit and vegetable sector from the 60s and has spread to other regions. The most well-known is the pig market at Plérin but there is a flower auction in Nice and fish markets operate on the same principle.

Current marketing trends, profiting from modern methods of communication, are tending to remove the boundaries between physical and abstract markets. Some physical markets have become virtual markets reflecting the stock exchange and traders operate remotely.

Twenty years ago, there was still a network of farmers' markets where they sold fruit, vegetables, flowers and animals. The interviewer went from one to the other, taking care to link the response to the interviewee's position[1] , and compiled market price lists that were widely distributed in the local or trade press. Large markets would be closed by the meeting of a quotation committee made up of different representatives of various categories of dealers who worked on or endorsed the price lists and made them official. The importance of the publicity given to the market prices explains the authorities' interest in them and the gradual introduction of specialised services by the Ministry of Agriculture and the Agencies.

This model is now a thing of the past. Faced with the growing power of mass distribution and its purchasing centres, the sectors upstream joined forces to strengthen their negotiating position and their ability to supply. Cooperatives and groups of producers as well as the trade are driving on normalisation, standardisation, grading, packaging and bulk packing as well as handling marketing. In addition, the processing industry, which channels an increasing share of production, is tied by contracts with its suppliers, for most of its purchases, and only supplies the free market occasionally.

There are still markets in France where market gardeners bring their fruit or vegetable products and horticulturists sell cut flowers, just as there are still some cattle markets. However, only a small proportion of goods are sold at these farmers' markets. The market, as a place where goods are traded and prices are set, has gone further downhill and has dematerialised to some extent. Transactions are made using modern communication methods and take place at various stages, sometimes after processing. The amounts received by the farmer can be recorded afterwards but they cannot always be related to the unit of volume, and the proportion of price to observable production in a market has decreased.

2.2. – Making the necessary changes to monitoring

The SNM price investigators currently consult farmers by telephone in an attempt to target the market through well-defined types of transactions.

Measurement of price variations currently refers to the dispatch stage for 30% to 40% of goods produced. This does not correspond to the ex-farm price but to a transaction that affects the product as it leaves the production area[2]. So the index takes into account transport costs and profit margins where variations do not take into account changes in the prices received by producers and which, logically, should not be involved in the monitoring of farm-gate prices. Admittedly, these procedures are somewhat opaque, because of the nature of the transactions and the stakes involved in knowing prices. However, these difficulties have been moderated by the considerable work in harmonising and collecting data carried out by the public statistics office or market management bodies, in particular, SCEES[3], SNM[4], OFIVAL[5] and ONIC[6]. Forty years ago, a considerable proportion of prices were recorded at wholesale in Les Halles, Paris. In base year 1980, ex-farm prices were monitored via records of disparate origin, without any guarantee of consistency in space and time. Nowadays, we go back to the source and the methods of collecting data are controlled more satisfactorily.

The table below summarises the coverage of agricultural activity. Although the number of items does not give a direct measurement of representativeness, we can appreciate the progress that has been made. The changes essentially reflect the improvement in monitoring methods. The survey carried out by the SCEES, which monitored poultry prices in detail, resulted in an improvement in the calculation of indices in this sector in base year 1980. The database compiled by the market news service resulted in a gradual improvement in the monitoring of the prices of fruit, vegetables and flowers throughout the 1980s and 1990s. The creation of interprofessional wine-producing bodies has been accompanied by more effective coverage of wine prices in base year 1990. Efforts by OFIVAL to harmonise the criteria

1. It is generally in the buyer's interest that the information reflects a lower price than the one which has really been set, which will enable him to influence the prices of his subsequent purchases.

2. price leaving storage bodies for cereals and oleo-proteinaceous plants, price onboard lorry for fruit and vegetables

3. Central service of surveys and statistical studies of the Ministry in charge of agriculture

4. Market news service of the Ministry in charge of agriculture

5. National interprofessional office of meat, breeding and poultry farming

6. National interprofessional office of cereals

for classing animals since the 1980s have made sets of prices more consistent. The move from 18 to 5 sets of prices for large cattle in base year 1995 is due to the fact that quotations at physical markets have been dropped in favour of abattoir prices. The content of the index has changed little since then.

Table 4. Number of index items according to the base year

	1955	1970	1975	1980	1990	1995	2000
Overall	12	35	52	106	161	155	158
Plant products	4	7	11	39	84	83	87
Cereals	2	3	5	8	9	9	9
Potatoes	1	1	1	3	9	9	13
Wine	1	2	2	8	19	18	18
Oilseeds			1	2	3	3	3
Horticulture		1	1	7	33	33	33
Other plant products			1	11	11	11	11
Livestock	8	8	9	30	36	23	23
Large cattle	1	1	1	18	18	5	5
Veal calves	1	1	1	1	1	1	1
Lean cattle			1	1	2	2	2
Pig	1	1	1	1	1	1	1
Sheep	1	1	1	1	1	1	1
Horse				1	1	1	1
Poultry, eggs and rabbit	3	3	3	6	10	10	10
Milk	1	1	1	1	2	2	2
Fruit and vegetables		20	32	37	41	49	48
Fruit		8	8	9	12	16	16
Vegetables		12	24	28	29	33	32

Source : INSEE

Transactions affect many products of various types. The same commercial name covers a great many determinants that have a significant effect on the quality of the goods and their price.

Variety
Size
Quality
Method of storage
Packaging
Origin
Method of transport …

The circumstances of trade play a considerable role in the price level. The ex-farm price can be far removed from the price on leaving the production area, the wholesale price or the retail price and the farmer's remuneration represents a small part of the value of the product bought by the consumer.

The differences are analysed as costs of handling, storage, transport, bulk packing, packaging, processing, salaries, energy, financial costs, profits, taxes and advertising. The marketing of meat goes through slaughter, whose products are directed towards various industries: butchering, tripe trade, processing, leather trade, non-food industry. Sectors such as fruit, vegetables and potatoes pass through chains with both short and long routes.

The variables that determine the value of goods are volatile and uncertain in terms of their effect. The setting of prices throughout the industry cannot be monitored using price records. Prices can have different contents at the same stage. The price of potatoes varies considerably depending on whether it is ex-farm or onboard lorry, whether the goods are assessed as raw, washed, sold in bulk, packed on pallets, in boxes, sacks, in nets, in small boxes, delivered to the buyer or removed from the farm. Then there are the harvests of lucerne sold uncut or from a farm incorporated by an animal feed manufacturer who buys animals from a breeder and rents them out to a fattener who is supplied with feed and veterinary products and who is not paid a price but is paid for a service since the animal does not belong to the breeder. Not to mention the effect of delays in payment and storage, which changes the rate of marketing.

The choice and follow-up of samples on which monitoring is based is therefore particularly acute. The IPPAP in France is one of the few price indices based not on specific records but on a pre-existing monitoring system aimed at people in the trade. Efforts are made to select the most homogeneous and representative sets, taking changes in industries into account. We should note that the frequent splitting of market monitoring with statistical nomenclatures complicates the calculations.

Table 5. Market prices : sources and stage of monitoring

	Bodies in charge of monitoring				Stage of monitoring	
	Ministry	Offices	Profession	Companies	Production	Dispatch
Cereals		ONIC				x
Potatoes for storage	SNM					x
early	SNM				x	
potato flour			UNPT		x	
for processing	SCEES				x	
Appellation wine			Com		x	
ordinary wine		ONIVINS			x	
Oilseeds		ONIOL				x
Fruit	SNM				x	x
Vegetables	SNM				x	x
Cut flowers	SNM				x	
Container-grown & bedding	SNM					x
Nursery stock				nurseryman	x	
Seeds		GNIS			x	
Potato plants			UNPPPT		x	
Beet		FIRS			x	
Lucerne			SNDF		x	
Pulses				merchant	x	
Proteinaceous plants			UNIP			x
Tobacco			FNPT		x	
Flax			CIPALIN		x	
Hops			AGPH		x	
Large cattle		OFIVAL			x	
Calves		OFIVAL			x	
Pigs		OFIVAL			x	
Sheep		OFIVAL			x	
Horse		OFIVAL			x	
Poultry	SCEES				x	x
Rabbit	SCEES				x	
Cow's milk	SCEES				x	
ewe's milk			CGPLBIR		x	
Eggs	SCEES				x	

Source : INSEE

The index is calculated based on 158 elementary items using prices recorded by about thirty administrative and professional bodies for the industry's information. The prices of milk and poultry are taken from specific surveys carried out by the SCEES in the main départements that produce them. The indices of fruit and vegetables are drawn up by the SCEES based on quotations made by the SNM. Some structural changes were made when moving to base year 2000:

Potatoes, as in the previous bases, are split into potatoes for potato flour, early potatoes and potatoes for storage.

A group called *Unprocessed potatoes for storage* was created beside potatoes for processing. It is divided into *Varieties with firm flesh* (six items) and *Varieties with normal flesh* (three items).

Wine is broken down into *Quality wine from specific regions* (VQPRD) and a new item *Other wine*, which includes *Ordinary wine* and Wine suitable for distilling into Cognac.

The structure of the group called *Other plant products* has been changed slightly. It is divided into :

Proteinaceous plants
Pulses
Hops
Flax
Seeds and plants
Fodder
Tobacco
Sugar beet

In the *Livestock* group, the former group of *Poultry, eggs and rabbit* is divided up to make a distinction between *Other animals* (except large cattle) and *Other animal products* (except meat), in order to comply with the nomenclature used in European audits.

Cattle
  Large cattle
    Lean cattle
    Beef cattle
  Calves
    Veal calves
    Eight day old calves
  Pigs
  Sheep
  Horse
Other animals
  Poultry
  Rabbit
Other animal products
  Milk
  Eggs

2.3. – Agricultural prices over a long period

The IPPAP has been successively calculated in base years 1955[7], 1970[8], 1975, 1980, 1990, 1995 and 2000, with each one used to follow price changes until the next one is set up. For the purposes of some studies, long sets are made up[9].

This procedure consists of calculating the indices of the present base year going back in time. As price sets needed for calculating the indices of the present year are not usually available for past years, they must be linked up using the variations displayed by the indices of the previous base years. This is therefore restricted by the heterogeneity of the items and the fact they become increasingly scarce as we go further back in time.

Annual indices – Each base is set up several years after the reference year. The base year 2000 began to be published for the indices of January 2004. The base year 1995 was therefore calculated up to December 2003 and has had the benefit of four years of collection. *The annual indices* of a base year are retropolated by dividing those of the previous year by the index of the new base year expressed as previous base.

Monthly indices – Using an annual average linking coefficient can, in some cases, lead to an untimely slide between December of the previous year before the base change and January of the new base year. Linking them by the relationship of the indices in January of the new base year, expressed in the two bases, may be an alternative solution. It has the drawback of basing the back extrapolation of several years of indices on the figures from a single month that may have been subject to financial or statistical events.

Preference was given to reporting the variations as an annual variation. The index, retropolated from June 1999 in base year 2000, is deducted from that of June 2000, by applying the variation recorded between the same months in base year 1995[10]. And straightaway, for the index $I_B^{m,a}$ in a month *m* in year *a* expressed in base *B :*

$$I_B^{m,a} = I_B^{m,a-1} \times \frac{I_{B-1}^{m,a}}{I_{B-1}^{m,a-1}}$$

If the index in a given month is not given in the previous base[11], an infra-annual variation is made. Finally, the consistency of the monthly indices with the annual indices, retropolated, is checked.

7. retropolated up to 1949.

8. Indices of fruit and vegetables in base year 1955 could not be calculated due to a lack of data, particularly monthly data. However, annual indices including fruit and vegetables were calculated at the time in base years 1938-39 and 1954-55 on the basis of prices recorded at the wholesale stage but were not thought reliable enough. The central service of surveys and statistical studies of the Ministry of Agriculture has drawn up, in an experimental way, a base year 1970 of the indices for fruit and vegetables, used in this retropolation although they were not incorporated in the general index at the time (SCEES - Set D n°17 April 1979).

9 these are long IPPAP sets. The work by Jean Fourastier cited in the bibliography presents several retrospective sets of prices, some of which go back to the early XVth century.

10. this solution is consistent with the cyclical analysis which prefers comparisons as an annual variation

The groups – The retropolated indices are like Laspeyres chained indices. Within each five-yearly link, there is consistency between the weighting base and the reference of prices so that the present structure of production cannot be pinned to previous bases. Therefore the indices of groups are not calculated by the average of retropolated elementary indices, weighted by coefficients of the most recent base, but are retropolated as elementary items.

The successive sets of weighting coefficients highlight the long-term decline in farm products apart from poultry and the growth in importance of wine and fruit and vegetables. However, the comparisons must be put into perspective as the weighting coefficients are taken from the Agricultural Audits where slight changes have been made to the coverage of agricultural activity on several occasions.

Table 6. The weighting coefficients in successive base years in the IPPAP

	1955[12]	1970	1975	1980	1990	1995	2000
Agricultural products		100 000	100 000	100 000	100 000	100 000	100 000
except fruit and vegetables	1 000	90 380	91 770	91 900	91 210	89 469	88 920
Plant products	308	34 630	36 900	38 700	44 161	41 147	42 994
Cereals	135	16 160	16 820	17 800	15 774	12 371	13 765
Potatoes	17	1 950	1 970	960	1 089	2 093	2 074
Wine	88	9 010	9 070	10 390	16 606	15 920	16 578
Quality wine			3 660	5 920	13 137	13 010	13 968
Other wine			5 410	4 470	3 286	2 910	2 610
Oilseeds					3 571	2 026	1 800
of which rape			610	1 170	1 323	1 070	1 210
Plants and flowers			2 260	2 000	2 575	4 200	3 383
Sugar beet			2 810	3 330	2 270	2 660	2 347
Proteinaceous products					1 700	805	503
Farm products	692	55 750	54 870	53 200	47 049	48 322	45 926
Cattle	389	30 300	28 970	26 600	22 082	22 719	20 974
Large cattle	147	13 350	14 470	12 890	10 871	11 782	10 587
Calves			5 300	4 910	3 483	2 993	2 654
of which veal calves	86	6 020	4 520	4 260	2 987	2 643	2 278
Pigs	110	8 400	7 640	7 350	6 342	6 288	6 200
Sheep and goats	33	2 080	2 150	1 910	1 263	1 178	1 273
Rabbit	14	1 230	1 270	1 180	1 104	656	546
Poultry	48	4 230	3 850	4 190	5 620	6 330	6 258
Milk	192	16 780	17 570	19 030	16 314	16 932	15 818
Eggs	49	2 380	2 290	2 420	1 694	1 575	1 657
Fruit and vegetables		9 620	8 230	8 100	8 790	10 531	11 080
Fruit			2 970	3 900	4 243	4 265	4 939
Fresh vegetables			5 260	4 200	4 547	6 266	6 141

Source : INSEE

Analysis over a long period is not as consistent as a study over a short period. The move from price support through intervention towards assistance for incomes uncoupled from production, weakens the scope of an analysis of products that benefit from a common market organisation since the resulting drop in price does not correspond to a compensatory decline in production. In addition, wheat, potatoes, chicken and tomatoes today are not the same as those that were sold fifty years ago and the price change reflects these changes. Reflecting the successive appearance of new products, the item *potatoes for storage*, presently calculated using ten varieties, covered five in base year 1995 and was based on the single variety *Bintje* and early potatoes until base year 1980. Furthermore, in base year 1990, prices recorded at the dispatch stage[13] by the market news service (SNM) of the Ministry of Agriculture were used. In base year 1995, a sample price at the production stage[14] was selected whilst in base year 2000, faced with the increasing scarcity of the latter, a result of changes in the industry, quotations at the dispatch stage were used once again. The same applies to cereals for which, in base year 1990, prices delivered to silo were used before changing to the market prices observed further down the marketing channel, in base year 1995[15].

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11. this instance occurs particularly when the change of base endorses a change in the production calendar.

12. in base year 1955, the IPPAP was a Paasche index. The weighting coefficients correspond to the sum of the prices in the current year multiplied by the average quantities in this year and the previous four years.

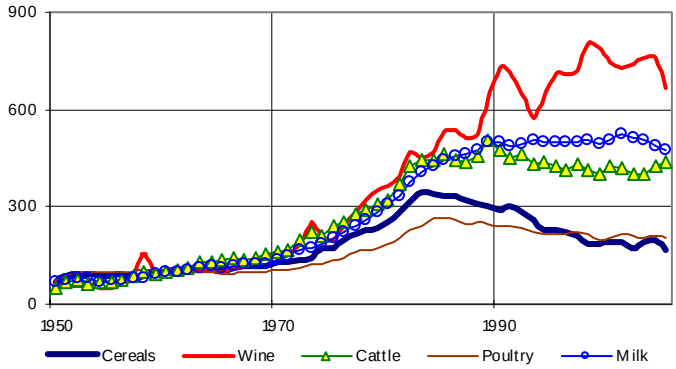
13. leaving the production area

14. ex-farm

15. delivered to Rouen, ex-Eure et Loire …

Indices in 1949 are between 7 and 37 in base year 2000 depending on whether they have increased strongly (veal calves) or moderately (poultry) between these two years.

Graph 1. Agricultural price indices retropolated in base year 2000



Source : INSEE

There have been 3 clearly contrasting periods in agricultural price trends.

During the fifties and sixties, after an inflationary start, agricultural prices increased moderately, by 4.1% on average per year with an average annual drop of 0.5% between 1952 and 1966 for poultry prices.

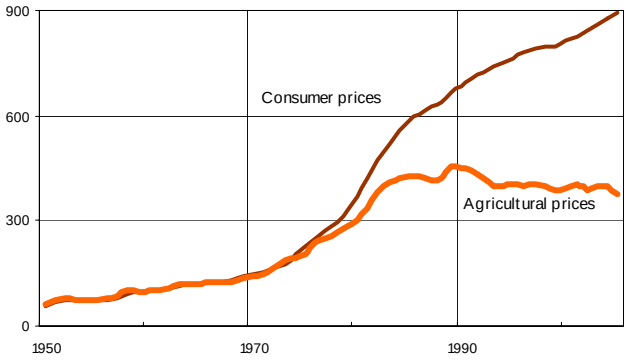
The increase gained pace from 1970, reflecting prices as a whole. Agricultural prices went up by 6.7% annually until the mid eighties, particularly quality wine and fruit, which increased by 9.2%. However, the purchasing power of agricultural prices began to fall back in the mid 1970s.

Between 1986 and 2005, prices fell by 1.4% a year. The reduction was sudden from 1989 to 1994 (-2,7% a year), then slower. The change in cereals (-4.4% annually), sunflower (-5.2%) and protein peas (-6.1%) was notable whilst only potato prices continued to grow (+0.7% a year).

Over the last 56 years, the price of veal calves has increased annually by 4.9% on average, slightly more than potatoes (+3.9%), large cattle (+4.2), wine (+4.2%), sheep (4.3%) and milk (+3.5%). Cereal price increases have been more moderate (+1.6% for wheat and +2.1% for milling barley). The same can be said for pigs (+2.6%) and poultry (+1.8%). During the same period of time, consumer prices have increased by 5.2% as an annual average.

Looking at the index of farm-gate prices of agricultural products (except fruit and vegetables) and the consumer price index, both converted to the 1960 reference, one can see a parallel increase until the mid seventies, followed by a slower increase in agricultural prices before the decline in the nineties.

Graph 2. Agricultural prices and consumer prices



Source : INSEE

However, the general index is of limited scope as the range of each farmer's sales is limited. An overall analysis masks disparities between the different markets.

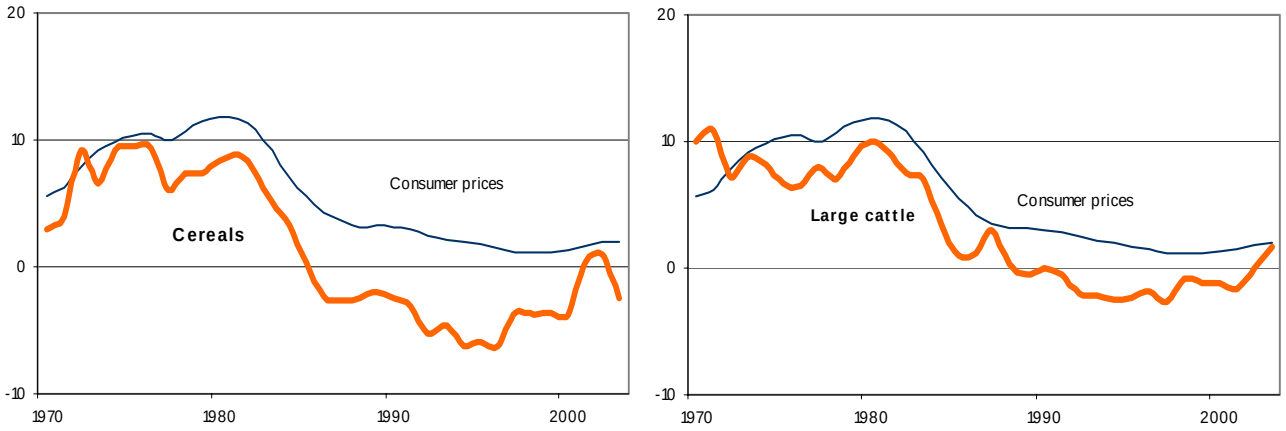
To illustrate the changes, it is more useful to begin in 1970, a year when most of the groups are present. Annual variation has been used and the indices smoothed out (mm5) in order to get round any localised interference. The graphs below trace the annual variations in indices (the fine dotted line represents changes in consumer prices).

An overview reveals two large types of profile.

- Products whose prices have always been behind consumer prices
- Those that have changed at about the same time as consumer prices.

The first group includes cereals, cut flowers, beet, proteinaceous products and oilseeds, seeds as well as cattle, poultry and milk.

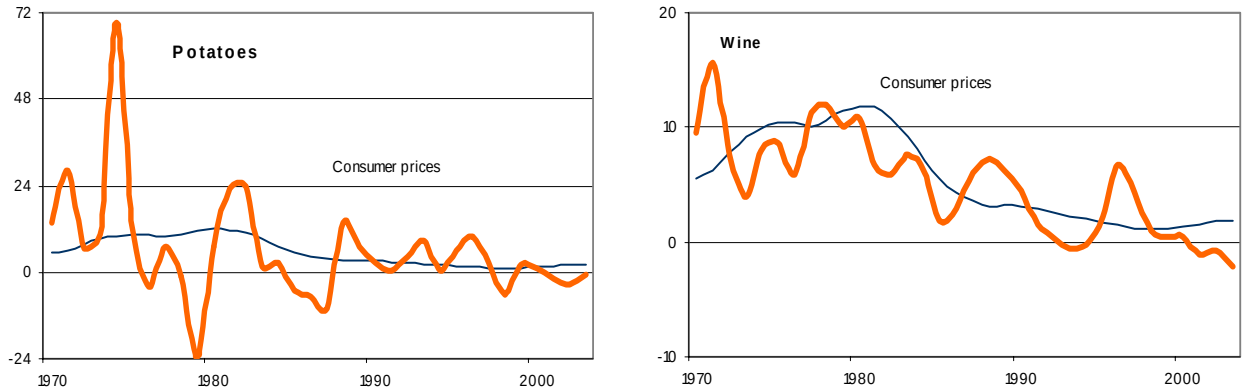
Graphs 3 and 4. The index of prices of cereals and large cattle as annual variation mm5



Source : INSEE

On the other hand, fruit and vegetables, as well as wine, particularly quality wine, have seen their prices increase in line with consumer prices.

Graphs 5 and 6. Index of prices of apples and wine as annual variation mm5



Source : INSEE

Following on from this general outline of the situation, we will now present the specific solutions adopted in the various agricultural sectors in base year 2000.