CHAPTER – IV

HISTORICAL BACKGROUND OF AGRICULTURAL INSURANCE

4.1 INTRODUCTION

Farming is inherently one of the riskiest economic activities. In the absence of formal risk sharing/diffusing mechanisms, farmers relay on traditional modes and methods to deal with production risk in agriculture. Agricultural insurance is one method by which farmers can stabilize farm income and investment from the disastrous effect of crop losses due to natural hazards or low market prices. Crop insurance not only stabilizes the farm income but also helps the farmers to initiate production activity after the bad agricultural year. It forms an important component of safety-net programmes of a nation.

Most of the developed countries have devised different models of insurance to safeguard the interest of the farmers. There are two major categories of agricultural insurance: single and multi-peril coverage. Single peril coverage offers protection from single hazard while multiple-peril provides protection from several hazards.

Historically, the first type of crop insurance to be offered was single peril for hail in Europe and North America in the 19th century. In the developing world, there were some early adopters of single peril and mutual insurance products--Uruguay (1914) and Mexico (1926). However, in most of the countries, the federal or national government, in collaboration with provincial government, provides multi-peril insurance coverage to the farmers. In the 1930s, the U.S. government started to experiment with multiple peril policies as a means to help farmers recover from the devastating effects of the Great Depression and the Dust Bowl (a prolonged drought that affected the Plain states)[1].

After the World War II, the use of this product was introduced in Western Europe and Japan. Later on it spread to African, South Asian, and Latin American countries.

The current research work is heavily concentrated on agricultural insurance in India. However, to understand the growth and development of agricultural insurance international experiences of some relevant developed and developing countries have been taken into account.

4.2 AGRICULTURAL INSURANCE IN SELECTED DEVELOPED COUNTRIES

In the developed countries, the four leading markets are found in the United States, Canada, Spain, and Japan.

4.2.1 USA

Agriculture insurance was originated in the United States of America during the last part of nineteenth century. Private sector insurers had provided single peril insurance products (hail, fire, flood, frost, wind, etc) efficiently for a long time. The first attempt of providing multiple-peril crop insurance was made in 1899 by a private company, Realty Guaranty Company of Minneapolis. However, the company discontinued the programme within two years[2]. Similar attempts were made during 1917 by three private companies in North Dakota, South Dakota and Montana and suffered heavy losses because of drought[3]. Many other companies entered into the field of crop insurance and vanished over time.

Finally, Federal Crop Insurance Act was passed in 1938 and Federal Crop Insurance Corporation (FCIC), an agency within the U.S. Department of Agriculture, was established to implement the crop insurance programme in USA. Wheat was the first crop that got insurance cover in 1939 under the federal multi-peril crop insurance policy[4].

At the very early stages the overall performance of the federal crop insurance programme was disappointing. Loss ratios for the entire programme has been found to be substantially higher than 1.0, indicating serious problems with the scheme. Federal crop insurance programme was actually terminated for a short period of time in early 1940s. The U.S. Congress passed an amendment in 1947 and the programme expanded gradually into new counties and new crops. The federal crop insurance is available for over fifty different crops in 3,000 counties across the United States. It covers all natural risks, including losses from droughts, excessive rain and storm damage[5].

Further, the Federal Crop Insurance Act (FCIA) of 1980 has made significant changes in the scope and objectives of U.S. crop insurance programmes. This Act was aimed at creating an insurance programme that would replace USDA's disaster assistance programmes while operating on actuarially sound basis with limited government financial assistance.

In spite of the changes brought about by the 1980 Act, the rate of participation in the Federal Crop Insurance Program averaged 27 per cent of insurable acres for all crops in the U.S. during 1985-1990[6]. Low participation rate indicated that the programme was not fulfilling the objective for which it was designed under the Federal Crop Insurance Act of 1980. Concerns have been raised regarding the actuarial soundness and limited participation of the programmes[7].

The 1990 Farm Bill proposed for repealing of the Federal Crop Insurance Programme and replacing it with several disaster assistance programmes owing to limited participation rate in Federal Crop Insurance Programme. However, these proposals were not adopted in the final legislation and multiple peril crop insurance was retained as a safety-net programme in U.S.A.

Reforms in agricultural insurance in the USA

Multiple peril insurance has largely been provided directly by the U.S. government or backed by the U.S. government since a reform in 1994. Up until 1994, U.S. Department of Agriculture (USDA) delivered most of the multiple peril crop insurance but it was a largely underdeveloped market because extensive commodity support programs and ad hoc disaster bailouts dating back to the 1930s reduced the incentives for farmers to participate in government supported multiple peril insurance schemes.

However, with reforms in insurance programs in 1994 and the Farm Bills of 1996 and 2000, incentives changed. Now private insurance companies, backed by government reinsurance facilities, premium subsidy payments to farmers, and administrative and operational cost subsidies, are the dominant providers of multiple peril insurance. The acreage covered by insurance has more than doubled compared to early 1990s levels. In 2000, over 200 million acres were covered compared to 80 million in 1992. Total cultivated area was approximately 500 million acres[8].

Current Trends

At present two broad categories of insurance products are offered, yield and revenue. Within the yield category there are three specific products: actual production history (APH), catastrophic, and group risk plan. Within the revenue category are four specific products: crop revenues, revenue assurance, income protection, and dollar revenue insurance. Four major crops (corn, wheat, soybeans, and cotton) are covered and accounted for 75% of risk premiums paid in 2001[9].

Area-yield and/or area-revenue buy-up insurance policies are offered through the FCIP for some crops and regions. The areas for these policies are defined along county boundaries. On a per acre insured basis, area-level insurance products tend to be less expensive than farm-level insurance products.

Most FCIP policies trigger indemnities at the farm (or even sub-farm) level. Yield insurance offers are based on a rolling 4-10 year average yield known as the Actual Production History (APH) yield. The federal government provides farmers with a base catastrophic yield insurance policy at free of any premium costs. Farmers may then choose to purchase additional insurance coverage beyond the catastrophic level at a federally subsidized price. This additional coverage often called "buy-up" coverage for yield or revenue insurance. Farm-level revenue insurance offers are based on the product of the APH yield and a price index that reflects national price movements for the particular commodity.

The federal government also provides a reinsurance mechanism that allows insurance companies to determine (within certain bounds) which policies they will retain and which they will cede to the government. This arrangement is referred to as the standard reinsurance agreement (SRA). The SRA is quite complex with both quota-share reinsurance and stop losses by state and insurance pool, however, in essence, it allows the private insurance companies to adversely select against the government. This is considered necessary since the companies do not establish premium rates or underwriting guidelines but are required to sell policies to all eligible farmers.

The efficiency, equity, and cost effectiveness of the U.S. program are not good. The total cost to the government in 2001 was $2.5 billion. Premium subsidies are increasing. In 2001, the premium subsidies amounted to $1.8 billion up from $700,000 in 1992. The subsidies paid to private insurance companies had jumped to $648 million from $225 million in the same period[10]. Loss ratios (indemnities paid out / premiums paid in) have been persistently above one (the breakeven point) for most states and all crops for the last 20 years. Moreover, the benefits are concentrated. There are approximately 3 million farmers but only a small fraction participates in government backed insurance schemes. Those who participate tend to be large, highly educated, and well capitalized farmers. Low-income, small-scale, and specialty crop producers are largely excluded[11].

4.2.2 CANADA

Agricultural insurance in Canada dates back to 1939 when the federal government started to provide disaster assistance to grain producers on the prairies. Since then, a tripartite system has evolved that consist of three separate programs:

1. Crop Insurance (CI),
2. The Net Income Stabilization Account (NISA) and
3. The Agricultural Income Disaster Assistance (AIDA).

The stated objectives are to provide income stabilization and a safety net to farmers and at the same time maintain actuarial performance. The programs are administered at the level of provincial governments and no private insurance companies are involved. The Federal government sets general frameworks and shares program costs with provincial governments, but the latter have flexibility to modify the products to suit the specific needs of farmers in their jurisdiction.

The Crop Insurance Program (CI) provides a yield guarantee based on historical yield data for the farm. If production falls below a yield trigger an indemnity will be paid covering 80-90% of the difference between the trigger and realized yield.

The product is multiple perils covering all losses due to natural hazards, excessive moisture, uncontrollable diseases, and pests. In 1999, 100,000 or 50% of all farmers participated and 50 million acres where insured, constituting 55% of all crop and forage acreage[12]. For most of the 1990s, the loss ratio was favorable, less than one, except for 1992-93. The Federal and provincial governments each pay 25% of the total premium and 50% of the administrative costs.

The second part of the system is the Net Income Stabilization Account (NISA) that is a matching savings program intended to help farmers achieve long-term income stability. Producers who file farm income tax statements can participate in the program. The Government matches on a 1:1 basis deposits made by farmers in participating financial institutions of their choice up to 3% of eligible net sales income. It is the difference between gross sales and net purchases of primary commodities with the exception of diary, poultry, and eggs. Withdrawals can be made from the account when certain triggers are struck, either the Stabilization or Minimum Income Trigger[13].

The last part of the system is the Agricultural Income Disaster Assistance program. The program is designed to help farmers suffering from shocks that are threatening the viability of their farm business. The federal government funds 60% of the cost of the program and provincial governments the remaining 40%.

Repeated attempts have been made by the Canadian farmers since the early 1920s to obtain some form of systematic protection against the effects of highly variable and uncertain crop yields. In western Canada a private insurance company entered into crop insurance business but after a short but costly experience quit the business.

In 1939, Prairie Farm Assistance Act (PFAA) was introduced by the Canadian government as an early attempt in the field of crop insurance. This Act provided limited protection to the grain producers in the Western Canada but it provided no protection to farmers producing other crops or to grain producers in other provinces. A one per cent levy was placed by the PFAA on all grain marketed through the Canadian Wheat Board. If the yields fell below the specified level, all producers of that township who grew the crops received an indemnity. The maximum amount of an indemnity that an individual farmer would receive was not more than $800.00 per year. During 1939 to 1968, the total levy collected was $196 million while the total indemnities paid to the producers was nearly $370 million dollars and the average loss ratio for the programme was estimated as 1.88[14].

All the 10 provinces in Canada are actively participating in the crop insurance programme through cost sharing agreements with the federal government. The provinces have substantial flexibility in designing their own crop insurance policies under FCIA. Currently, 25 per cent of the farmers' premiums and 50 per cent of provincial administrative costs are contributed by the federal government. On the other hand, if the provinces pay all the administrative costs, the federal government will contribute 50 per cent as the premium subsidy. The federal government also provides loans to provincial crop insurance commissions as a reinsurance agreement if indemnities exceed cash reserves.

The crop insurance programme covered over 43 million acres of farm crops since its inception in 1959 till 1994 and paid indemnities to the tune of $4.4 billion. The average loss ratio (indemnities paid/premiums paid by farmers) for Canada was estimated as 2.03 without administrative costs and 2.37 with administrative costs during 1974-94. In other words, Canadian farmers received an average of $2.03 for every dollar contributed as premium for crop insurance over a period from 1974 to 1994. The total premium revenue was $3.9 billion as against $4.4 billion paid as indemnities during 1959 to 1994[15].

Current Trends[16]

In 2003 Canada revised its agricultural risk management programs. The "Business Risk Management" element of the new Agricultural Policy Framework (APF) is composed of two main schemes: Production Insurance and Income Stabilization.

The Production Insurance (PI) scheme offers producers a variety of multiple-peril production or production value loss products that are similar to many of those sold in the United States. One major distinction, however, is that the Canadian program is marketed, delivered, and serviced entirely and jointly by federal and provincial government entities.

Production insurance plans are offered for over 100 different crops, and provisions have been made to include plans for livestock losses as well. Crop insurance plans are available, based on individual yields or area-based yields.

Insurance can also be purchased for loss of quality, unseeded acreage, replanting, spot loss, and emergency works. The latter coverage is a loss mitigation benefit meant to encourage producers to take actions that reduce the magnitude of crop damage caused by an insured peril.

Beginning in 2004, the Canadian Agricultural Income Stabilization (CAIS) scheme replaced and integrated former income stabilization programs.

CAIS is based on the producer's production margin where a margin is "allowable farm income" that includes proceeds from production insurance, minus "allowable (direct production) expenses". The program generates a payment when a producer's current year production margin falls below that producer's reference margin. It is based on an average of the program's previous five-year margins less the highest and lowest.

One important feature of CAIS is that producers must participate in the program with their own resources. In particular, a producer is required to open a CAIS account at a participating financial institution and deposit an amount based on the level of protection chosen (coverage levels go from 70 percent to 100 percent of the "reference margin"). Once producers file their income tax returns, the CAIS program administration uses the tax information to calculate the producer's program year production margin.

If the program year margin declined below the reference margin then some of the funds from producers' CAIS account will be available for withdrawal. Governments match the producers' withdrawals in different proportions for different coverage levels.

4.2.3 SPAIN

Spain has very variable rainfall and climate patterns due to its topography and location. Spain is situated at the meeting point of two weather systems one originating in the Atlantic Ocean and the other in Mediterranean Sea. Agricultural insurance in Spain dates back to the 1920s and has been marked with a strong tradition. One of the oldest insurance companies MAPFRE (La Agrupación de Propietarios de Fincas Rústicas de España) established a farmers mutual insurance scheme in 1933. During the 1920s and 30s, the industry experienced many losses and reversals[17].

The current system of agricultural insurance evolved on 1978. It is a public-private partnership involving three key actors. State Entity for Agricultural Insurance (Entidad Estatal de Seguros Agrarios (**ENESA**)), an agency of the Ministry of Agriculture, Fisheries, and Food, designs and administers the program. While a pool of sixty private insurance companies, Combined Grouping of Spanish Agricultural Insurance Companies (Agrupación Española de Entidades Aseguradoras de los Seguros Agrarios Combinados (**AGROSEGURO**)), sells and services the policies. Consortium for Insurance Compensation, (Consorcio de Compensación de Seguros (**CCS**)), is a public enterprises under the control of the Ministry of Economy that provides obligatory reinsurance[18].

Each year ENESA develops an operational plan stipulating which commodities will be insured and what risks to be covered, ranges of premium subsidies, and deadlines for purchase. AGROSEGURO specifies terms and conditions for each product and makes regional differentiations in premium rates in accordance with level of risk exposure and cost of administration and reinsurance. Then AGROSEGURO sells the policies through its network of 60 companies and each company is responsible for monitoring and loss adjustments for the policies it sold. Obligatory re-insurance is purchased from CCS and additional risk can be ceded to private reinsurance companies in excess of what CCS will accept. The objectives of the program is to achieve universal coverage, insure all agricultural risk, and provide income stabilization, while maintaining actuarial soundness. In addition, the system is highly participatory and marked by constant change and reformulation in product design based on feedback from farmers, cooperatives, and insurance companies.

The system started out with a few products and now expanded rapidly covering virtually all crops and the economically most important type of livestock. In 1980, 5 products were offered for 10 commodities. In 2000, 63 different products were offered covering 130 crops grown in the country, three types of livestock (cattle, sheep, and goats) and five types of fisheries. Farmer participation is 31% and 45% of the cultivated area is insured. The most widely insured crop in are tobacco (90%), winter grains (80%), fruits (40-70%), citrus (30-50%), and vineyards (45%). The least insured commodities are olives, cotton, and vegetables[19].

Public subsidies go up 45% of the premium and average outlays in a year are about 151 million Euros. The average loss ratio for the period 1980-1999 was 113%. The program has been reporting loss ratios less than one for most of the 90s and in the first part of the new millennium. Overall, the system is not viable if the administrative subsidies are counted.

The strengths of the program are a participatory structure and excellent commodity coverage. The participation rate is 31% and a slew of actors are involved in the design of products, most importantly farmers themselves. The weaknesses are that the system lacks of efficiency and long-term viability. It attempts to insure all risks in virtually all conditions, when not all risks are insurable. Actuarial performance is purchase by substantial premium subsidization to avoid adverse selection and through massive investments in monitoring to control moral hazard.

Similar to the United States and Canada, insurance policies offered cover multiple perils in a combined program. Policies are available for crops, livestock, and aquaculture activities, with these risks being pooled across the country by Agroseguro. Unlike the United States and Canada, farmer associations are more actively involved in implementation and development of agricultural insurance. Government has reserves to cover extreme losses, and as a final resort, the government treasury is used to cover losses that may occur beyond these reserves.

In the 2002 Insurance Plan, there were 65 insurance products/programs, including a program to insure the fixed costs of agricultural cooperatives that experience climate induced losses. In 1990, there were 36. The 60 companies involved use a large cadre of well-trained and highly professional claims adjusters. ENESA actively coordinates with provincial governments and producer associations to adapt products to local conditions. As a result of the growing complexity, the annual cost to the State has risen from 74 million Euros in 1978 to 2.5 billion Euros in 2002. Indemnity payments cover between 65-100% of losses and historically indemnity payments plus administrative costs have exceeded premium payments. The variety of products and intensive monitor combine to attract clients and reduce losses.

The comprehensive ex ante insurance scheme minimizes the need to make extraordinary budget allocations for disasters. The main political rationale for the insurance program is stability in fiscal outlays. Because the insurance budget is planned every year and types of coverage are so extensive, ad hoc disaster payments and sharp drops in farm tax collections are avoided. Effective demand for public emergency relief is lowered and a strong incentive provided to increase the demand for insurance through the sense that farmers are not eligible for disaster relief if they have not purchased insurance[20].

4.2.4 JAPAN

In Japan, crop insurance proposals were first coined during 1920 and after a prolonged debate on the subject; Agricultural Insurance Law was enacted in 1938. The crop insurance scheme was implemented from April 1939 and provided nationwide coverage for paddy rice, wheat, barley and mulberries[21].

The Agricultural Insurance Law was amended after the Second World War in 1947. This amendment provided multi-peril insurance and at the same time subsidy was increased from 15 per cent of the premium to about one half.

Japan is the only country that has been successful in implementing crop insurance scheme on a nation wide basis and is reckoned as the worlds largest in terms of the number of farmers insured.

The striking difference with Japan when compared to other developed nations is small-scale cultivation where the basic unit of insurance is essentially the owner-operated family farm. Moreover, the Japanese agricultural insurance scheme has no direct linkage with formal credit institution unlike in western developed countries like USA and the Asian developing countries like India[22].

Some of the essential features that contributed to the success of Japanese crop insurance scheme are listed below[23]:

1. Implementation of crop insurance programme is compulsory as stipulated by laws and ordinances.

2. Farmer's participation is compulsory. A large amount of government subsidy is provided for administrative expenses as well as for premium payments.

3. The government itself conducts the reinsurance business in order to carry out the insurance programme smoothly.

4. Existence of structurally well established National Agricultural Insurance Association (NAIA) that conduct research, carry out publicity and organize training courses on agricultural insurance programme.

5. The operational dynamism of "Farmers Associations" that shoulder the responsibility of the entire crop insurance operations at the gross roots level.

Farmers Association:

The farmers association is an organization established in each locality (village, town or city) with all the farmers in that area whose planted acreage exceeds a prescribed minimum. This association is basically responsible for the entire operation of crop insurance scheme at the gross roots level. It undertake the basic activities such as making mutual relief contracts, collecting premiums from the insured, making loss assessments, paying indemnities and proving the farmers with loss-prevention guidance (extension).

The association also has an autonomous function of electing the leaders of the federation, communicating their needs to the higher levels, retain some portion of the premium collected in the form of deposits and carry out loss-prevention activities of their own.

The Japanese crop insurance programme derived the following benefits out of these farmers association-

1. The government of Japan has developed necessary instruments to fix the inherent risks associated with the crop insurance programme such as moral hazard and adverse selection.

2. Immediate appraisal and rapid loss assessment procedures are absolutely essential as the farmers may wish to harvest the undamaged part of the affected crop in due time when ever there was a catastrophe.

3. Agricultural insurance programme requires a large number of trained personnel capable of responding immediately to appraise the losses. This function is being effectively carried out by the association.

4. Another important activity, the association under takes is the loss prevention guidance to the farmers.

5. It brings down the unit cost of the production by purchasing the inputs in bulk and distribute to the farmers.

6. It also facilitates for marketing of the produce besides bargaining for better price[24].

4.3 Experiences of Developing Countries

In developed countries, government risk management programs are as much about income transfers as they are about risk management. Developing countries cannot afford to facilitate similar income transfers to large segments of the population who may be engaged in farming. Nonetheless, a larger percentage of the population in developing countries is typically involved in agricultural production or related industries; therefore, catastrophic agricultural losses will have a much greater impact on GDP than in developed countries.

There are various reasons for developing countries to avoid adopting approaches to risk management similar to the ones adopted in developed countries. Clearly, developing countries have more limited fiscal resources than developed countries. Even more importantly, the opportunity cost of those limited fiscal resources may be significantly greater than those of a developed country. Thus, it is critical for a developing country to consider carefully how much support is appropriate and how to leverage limited government money to encourage agricultural insurance markets.

Policy makers should also carefully consider the structural characteristics of agriculture for different countries. Farms in developing countries are significantly smaller than farms in countries like the United States and Canada. Smaller farms imply higher administrative costs and portion of these costs are related to marketing and servicing (loss adjustment) insurance policies. Another portion is related to the lack of farm-level data and cost effective mechanisms for controlling moral hazard.

Developing countries also have far less access to global crop reinsurance markets than do developed countries. Reinsurance contracts typically involve high transaction costs. Reinsurers must understand every aspect of the specific insurance products being reinsured (for example, underwriting, contract design, ratemaking, and adverse selection and moral hazard controls). Some minimum volume of business or the prospect for strong future business must be present to rationalize incurring these largely fixed transaction costs.

The enabling environment to gain confidence in contract enforcement and the institutional regulatory environment are critical to create trust that must be present for a global reinsurer to become involved. These components are largely missing in developing countries.

The development patterns of agricultural insurance in the developing countries are just about identical. In recent times the Food and Agriculture Organization (FAO) of United Nation, World Trade Organization (WTO) and other international bodies have taken wide-ranging initiatives to popularize agricultural insurance programmes in the developing countries.

Among the developing countries India, Uruguay and Mexico have made noteworthy achievements in implementations of agricultural insurance programmes. The agricultural insurance patterns of Uruguay and Mexico are discussed below.

4.3.1 URUGUAY

Agricultural insurance in Uruguay was first commenced in 1914. Between 1914 and 1993, it was under state monopoly. The State Insurance Bank (Banco de Seguros del Estado) was the only entity permitted to issue policies. Since then the industry has liberalized and there are total of eighteen companies but in the area of agricultural insurance only three entities are active—Banco de Seguro del Estado (BSE), MAPRE, and La Compañia Cooperativa de Seguros (SURCO). Among them BSE is the dominant actor and they all offer very similar multiple peril policies and rely on a 35% government subsidy for premiums[25].

The basic policy covers estimated yield losses from hail with additional buy up polices available for fire, frost, excessive rain, and wind. Levels of coverage vary by risk—100% guarantee for hail damage, 80% guarantee for fire damage, and between 80-100% for other perils.

The claim adjustment process is identical for all three companies. The policyholder or legal representative of that person must accompany the claims adjustor in the field and payments are made based on calculated damages. If there is a dispute, it is settled by arbitration.

The agricultural insurance market is quite small. In the crop cycle 2000-01, 1,400 policies were issued, insuring 160,887 ha for a value of US$44 million. The premium volume was US$2.3 million. Agricultural insurance covers 2% of the farmers and less than 1% of the total cultivated area of Uruguay[26].

Agricultural insurance in Uruguay for a long time has been seen as a "government endeavor" and private companies and re-insurers have expressed little interest in this market segment. Since 2001, the Ministry of Agriculture has been trying to rationalize the system by undertaking studies to design a new, more rational insurance scheme to replace the present anemic private sector efforts and the very expensive and nontransparent "post disaster emergency payments and debt forgiveness" schemes.

The major impediments are lack of a set of complementary well coordinated supporting institutions and the lack of a clear legal and regulatory framework. To overcome the problems an interdepartmental working group that includes persons from the Ministry of Livestock Food, and Fisheries (MGAP), the Weather Service, the National Agricultural Research Institute, was formed in 2003 to promote the introduction of agricultural insurance.

The purpose of the working group was to drafting a new law and in starting a pilot insurance scheme. The draft Agricultural Insurance Law that replicates the ENESA model from Spain has been prepared and the pilot launched. MGAP has been receiving technical assistance from Agroseguros, a Spanish consortium of insurance companies. Spanish insurance companies are advising the Uruguayan government. Proposal has been given to introduce an area yield product, and to establish a separate catastrophic emergency disaster fund open to only those that purchase crop insurance[27].

4.3.2 MEXICO

Crop insurance in Mexico dates back to 1926. Agricultural cooperatives often constituted special funds to cover income shortfalls caused by natural disasters. The funds did not work well due to the long time needed to capitalize them and the frequency of shocks experienced. In 1955 the government attempted to provided reserves and guarantees to the 'mutualist' companies. In 1961, the government through Aseguradora Nacional Agricola y Ganadera S.A. (ANAGSA) started to directly retail an all risk crop insurance product with a 45-61% subsidy in the premium[28].

The most important feature of the ANAGSA program was that crop insurance was a prerequisite for approval from loans from the state owned agricultural development bank and indemnity payments were made via the bank so that the bank could cancel outstanding debts first before paying the farmer for losses. Thus this program was in essence "bank insurance". The high losses, high administrative costs, the premiums were set low and hardly varied. As a result, the company experienced repeated heavy losses, eventually forcing its closure in 1990.

In that year, AGROASEMEX, replaced ANAGSA, as the state crop insurance company, but operated in a liberalized setting. It competed against five private companies under the same set of rules and regulations and all premium subsidies went directly to producers. With the technical support of AGROASEMEX some 200 mutual insurance funds benefiting groups of farmers.

During the decade, AGROSASEMEX offered multiple risk products for both crops and livestock. It used a premium subsidy of 30% and diminished moral hazard problems by insuring 70-90% of total value as opposed to 100% value as was the case with ANAGSA. As a result of better use of modern underwriting techniques, such as deductibles to combat moral hazard, the company posted loss ratios of 78.6% for livestock and 64.6% for crops in 1999[29].

In 2000, AGROASEMEX transformed into a second tier institution primarily providing reinsurance and secondarily working to promote and development the industry by providing technical assistance to the mutual funds, developing innovative instruments (parametric and catastrophic bond products).

Being only reinsures of local private insurance companies (only five offer crop insurance products) and about 200 mutual insurance funds (Fondos de Aseguramiento or FONDOS), AGROASEMEX serves as a technical adviser to the FONDOS, and manages the Federal premia subsidy program for the FONDOS.

The FONDOS are mutual insurance funds that allow farmers to pool resources and insure themselves as a group. The FONDOS tend to be in low-income regions of the country. The risks covered are drought, excess moisture, frost, hail, fire, wind, plant infestations, and livestock diseases, accidents, incapacity, and forced sacrifices. AGROASEMEX's program is more cost effective.

For example, its ratio of indemnity to reinsurance averaged 13.06% for the period 1991-96. Since 2000, AGROASEMEX has been performing more efficiently[30].

4.4 EVOLUTION OF AGRICULTURAL INSURANCE IN INDIA

The idea of agricultural insurance emerged in India during the early part of the twentieth century. Credit for pioneering work on agricultural insurance in India goes to J. S. Chakravarti, who published a number of papers on the subject since 1915 in the *Mysore Economic Journal.* In 1920 he brought out a book *"Agricultural Insurance: Practical Scheme suited to Indian Conditions"*. J. S. Chakravarti[31] proposed an agricultural insurance scheme based mainly on the rainfall approach. This scheme consisted of a package that included insurance of buildings, granaries and agricultural implements; cattle insurance and; insurance of crops. There were also attempts prior to independence by princely states like Dewas, Baroda, Madras etc to introduce crop insurance[32].

Agricultural insurance received more attention after India's independence in 1947. The subject was discussed in 1947 by the Central Legislature and the then Minister of Food and Agriculture, Dr. Rajendra Prasad gave an assurance that the government would examine the possibility of crop and cattle insurance. Some committees were formed and discussions and deliberations continued.

The interest in the subject was rekindled during the Third Five Year Plan (1961-66). However, the Working Group on Agriculture was averse to include crop insurance in the plan. The government of Punjab proposed the inclusion of crop insurance in its state plan and sought financial assistance from the central government. The state government could not introduce crop insurance as the powers to pass the legislation related to insurance were vested with the central government.

Following these developments and increasing demand for crop insurance, a concrete step for introducing crop insurance at the national level was taken only in October 1965. The Government of India decided to have a Crop Insurance Bill and Model Scheme of Crop Insurance was formulated so that the interested States could introduce Crop Insurance in the area under their jurisdiction[33].

A Draft Bill and Model scheme were prepared and circulated to the states to elicit their views and comments on the same. Further, incorporating the comments and views of the states, the Government of India in March 1970 considered the Draft Bill and the Model Scheme. The Draft Bill and the Model Scheme were then referred to the Expert Committee (under the Chairmanship of Dharm Narain) in July 1970, for fuller examination of the economic, administrative, financial and actuarial implications. The Committee opined that it was not advisable to go in for any type of crop insurance in India, not even on a pilot basis. Thus for over two decades the issue of crop insurance continued to be debated and discussed[34].

Despite the unfavorable report of the Dharam Narian committee, political compulsions forced the government to introduce crop insurance in the country in 1972 on an experimental basis. The General Insurance Department (GID) of the Life Insurance Corporation (LIC) introduced the first ever crop insurance scheme based on individual farm based approach in 1972 for Hybrid-4 cotton in a few districts of the Gujarat[35].

The crop insurance programme was subsequently transferred to the General Insurance Corporation (GIC) of India after the nationalization of Property & Casualty insurance business.

The scheme was extended to Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu and West Bengal and covered cotton, wheat, groundnut and potato. The scheme was in operation up to 1978-79 and covered only 3,110 farmers. The total premium collected was Rs. 4.54 lakh against the claim of Rs. 37.88 lakhs. The claim premium ratio was 8.34 indicating that for every one rupee of premium collected, the scheme paid Rs. 8.34 in claims[36].

The GIC of India found these schemes uneconomic and unsuitable for implementation on a large scale due to very high claim premium ratio. It was also realized that programs based on the individual farm approach would not be viable in the country.

4.4.1 Problems of Individual Approach[37]

Obviously, "individual farm approach" would reflect crop losses on realistic basis and hence, most desirable, but, in Indian conditions, implementing a crop insurance scheme at "individual farm unit level" was overwhelmed with problems, such as:

1. Non availability of past records of land surveys, ownership, tenancy and yields at individual farm level
2. Large number of farmer with small farm holding size
3. Remoteness of villages and inaccessibility of farm-holdings
4. Large variety of crops, varied agro-climatic conditions and practices
5. Simultaneous harvesting of crops all over the country
6. Problems in collection of small amount of premium from large no. of farmers
7. Prohibitive cost of manpower and infrastructure

In 1976, an expert committee headed by V M Dandekar looked into issues and modalities of crop insurance in India and revisited the Dharam Narain Committee's views. It opted for the introduction of crop insurance, and submitted its report to the General Insurance Corporation (GIC) in May 1976. V M Dandekar examined in detail the arguments of the expert committee (Dharam Narain Committee') and strongly advocated the introduction of crop insurance. The following were the major issues in the discussion on crop insurance[38].

Independent risks and time diversification:

According to the expert committee agriculture risk has a significant systematic component and cannot be diversified by pooling – a necessary condition for insurability. However, Dandekar argued that, "in many years the amount of premium received will nearly balance the amount of indemnities paid, though in some years the premium received will exceed the indemnities paid out and vice-versa".

This is a reference to diversification over time as opposed to the diversification across space or individuals at a point in time, referred to by the expert committee. However, diversification over time cannot be a substitute for diversification over space or individuals. Diversification across individuals reduces or eliminates variability over time in the aggregate claims. Diversification across time only ensures that over a sufficiently long period of time of several years the insurer breaks even, but still has to withstand year to year fluctuations in profits.

Individual and area based approach:

Both Dandekar and the expert committee preferred the 'area' approach to the 'individual' approach. The individual approach requires individual ex ante assessment of risk and ex post assessment of loss for determining individual premium and claim payments. The area approach treats all farmers in a defined area as identical in terms of risk and loss and, therefore, paying identical premium and receiving identical claim amount. However, even though the individual approach is the first best from the perspective of reducing the basis risk, the area approach is the preferred alternative in terms of the administrative costs of risk assessment and loss estimation, as well as being less susceptible to the moral hazard problem.

Adverse selection problem and compulsory insurance:

The area based approach, by assuming sufficient homogeneity in each area, reduces the adverse selection problem and hence the need for compulsory participation. However, it was felt that participation would be limited and premium collection difficult if the insurance were not made compulsory. Dandekar recommended that the "crop insurance scheme should be linked, on a compulsory basis, with the crop loan system.... The entire amount of the crop loans should be insured. Premium should be deducted while advancing the loan. Indemnities when they become payable should be adjusted against the recovery of the loan". The main advantage of this approach is that, "Not only the scheme can immediately get off the ground but there will be hardly any administrative costs involved"[39].

This was also expected to solve the problem of loan recovery since, "the entire agricultural credit structure is in urgent need of protection from the hazards of agriculture and this can be done only by means of an appropriate crop insurance scheme suitably linked to the agricultural credit structure"[40]. A non-borrower farmer could take the insurance on a voluntary basis.

Subsidies:

While Dandekar proceeded largely on the basis of a self-supporting scheme he did not rule out "legitimate grounds for a certain amount of subsidy". Dandekar suggested that less risky areas should be charged "slightly higher, but only slightly, higher premium than warranted" to subsidize more risky areas. This implies that while more risky areas would be charged higher premium than less risky areas, the difference would be less than the actuarial amount. Dandekar also provided for direct subsidy of high risk areas and of small and marginal farmers.

Dandekar suggested an alternative approach linking crop insurance with institutional credit, i.e., crop loan. The main objectives of the scheme were:

(i) To provide a measure of financial support to the farmers in the event of crop failure as a result of drought, floods, etc., and

(ii) To restore credit eligibility of farmers after a crop failure for the next crop season.

The GIC accepted most of the recommendations and The Pilot Crop Insurance Scheme (PCIS) based on the area approach was first introduced in three states viz., Gujarat, Tamil Nadu and West Bengal in kharif (Monsoon) 1979 on pilot basis. Later on, it was extended to nine more states.

4.4.2 Salient Features of the Pilot Crop Insurance Scheme (PCIS) [41]

1. The basic unit of insurance was 'homogeneous area' rather than an individual. Taluka / revenue circle was considered as area unit. The premium as well as the indemnity rate for the notified crop was uniform for all the insured farmers irrespective of their actual yield. Indemnities were paid to all insured farmers when the average output of the given area fell below the 'normal' output of the area.

2. The insurance policies were issued in favor of the institutional credit agencies, i.e., District Central Cooperative Bank or the Commercial Bank as the case might be.

3. Only a few major cereals, pulses and oil seeds crops were covered under the scheme with a provision for inclusion of nonfood crops with adequate crop cutting data.

4. The scheme was voluntary in nature. The GIC of India formulated separate schemes for kharif and rabi seasons and implemented in select area in consultation with the state government.

5. The crop insurance scheme was multi-peril insurance in nature as it covered almost all the natural risks except war and nuclear risks.

6. The premiums were to be set in such a way that the premium collected for the area over the long-run matched the indemnity payments over the same time horizon (i.e., it is actuarially fair).

7. The premium and indemnity rates for individual crop were calculated for the homogeneous area (taluka or revenue circle) based on the crop cutting data for 10 preceding years.

8. The threshold yield for various crops ranged between 50 to 80 per cent of the normal yield of the area during the specific season. The farmers had to bear the loss between normal and threshold yield.

9. The indemnity became payable only when assessed yield in the insured area was less than the guaranteed (threshold) yield. The maximum indemnifiable limit was the difference between threshold yield and the actual yield during the season.

10. The overall liability for crop insurance policies was limited to Rs. 12 crores per annum for the whole country. This was shared by the GIC of India and the State Government concerned in the ratio of 3:1

The details about the coverage, in terms of number of farmers, area covered, premium collected and total claims paid for the Pilot Crop Insurance Scheme implemented during 1979 through 1984-85 have been provided in **Table 4.1.** The total amount of premium collected during the six years of pilot implementation of crop insurance was Rs. 195 lakhs and total claims or indemnity payments were around Rs.155.7 lakhs[42].

Table 4.1

Working Results of Pilot Crop Insurance Scheme during 1979 - 1985

Particulars	YEARS						Total
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	
No. of states	3	3	8	9	11	12	—
Area covered (ha)	13181	18703	24467	70729	87347	477333	691760
Farmers covered	16265	23442	24625	50855	60349	447086	622622
Sum insured*	130.30	165.77	202.82	468.26	653.64	4446.49	6067.28
Premium collected	5.53	6.93	7.55	15.65	21.15	138.20	195.01
Total claim paid	5.29	3.27	9.64	37.32	8.37	91.80	155.68
Claim ratio (%)	95.71	47.10	127.67	238.46	39.56	66.42	79.83

* *Sum insured, Premium collected and claims paid are in lakh rupees*

Source: Tripathi S.L. (1987)

The overall claim to premium ratio was roughly 80 per cent indicating that about 80 per cent of the total premium collections were used for the payment of claims or indemnities. The average premium collected for crop insurance declined from Rs. 41.95 per hectare in 1979-80 to Rs 22.13 per hectare during 1982-83 and increased thereafter to Rs. 28.95 per hectare in 1984-85. Incidentally, the average premium collected per hectare was the lowest and the average indemnity paid per insured crop hectare was the highest (Rs. 52.76 per insured hectare) during 1982-83.

4.4.3 Shortcomings of the Pilot Crop Insurance Scheme

Following were some of the factors that impinged upon the coverage of the Pilot crop insurance scheme[43].

1. A Majority of the holdings were in small and marginal farm categories and these farms have poor access to institutional credit. Since Crop insurance was linked to crop loans, many small and marginal farmers could not participate in the crop insurance scheme.

2. The threshold yield was fixed on the basis of the average of the preceding 10 years whereas the trend in the growth of yield levels for most of the crops was positive.

3. The threshold yield or level of non-indemnifiable yield was very high even for low risk areas.

4. Exclusion of the high risk areas from crop insurance scheme

5. The unit of insurance or area defined as homogeneous area was very large

6. Unawareness among the farmers about the crop insurance scheme

7. Major commercial crops like cotton and sugarcane were excluded from the crop insurance scheme.

4.5 DEVELOPMENT OF COMPREHENSIVE CROP INSURANCE SCHEME (CCIS)

After successful implementation of the pilot scheme on Crop Insurance, the Government of India with active participation from the State governments introduced the **Comprehensive Crop Insurance Scheme (CCIS)** with effect from 1 April 1985, coinciding with the initiation of the 7th Five Year Plan. The scheme operated on homogeneous **'area yield'** based approach. The scheme was compulsory for all the borrowers of the short-term crop (production) loans from institutional sources.

The State Government and the Union Government jointly funded the Crop Insurance scheme and shared both premium and claims in the ratio of 1:2. The General Insurance Corporation (GIC) of India established Crop Insurance Cells in their offices at the state level and maintained close liaison with the state government, RBI, NABARD and other financial institutions like co-operatives, commercial banks, Regional Rural Banks (RRBs.) etc.

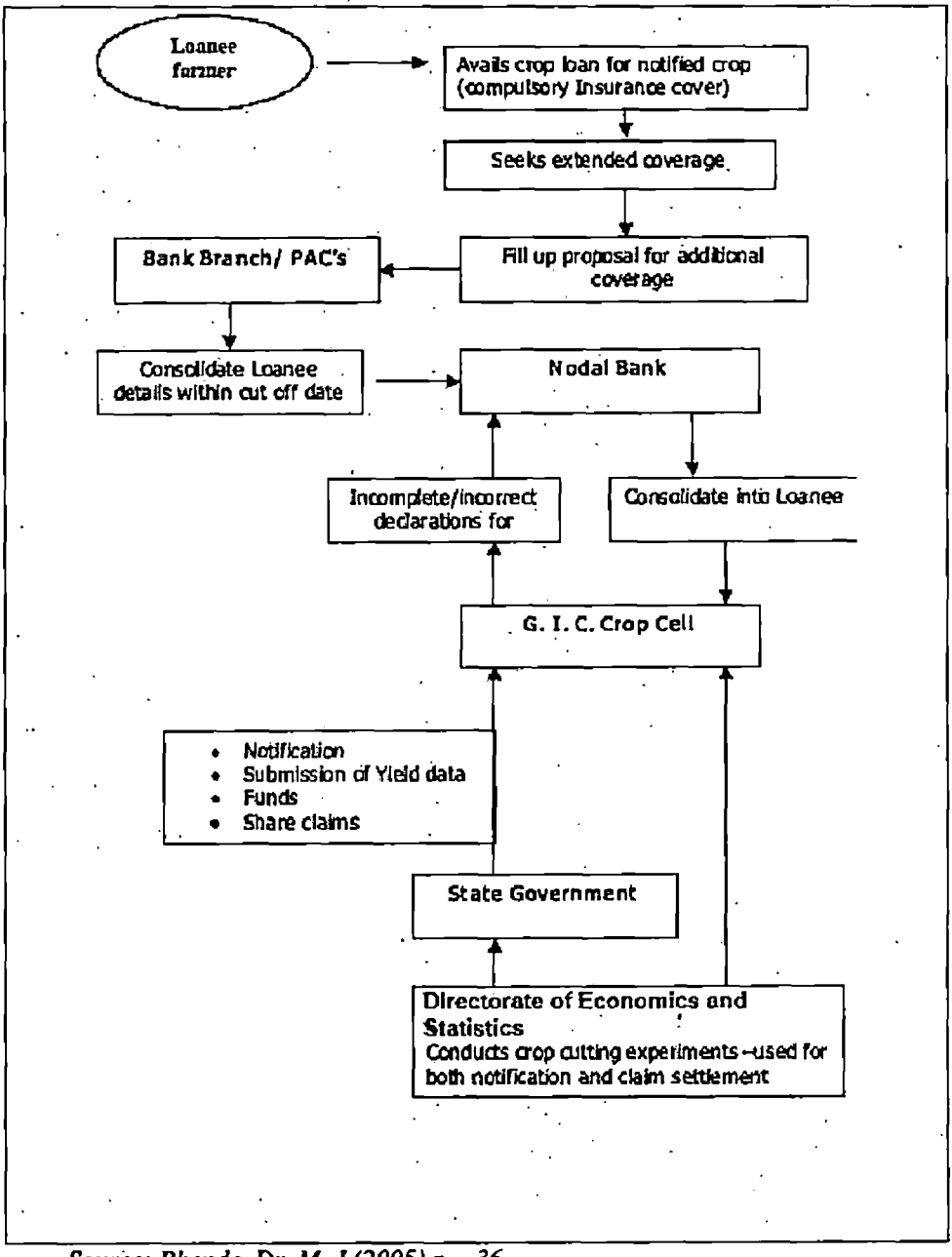
All the farmers availing crop loans from co-operative credit institutions, commercial banks and regional rural banks for rice, wheat, sorghum, millets, pulses and oilseeds during kharif, rabi and summer were eligible for the insurance cover. The insurance coverage was built in as a part of crop loan in the areas where the scheme was in operation.

The premium charged was 2 per cent of the crop loan borrowed for cereals (rice, wheat and millets) and 1 per cent of the sum insured for oilseeds and pulses. The premium amount used to be reimbursed by the financing agency to GIC of India directly on behalf of the borrower. The premium amount was additional credit over and above the scale of finance available for a particular crop.

The operation of CCIS is presented with the help of Flow Chart in **Figure 4.1** below[44].

Figure: 4.1

Flow Chart for CCIS Programme



Source: Bhende, Dr. M .J (2005) p. - 36

Various facets of the Comprehensive Crop Insurance Scheme are described below[45].

4.5.1 Major Objectives

The major objectives of the CCIS were more or less the same as that of the Pilot Crop Insurance Scheme as given below.

1. To provide a measure of financial support to farmers in the event of crop failure due to vagaries of nature such as drought and floods,
2. To restore credit eligibility of farmers after a crop failure for the next crop season and
3. To support and stimulate production of cereals, pulses and oilseeds

4.5.2 Area approach/defined area

There was a three-tier system in the notification of crops eligible for insurance. At the apex or national level Ministry of Agriculture, the Government of India declared the crops that were eligible for insurance under the CCIS. At the second stage, the State department of agriculture issued a notification on the type of crops that were eligible for insurance cover within the state (sub-set of the crops notified by the central government). Finally, the department of agriculture in the state notified the crops in the respective homogenous areas (Taluka) that can be insured during the concerned crop season.

Generally, taluka was considered as the homogenous area and unit for calculating premium and level of indemnity payments under CCIS. A crop was notified or became eligible for insurance if it covered a minimum area of 1,000 hectares in the taluka. In addition to this, the availability of past data and the ability to conduct requisite number of crop cutting experiments were the important parameters in notifying the crop. Most of the cereals, important pulses and oilseeds were included in the list of notified crops under CCIS in most of the states.

4.5.3 Assessed Yield

The actual average yield per hectare of the insured crop for the defined area was estimated through crop cutting experiments conducted during the insured season. Minimum 16 crop cutting experiments were conducted for selected crops, in each notified taluka.

4.5.4 Threshold Yield

Threshold yield represented 60 to 90 per cent of the average yield per hectare for the last five years of a crop in a 'defined area' (or such shorter period as decided for specific defined area). Data from crop cutting experiments or any other such alternative methodology adopted by the Government of India was used for calculating the threshold yield. Generally, 5 years average yield of millets, pulses and oilseeds in the defined area were used as threshold yields as against 3 years average yield of wheat and paddy.

4.5.5 Level of indemnity

The level of indemnity in the existing CCIS was notified for each crop separately based on variability (coefficient of variation) in the yield of that crop in the past. The crops are classified as low-risk, medium-risk and high-risk crops depending on the variability in yield levels as shown in **Table 4.2** below.

Table 4.2:

Study of Risk Levels and Indemnity Payments for CCIS

Sl.No.	Type of Risk	Coefficient of Variation (%)	Level of Indemnity (%)
1	Low	Up to 15	90
2	Medium	16 to 30	80
3	High	Above 30	60

Source: Constructed by the Researcher

The categorization of crops in different classes of risk was based on the yield data of the 10 preceding years. The level of indemnity payment might be varying from year to year depending upon the coefficient of variation.

4.5.6 Payment of indemnity

If actual yield become short of specified threshold yield, all farmers growing that crop in the defined area were deemed to have suffered shortfall in their respective yields and were eligible for compensation or payment of indemnity. The amount of indemnity or the compensation payable was calculated as under:

$$\frac{\text{Threshold yield - Actual average yield}}{\text{Threshold yield}} \text{ X Sum insured for the farmer}$$

4.5.7 Sum insured

The sum insured per borrower farmer was 150 per cent of the crop loan, subject to a maximum of Rs. 10,000 for growing notified crop/crops in the defined area during the insured season. However, from kharif 1988, the sum insured had been reduced from 150 per cent to 100 per cent of the crop loan disbursed to a farmer subject to a maximum ceiling of Rs. 10,000.

4.5.8 Subsidy on insurance charges

Small and marginal farmer borrowers (land holding less than 2 hectares) are granted 50 per cent subsidy for the payment of insurance premium. The Central and State Governments share the subsidy equally. In case of Union Territories, the entire subsidy was borne by the Government of India.

4.5.9 Shortcomings of CCIS

The Comprehensive Crop Insurance Scheme (CCIS), which was introduced in 1985 and continued till 1999, had some in-built weakness or shortcomings. These shortcomings impinged on the viability of the scheme. The major shortcomings of the scheme were as follows:

Area Approach

CCIS established taluka as a unit for notification. A taluka covers a very large geographical area and was treated as homogeneous as soils as well as climatic conditions vary drastically within a taluka. There were instances where crop losses occurred in some villages and farmers did not get the benefit of the scheme. This made the farmers disinterested and reluctant participant in the CCIS. Therefore, it is desirable to have smaller area units or defined areas for the calculation of premium and indemnity payments.

Coverage

The sum insured was limited to the amount of crop loan borrowed from formal credit institutions. However, the crop loan did not cover the entire expenditure made by the farmer on crop production. In the event of crop failure, the farmer suffered tremendous losses. Only loanee farmers were eligible for participation the CCIS or rather it was compulsory for them to buy insurance cover for the crop loans borrowed from institutional sources. It was observed that farmers take out loans in the name of insured crops and invest it in the production of both insured and un-insured crops with a view to maximizing their returns within the available resources.

Threshold Yield

It was 60 to 90 per cent of the average yield per hectare during the past 5 years of the defined crop. However, yield levels were showing increasing trend over the years due to adoption of improved technology and increased use of inputs in crop production. This dampened the interest of progressive farmers in CCIS.

Non-borrower Farmers

Farmers who borrowed crop loans from institutional sources were eligible for insurance coverage under CCIS. Non-borrowing farmers could not get such coverage and in the process a vast majority of the non-borrower farmers were left out of the insurance cover.

Voluntary Participation

The success of any insurance scheme is conditioned by the participation of a large number of people over time and space. The voluntary nature of participation gives rise to adverse selection wherein higher risk individuals are inclined to subscribe to the scheme heavily. At the macro level, it is for the state governments to decide about participation in the scheme. However, in order to avoid adverse selection it is imperative to make participation of the state compulsory.

Premium Rates

The risk associated with crop production or variability in crop yields for different crops varied from region to region and across the states. Premium rate was uniform for the entire country and there was no differential rate of premium for low risk and high-risk areas. Moreover, the premium rates charged were too low and have no actuarial basis.

Crop Coverage

The CCIS covered cereals, pulses and oilseeds and some of the important cash crops such as cotton were left out of the system. The farmers had the incentive to borrow in the name of insurable crop and divert the credit for other crops. This may lead to the problem of moral hazard.

Risks or Perils Covered

CCIS provided insurance cover against all types of risks that affected average yields of the insured crops in the area. In other words, it was a multi-peril crop insurance scheme. The CCIS was in the public sector and was supported by budgetary resources of the central and state governments.

Time Lag for Indemnity Payments

The time taken for the settlement of claims varied from 6 months to one year. This leaded the small and marginal farmer to a great hardship. The farmer faced liquidity crunch due to reduction in crop production or complete crop failure, on the one hand and he could not borrow for the next season as the indemnity payments due had not reached the bank.

Reserve and Reinsurance

The CCIS had created reserves in the form of State Crop insurance Fund. However, these funds were inadequate to meet the demand for indemnity payments at the time of catastrophic losses. There was heavy dependence on government budgetary resources. As a result there were delays in settling the claims. Reinsurance is another alternative to meet unforeseen payments for catastrophic losses. However, the CCIS for its business parameters like claim premium ratios, premium rates, etc., could not get access to reinsurance in the international market.

4.6 OUTLINE OF NATIONAL AGRICULTURAL INSURANCE SCHEME (NAIS)

In order to address some of the shortcomings and improve the scope and contents of CCIS, the government of India expressed its intentions to launch a new crop insurance scheme during 1998-99 budget speech. A broad-based National Agriculture Insurance Scheme (NAIS) or Rashtriya Krishi Bima Yojana (RKBY) was introduced with effect from the Rabi season of 1999-2000.

The scheme was designed to cover all the farmers irrespective of the size of holding and both borrowers and non-borrowers of the institutional credit. NAIS provides for greater coverage of crops and risk commitment (sum insured) when compared with CCIS. The new crop insurance scheme was intended to address the issue of financial viability by raising the premium to 4 per cent for food crops and still higher premium for cash crops like sugarcane, potato, groundnut, etc. The government intended to bring down the claim premium ratio from more than 5 to a manageable 1.4.

The new crop insurance scheme NAIS / RKBY was introduced during rabi 1999-2000 in 9 States / Union Territories. The states/UT, which adopted the new scheme during 1999-2000 Rabi season, were Assam, Goa, Gujarat, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Orissa and Pondicherry. The number ofStates/UT implementing NAIS increased to 17 in Kharif 2000 and reached 21 in kharif 2002. However, prosperous states like Punjab and Haryana preferred to stay out. Sates like Rajasthan having large area under rain-fed agriculture also preferred not to join the scheme[46].

Various facets of the Comprehensive Crop Insurance Scheme are described below[47].

4.6.1 Crops Covered

The Crops were categorized in the following broad groups:

- Food crops (Cereals, Millets & Pulses)
- Oilseeds
- Sugarcane, Cotton & Potato (Annual Commercial / Annual Horticultural crops).

Ginger, onion, turmeric and chilies were covered under agricultural insurance during the second year of the scheme. Other annual commercial/horticultural crops have also been brought under insurance cover in the subsequent years depending on the availability of crop yield data.

4.6.2 States and Areas Covered

The scheme has been extended to all the states. The state has the responsibility to extend it for all the crops identified for coverage in a given year. Moreover, states / union territories once opting for the Scheme have to implement it for a minimum period of three years. The participation in NAIS/RKBY is compulsory for farmers growing notified crops by availing crop loans from formal credit institutions. However, non-borrower farmers growing notified crops are also eligible to opt for the scheme on voluntary basis.

4.6.3 Farmers Covered

All farmers including sharecroppers, tenant farmers growing the notified crops in the areas are eligible for coverage. The Scheme covers following groups of farmers:

a) ***On a compulsory basis:*** Farmers growing notified crops and availing Seasonal Agricultural Operations loans from Financial Institutions i.e. Loanee farmers.

b) ***On a voluntary basis:*** All other farmers growing notified crops those opt for the Scheme on a voluntary basis. (i.e. Non-Loanee farmers)

4.6.4 Risks/ Perils Covered

The NAIS covers yield losses due to non-preventable risks, which includes:

1) Natural Fire and Lighting
2) Storm, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane, Tornado etc.
3) Flood, Inundation and Landslide
4) Draught, Dry spells
5) Pests/Diseases, etc.

Losses arising out of war & nuclear risks, malicious damage & other preventable risks shall be excluded.

4.6.5 Premium Rates

The Government at the time of introduction of NAIS decided to continue with the 'flat rate' system of premium followed in the CCIS. The flat rate of premium applies to all the major crops including food grains, pulses and oilseeds. The limited number of commercial and horticultural crops, which are included in the list of insurable crops, attracts actuarial rate of premium. Actuarial premium rates for the basic crops (food grains, pulses and oilseeds) ware calculated on the basis of "Exposure Rating Technique" which used the principle of 'Normal distribution/Central Limit Theorem'.

4.6.6 Premium Subsidy

50% subsidy in premium is allowed in respect of Small & Marginal farmers, to be shared equally by the Government of India and State / UT Govt. The definition of Small and Marginal farmer would be as follows:

Small Farmer: A cultivator with a land holding of 2 hectares (5 acres) or less, as defined in the land ceiling legislation of the concerned State / UT.

Marginal Farmer: A cultivator with a land holding of 1 hectare or less (2.5 acres).

6.6.7 Sharing of Risk

The Implementing Agency (IA) and the Government should share the risk in the following proportion:

a) **Food Crops & Oilseeds:** It was decided that all the claims beyond 100 per cent of the premium to be borne by the Government of India and the States on basis of 50:50. The claims beyond 150 per cent of the premium shall be met by implementing agency. Claims beyond the limits of IA shall be paid out of the Corpus fund.

b) **Annual Commercial crops / Annual Horticultural crops:** In the case of commercial / horticultural crops, the implementing agency shall bear claims up to 150 per cent of the premium. The claims beyond the limits of implementing agency shall be paid out of Corpus fund.

4.6.8 Approach and Unit of Insurance

The scheme operates on the basis of "Area Yield Approach", i.e., Defined Area for each notified crop for widespread calamities and on an individual basis for localized calamities such as hailstorm, landslide, cyclone and flood. The defined Area (i.e., unit area of insurance) may be a Gram Panchayat, Mandal, Circle, Block or Taluka etc.

4.6.9 Estimation of crop yield

The State/UT Government will plan and conduct the requisite number of Crop Cutting Experiments (CCE) for all notified crops in the notified insurance units in order to assess the crop yield. A Technical Advisory Committee shall decide the sample size of CCEs and all other technical matters.

4.6.10 Levels of Indemnities and Threshold Yield

The indemnity levels are fixed at 90 per cent, 80 per cent and 60 per cent corresponding to low risk, medium risk and high risk areas based on variability in yields in the past 10 years. The crops are classified as Low Risk, Medium Risk and High Risk when the coefficient of variation (CV) is less than 15 per cent, between 16 per cent to 30 per cent and higher than 30 per cent respectively. The farmers may opt for higher level of indemnity on payment of additional premium based on actuarial rates. The Threshold Yield or the guaranteed yield for a crop is the moving average based on past three year average yield in case of rice and wheat and five year average in case of other crops multiplied by the level of indemnity. If the actual yield per hectare of the insured crop in the insured season falls short of the specified Threshold Yield, all the farmers growing that crop in the defined area are deemed to have suffered shortfall in their yield. The shortfall in actual yield as the proportion of threshold yield times the sum insured is the indemnity claim.

4.6.11 Shortcomings of NAIS / RKBY

Though some of the shortcomings of the CCIS were addressed by enlarging the scope and coverage in terms of crops and farmers covered under NIAS/RKBY, the Scheme could not make much dent and covered less than 10 per cent of the cropped area in the country. **The Joint Group on Crop Insurance (2004)**[48] identified various shortcomings of NAIS programmes. Summary of the findings of that report are as under.

1. The premium rates being charged had no relation with actuarial rates. This is largely because actuarial rates, which reflect the probability of a loss, have not yet been computed.

2. The scheme is not financially viable, as it depends on government for subsidization. The claim premium ratio is still very high. The question is posed that if disaster strikes how the government will manage the claims?

3. It is argued that the scheme is not a crop insurance scheme in reality but rather a crop loan insurance scheme. It aims to underwrite agricultural lending and not the agricultural risk.

4. Though the area yield approach minimizes or eliminates the problem of moral hazards, another problem closely associated with insurance business, i.e., adverse selection seems to be affecting the existing NIAS/RKBY as indicated by higher claim premium ratio or loss ratio for non-loanee farmers.

5. There is inordinate delay in settling the claims in the event of crop failures or low yields. The farmer is hard pressed due to reduced or no access to institutional credit and faces liquidity crunch to begin new operation.

6. The government has not explored the avenues for reinsurance to absorb the shocks in case of widespread calamities and disasters.

4.7 PRESENT TRENDS OF AGRICULTURAL RISK MANAGEMENT IN INDIA

4.7.1 Foundation Agriculture Insurance Company (AIC) of India Ltd

Initially the National Agriculture Insurance Scheme (NAIS) was implemented by General Insurance Corporation (GIC) but the Crop insurance seemed to benefit only the big farmers. Hence the government contemplated on a new statutory entity, which would carry the crop insurance benefits to the majority of the farming population, especially to the small and medium farmers. This gave birth to the Agricultural Insurance Company of India Ltd. (AICI or AIC).

The Union Finance Minister in his budget speech for 2002-03 proposed setting up a separate Corporation for Agriculture Insurance. A Task Force was constituted to oversee the setting up of the Agriculture Insurance Corporation. The Task force decided that the new company will be named as 'Agriculture Insurance Company (AIC) of India Ltd' and will be registered under the companies Act 1956. Accordingly, the Agricultural Insurance Company of India Ltd. came into being on December 20, 2002. The company has obtained registration from the Insurance Regulatory and Development Authority under the Insurance Act 1998. The General Insurance Corporation of India, National Bank for Agriculture and Rural Development (NABARD) and four public sector general insurance companies, viz., (i) National Insurance Co. Ltd, (ii) New India Insurance Co. Ltd, (iii) Oriental Insurance Co. Ltd. and (iv) United India Co. Ltd. are the promoters of the new agriculture insurance company[49].

GIC of India Ltd. has subscribed 35 per cent and NABARD 30 per cent to the paid up capital while four public sector insurance companies have contributed 8.75 per cent each. The authorized capital of the new organization will be Rs. 1,500 crores, while the initial paid-up capital is Rs. 200 crores. The Agriculture Insurance Company of India Ltd is implementing NIAS/RKBY without effecting any change in its content[50].

The newly formed Agriculture Insurance Company of India has taken over the role of the implementing agency from the General Insurance Corporation. AIC is supposed to have the "overriding authority and overall responsibility in the operation of the scheme". The state government gives consent for implementation of schemes; notifies the crops and areas; and generates actual yield data through crop cutting experiments at harvest time. The loan granting banks are responsible for issuing coverage; collecting premium and disbursing claims. Each bank identifies a Nodal branch and the AIC works through the Nodal branch.

The government plans to shift to an actuarial regime soon. While this will push up premium rates, the approach will be more scientific. The government should subsidize a part of the premium to relieve farmers. Government support will be necessary, but comprehensive agriculture insurance will go a long way in protecting farmers from uncertainties. AIC of India will devise different insurance products suitable to Indian conditions and offer to farming community in the near future.

4.7.2 Liberalization of Agricultural Insurance Sector

Before deregulation, the Indian insurance industry was characterized by undifferentiated products, fixed premiums set by the Tariff Advisory Committee and low coverage rates in nearly all business lines. Public monopolies thrived in the absence of competition. IRDA Act 1999[51] lifted the ban on private players and opened the industry to foreign players in a limited manner. Key international players have entered into partnerships with Indian counterparts (such as ICICI-Lombard, HDFC-Chubb, IFFCO-Tokio, Bajaj-Allianz, and Birla-Sun Life), and are competing to increase their share of the Indian market at the expense of the government-run monopolies.

Another reason for the focus on agriculture is that as per IRDA regulations, all insurers are required to provide some coverage for the rural sector. In addition, each company is obligated to service the social sector, which includes the unorganized sector, the informal sector, and the economically vulnerable or backward classes in rural and urban areas.

The entry of the private sector has metamorphosed the way the industry functions and this has been critical in improving the penetration levels of insurance. Taking cue from the limitations of traditional crop insurance, private insurance companies have modified their offerings considerably by way of weather-indexed contracts[52].

4.7.3 Weather Rainfall Insurance[53]

Evolution

Weather insurance is a well-known tool for agriculture insurance in other developed economies and has been used successfully by various developmental organisations in various developing economies as well. Weather insurance is prevalent in US, Canada, and other western countries. It has found application across diverse industries like agriculture, food processing, energy, leisure and reinsurance. In India, ICICI Lombard pioneered weather insurance primarily as a weather risk mitigation tool with applications in agriculture, rural lending and energy.

ICICI-Lombard introduced pilot based rainfall insurance on a 'composite rainfall index' in 2003. ICICI Lombard has designed rainfall insurance policies with support from the World Bank and IFC. A pilot project was carried out in the Mahboobnagar district of Andhra Pradesh through the Krishna Bhima Samruddhi (KBS) Local Area Bank.

KBS has been promoted by BASIX and operates in the district of Mahboobnagar in Andhra Pradesh and Raichur and Gulbarga in Karnataka. BASIX is a rural livelihood promotion institution working through an NBFC Bhartiya Samruddhi Finance and an NGO, Indian Grameen Services. The rainfall index insurance and other weather based insurances have since been extended to other areas and crops beginning with Kharif 2004 season[54].

Advantages over Traditional Crop Insurance[55]:

There are many shortcomings in the traditional crop insurance. The important ones are: (a) moral hazard (b) adverse selection (c) multiple agencies and their huge administrative cost which are hidden in the government budgets (d) lack of reliable methodology for estimating and reporting crop yields (e) delays in settlement of claims (f) program limited to growers (farmers). Majority of these shortcomings could be overcome in the weather insurance, as follows:

(i) Trigger events (like adverse rainfall) can be independently verified & measured. India has an independent rainfall reporting system through India Meteorological Department. If the unbiased data can be procured, the moral hazard can be minimized to a large extent.

(ii) Compared to yield based insurance, weather insurance is inexpensive to operate. Since very few agencies would be involved in implementation, the aggregate administrative cost would be far lower.

(iii) Weather insurance allows for speedy settlement of indemnities, as claims can be settled even within a fortnight of the expiry of indemnity period.

The Product Structure:

The product was developed keeping in mind the drawbacks of the crop insurance scheme. The key objectives of this product are to protect the farmers from the vagaries of weather and to promote sustainable resource allocation.

The key characteristics of the weather insurance product are its transparency, objectivity and ease of administration. Transparency primarily refers to the product structure. The structure is communicated through simple definition of parameters, and their transparent and impartial measurement. Objectivity is a measure of identification of the key risk parameters and development of structures to optimally mitigate its effects. Ease of administration is achieved by ensuring minimum subjectivity or physical intervention in the claim assessment.

The product seeks to insure the farmer for his cost of inputs against an uncontrollable weather related parameter that substantially impacts his yield. Based on historical data, the yield and rainfall are correlated to arrive at a rainfall index.

This index is an estimate of the farmer's loss in the event of deficiency of rainfall. The index is adjusted to reflect different requirement for rainfall during different phases of the cropping cycle. The farmer is presented with a simple matrix that denotes the amount due to him for every unit fall in rainfall below the benchmark index.

The structure is designed around historical data sourced from a source weather station. Thus, the structure is applicable to region around the station. The claim is assessed based on the measurements at that station for the period of insurance. The claims are paid out within a month of expiry of period of insurance. Phase-wise payouts are also possible, wherein the period of insurance is split into phases and payouts are made immediately after the lapse of a phase to enable the farmer to take corrective action.

The basic idea of weather insurance is to estimate the percentage deviation in crop output due to adverse deviations in weather conditions. There are statistical techniques to workout the relationships between crop output and weather parameters. Techniques like multivariate regression could explain the impact of weather deviations / variations on productivity.

This gives the linkage between the financial losses suffered by farmers due to weather variations and also estimates the indemnities that will be payable to them. The analysis could also include contingencies associated with the timing and the distribution of weather parameters, particularly rainfall over the season. The two together form the basis for designing rainfall (weather) insurance contracts.

Experiences of Weather Insurance[56]

(a) ICICI-LOMBARD

The pilot scheme was launched in June 2003 for the kharif season 2003-2004 in Mahboobnagar district of Andhra Pradesh. KBS sold policies to groundnut and castor farmers. The policy was limited to crop loans given by KBS to these farmers. The insurance policy makes payments if the cumulative rainfall during the season falls below the historical average.

During 2003 Mahboobnagar district received the best rainfall in the past five years. However, the monsoon was delayed leading to delayed sowing and in turn affecting the yield of groundnut and that resulting in payments to the farmers.

(b) ITGI

IFFCO-Tokio General Insurance Company (ITGI) piloted rainfall insurance by the name – 'Baarish Bima' during 2004 in nine districts of Andhra Pradesh, Karnataka, Gujarat & Maharashtra. The product is based on rainfall index compensating farmers for deficit rainfall. The policy pays for deviations in actual rainfall exceeding 30 percent. The claims are paid on graded scale, with 100 percent claims payable when adverse deviation in rainfall reaches 90 percent. This pilot again is expanded to more crops and areas after Kharif 2004 season[57].

(c) Agriculture Insurance Company of India Ltd. (AIC):

Agricultural Insurance Company of India (AIC) introduced rainfall insurance known as 'Varsha Bima' during the 2004 South-West Monsoon period. The scheme was implemented in 10 States initially, in areas that correspond to 140 Indian Meteorological Department (IMD) rain-gauge stations. The States selected for implementation were Andhra Pradesh, Chhattisgarh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttaranchal and Uttar Pradesh.

Besides this, the AIC has offered the Sookha Suraksha Kavach (SSK). SSK was exclusive product for Rajasthan, an exceptionally drought-prone State. The SSK was made available in 23 districts of Rajasthan and it covered major crops such as bajra, jowar, maize, guar, soybean and groundnut.

Varsha Bima compensates farmers for financial losses incurred owing to crop losses, as a result of adverse rainfall. Insurance is offered to large, small and marginal farmers both for loanees and for non-loanee. However, it is compulsory for loanee farmers.

So far, Varsha Bima is viewed as a scheme still evolving. There are efforts to expand its scope further. AIC also introduced weather insurance pilots on wheat insurance, mango insurance, and coffee insurance during 2005-06, and is looking ahead for expansion during 2006-07[58].

4.7.4 Farm Income Insurance Scheme (FIIS)[59]

Traditional CCIS or NIAS provided insurance coverage to the borrowers for the crop loans from institutional sources or the equivalent amount for non-borrowers. Unscientific premium devoid of any relation with actuarial calculations or probability of crop failure/loss resulted in very high claim premium ratio and scheme proved to be non-viable. Moreover, the participation of farming community in the existing crop insurance scheme (NIAS/RKBY) is also low. To overcome the problem of non-viability and to improve the participation rate, the Agriculture Insurance Company (AIC) of India Ltd. has introduced 'Farm Income Insurance Scheme (FIIS)" on pilot basis in major wheat and paddy growing districts in the country.

Objectives:

- To provide financial support to farmers, in the event of loss in income from adverse incidence of *Crop Yield* (on account of natural calamities, pests & diseases) And *Market Price fluctuations.*
- To encourage the farmers to adopt prudent and progressive farming practices, *both* in terms of agricultural technology, and market economics,
- To enhance food and livelihood security of the farming community,

Salient Features

The following are the salient features of the FIIS:

1. The crops covered are rice and wheat.
2. The scheme is based on the 'homogeneous area' approach and notified area can be an administrative unit such as a gram panchayat, block, taluka or district.
3. The premium rates are determined on actuarial basis at the District level.
4. The Government of India subsidizes 75 per cent of the premium for small/marginal farmers and 50 per cent for other farmers.
5. If the actual income (current yield X current market price) is lower than guaranteed income (average yield of 7 years X level of indemnity X MSP), the insured farmer receives the compensation.
6. NAIS is suspended for the selected districts/crops where the pilot FIIS is implemented.

Experiences of FIIS

The origins of the farm income insurance scheme are in the attempts to reform the minimum support price (MSP) based procurement of food grains. The government follows an open ended procurement policy and there is no procurement target. It buys whatever is offered for sale at MSP. Rice and wheat are the two principal commodities where the government's role is most pronounced.

The Scheme was implemented during Rabi 2003-04 season in 18 Districts of 11 States for wheat and / or rice and during Kharif 2004 season in 19 Districts of four States for rice. In all the scheme covered 4,15,032 farmers with 4,01,812 hectares for a sum insured (guaranteed income) of Rs. 4.20 billions, collecting a premium of Rs. 285 millions and paid claims of Rs. 287.5 millions[60].

FIIS - Key Issues and Constraints:

As it was initially intended to implement FIIS in 100 districts during Kharif 2004, a general review of FIIS was done by AICI at the beginning of Kharif 2004 season. It was noticed that many states including Haryana and Punjab had not agreed to implement the scheme. The single most important reason given for non-acceptance was suspension of MSP based procurement in areas where the scheme is implemented. Other important issues noticed in the review are:

- Majority States were not keen to implement the scheme on the ground that it would not be beneficial to the farmers, as yield and price have offsetting behavior.

- The premium rates were substantially high despite the premium subsidy given by the government. States demanded that the premium payable by farmer should be restricted to NAIS level.

- States also desired that coverage of the scheme should be enlarged to cover risky crops like soybean, groundnut, red gram and commercial crops like cotton, etc.

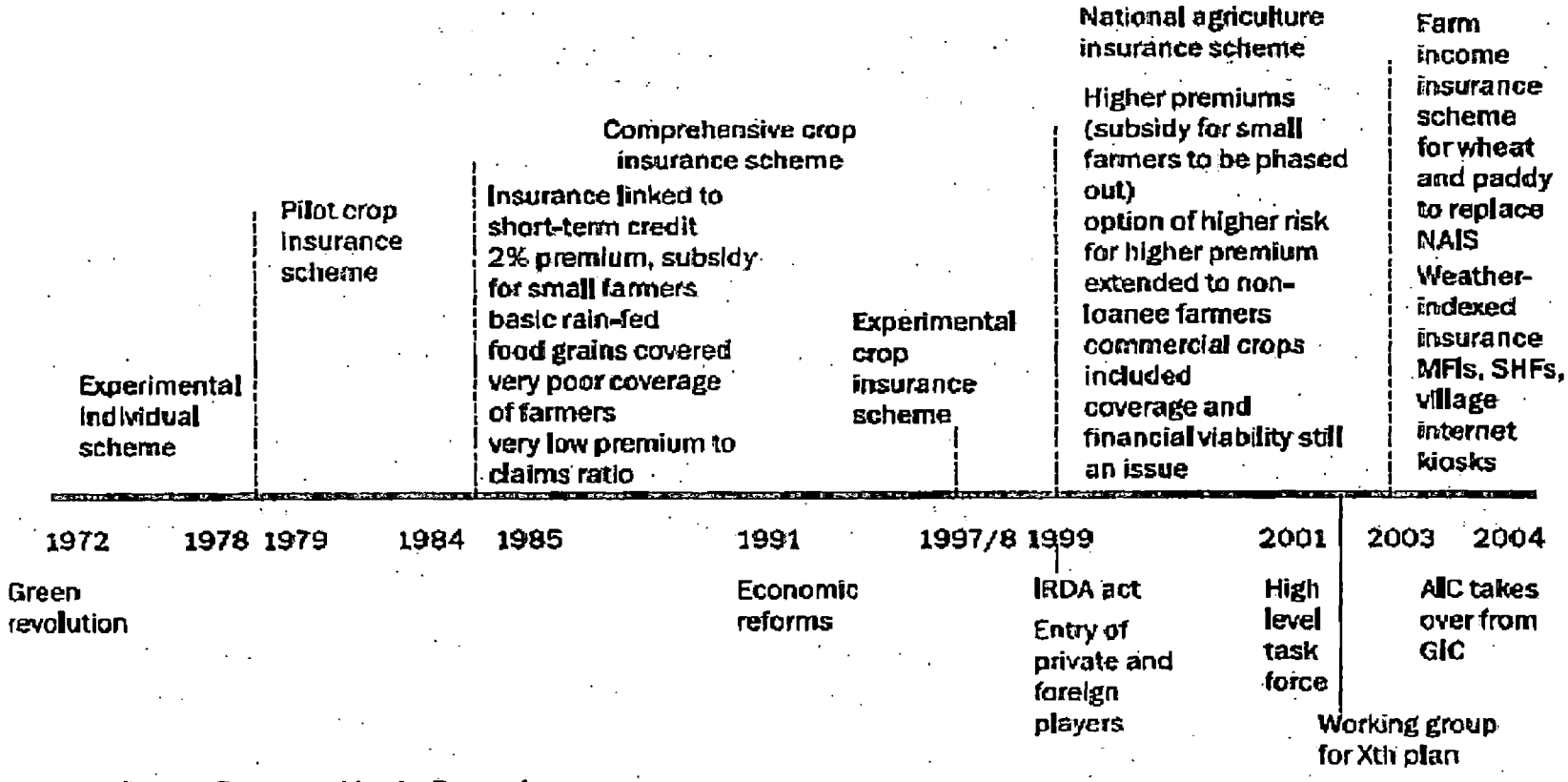
- Improper functioning of Marketing Departments, availability of past as also current data at implementation level was another reason quoted as hindrance for smooth implementation of the Scheme

FIIS was shelved after piloting in two seasons.

The overall evolution process of agricultural insurance in India is graphically presented **(Figure 4.2)** below.

Figure: 4.2

EVOLUTION OF CROP INSURANCE IN INDIA



Source: Constructed by the Researcher

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