

## **AGRICULTURAL INSURANCES IN THE MACROREGION OF NORTHERN POLAND**

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**Key words:** production risks in agriculture, compulsory and voluntary insurances in agriculture, family farms, diagnose for the region of northern Poland.

### **A b s t r a c t**

The studies aimed at formulating the diagnose of agricultural insurances in family farms of northern Poland. The choice of farms for the study was performed by applying the random-strata sampling system. For the confidence level of 0,95 the minimum number of farms for the study was 384. The questionnaire-based study encompassed 420 family farms with the area exceeding 1 ha.

The studies indicate that 90% of the farms purchased the compulsory agricultural insurance. The average year cost of crops insurance per farm amounted over PLN 300, farm buildings PLN 280 and farmer's third party liability PLN 70. More than a half of the farmers declared that the average burden for the farms. Voluntary insurance was less popular. Only about 20% of farm owners purchased them. The farmers covered only 7,6% of the area under crops with the voluntary insurance and the costs of such insurance averaged just around PLN 100. The study also found a clear, directly proportional relation between the farm area and the level of the farm insurance.

## **UBEZPIECZENIA ROLNE W MAKROREGIONIE PÓŁNOCNEJ POLSKI**

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**Słowa kluczowe:** ryzyka produkcyjne w rolnictwie, ubezpieczenia obowiązkowe i dobrowolne w rolnictwie, gospodarstwa indywidualne, diagnoza regionu północnej Polski.

### **A b s t r a k t**

Celem badań była diagnoza stanu ubezpieczeń rolnych w gospodarstwach indywidualnych północnej Polski. Gospodarstwa do badań wybrano systemem losowo-warstwowym. Dla poziomu ufności 0,95 minimalna liczba gospodarstw do badań wyniosła 384. Zankietowano 420 gospodarstw rolników indywidualnych o powierzchni powyżej 1 ha.

Z badań wynika, że 90% gospodarstw wykupywało obowiązkowe ubezpieczenia rolne. Przeciętny roczny koszt ubezpieczenia upraw w gospodarstwie wynosił ponad 300 zł, budynków rolniczych 280 zł, a OC rolnika 70 zł. Ponad połowa rolników uznała to za średnie obciążenie dla gospodarstw. Mniej popularne były ubezpieczenia dobrowolne. Zaledwie około 20% właścicieli gospodarstw je wykupiło. Dobrowolnym ubezpieczeniem rolnicy asekurują tylko 7,6% posiadanej powierzchni upraw, a koszt ich ubezpieczenia wynosi niespełna 100 zł na gospodarstwo. W badaniach stwierdzono wyraźną wprost proporcjonalną zależność między powierzchnią gospodarstwa a poziomem ubezpieczenia w gospodarstwie.

## **Introduction**

Insurance is the condition for stabilization of the farm and the farming as a whole. That is why farming without an efficient system of insurance, well designed and adjusted to the actual needs, but also without the capacity of the farmers, may not develop appropriately, may not satisfy the market expectations, may not modernize and improve (STROIŃSKI 2006 p.5).

According to the model established in Poland, the business activity insurances can be divided into two groups: compulsory insurances and voluntary insurances.

Compulsory (obligatory) insurances are those that the farmer is required to purchase by the law. According to the legislator, imposing the statutory requirement on farmers to purchase insurance aims at protection of possible victims against the consequences of lack of insurance. It is characteristic for the compulsory insurances that their scope is defined by the law and the scope of coverage cannot be narrowed discretionally, no additional exclusions can be made, etc. The currently effective law in Poland imposes on the farmers the duty to contract three types of insurance:

**Third party liability insurance related to possession of a farm called the OC of the farmers. The Act on compulsory insurances, Insurance Guaranty Fund and Polish Motor Insurers' Bureau, Dz.U. of 2003, No. 124, item. 1152.**

The third party liability insurances protect not only the person responsible for damages against expenditures exceeding its financial capability but also the victim against long and arduous actions related to claims for damages against the guilty party. Article 44 Of the Act on compulsory insurances. imposes on the farmers the duty of contracting third party liability insurance related to possession of a farm. According to the provisions of the Act, the farmer, that is the entity, required to contract the insurance coverage is a person in possession or joint possession of which the farm is. It is worth highlighting that also the tenant, lessee and user of the farm is required to contract that insurance.

The notion of the farm, according to the legislator encompasses the agricultural land, land under ponds and land classified as agricultural under buildings and structures exceeding the total area of 1 hectare if it is, as a whole or in part, subject to taxation with the agricultural tax (Act on agricultural tax, Dz.U. of 1984, No. 52, item 268). The farm is also the area of land, indifferent of its area, if it is used for agricultural production that represents the special segment of agriculture (greenhouse production and production in heated foil tunnels, cultivation of fungi and mycelium, in vitro cultivation, farm breeding and rearing of fur and laboratory animals, rearing of earthworms, rearing of entomofags, rearing of silkworms, apiculture as well as breeding and rearing of other animals outside a farm) according to the regulations on the personal income tax.

**Insurance of farm buildings and structures against fire and other disasters referred to as the insurance of agricultural buildings; The Act on compulsory insurances, Insurance Guaranty Fund and Polish Motor Insurers' Bureau, Dz. U. of 2003, No. 124, item. 1152.**

According to the Act, the farmer is required to make the insurance contract of any farm building against fire and other disasters. The farm building should be understood as any structure that is and object permanently fixed to the ground, separated from space by means of partitions and possessing foundations and roof, exceeding 20 square meters in area if it forms a part of the farm. The duty to insure the building is established as of the date of roofing the building. According to article 69 of the Act on compulsory insurance... the insurance of the farm buildings provides damages in case of disasters in the form of a fire, hurricane, flood, partial flooding, torrential rain, hail, snowfall, thunder strike, explosion, landslide, bounce, avalanche or fall of an aircraft.

**Insurance of at least 50% of the field crops area in the farm against the risk of damages caused by flood, drought, hail, negative consequences of wintering and spring frost (compulsory crops insurance). Act of the 7<sup>th</sup> of March 2007 on amendment to the Act on subsidies to the insurance of farm crops and livestock and some other Acts. Dz.U. No. 9, item 328.**

A farmer who obtained direct subsidies to agricultural land (according to the regulations on subsidies to agricultural land and separate sugar payment) is required to insure at least 50% of the area under crops. The compulsory insurances cover crops of cereals, corn, field beans, rape, hops, tobacco, field vegetables, fruit trees and bushes, strawberries, potatoes sugar beets or leguminous crops, from sowing or planting until harvest. Those crops, however, are covered by the insurance against certain risks of damages such as flood, drought, hail, negative consequences of wintering and spring frost.

Voluntary insurance, the purchase of which is discretionary, are purchased not as required by the law but on discretionary contract between the insured and the insurance company. The voluntary insurance may cover the mobile property, livestock, agricultural machines and the remaining part of crops. Voluntary insurances cover material damages (agricultural equipment, materials, stocks, household mobile goods, livestock and crops) protecting the owner against the loss incurred as a consequence of a disaster.

Insurance companies present an extensive offer of insurance products protecting almost all species and groups of livestock, crops, agricultural machinery or accumulated agricultural products and other mobile goods. All those products can be divided into several basic groups of voluntary insurances in agriculture:

– **insurance of mobile property at farms**

Mobile farm property insurances offered by insurance companies cover:

– household mobile property – equipment, furniture and household stocks, clothing, electronic equipment, works of arts, permanent elements of home equipment such as floors, built-in furniture, heating systems, water and sewers installations, windows and doors;

– goods related to operation of the farm or a special segment of agricultural production: agricultural machines and equipment, construction materials, fuels, fertilizers, fodders, plants protection products, packages, office equipment;

– livestock;

– agricultural products stored,

This is an excellent comprehensive complement to the compulsory insurance of farm buildings, which is a typical insurance of the walls” protecting the structure of the buildings covered only.

– **insurance of farm machinery**

The voluntary agricultural insurance can cover agricultural equipment, which means the machines, including harvesting machines and other mobile machines, tools and equipment for farm operation, excluding agricultural tractors and trailers. The agricultural equipment does not include the other vehicles that are subject to compulsory registration in the country. As a consequence cars and trucks, motorcycles and mopeds, their additional equipment and parts, even if they are used by the farmer, are not agricultural equipment. Those vehicles are covered by the third party liability insurance of vehicles compulsory for all drivers. They may also be insured additionally within the frameworks of full coverage auto-casco insurance.

– **insurance of crops**

As already mentioned, the farmer who obtained direct subsidies to agricultural (according to the regulations on subsidies to agricultural land and

separate sugar payment) is required to insure at least 50% of the area under crops, however, those crops are covered against some risks of damages caused by flood, drought, hail, negative consequences of wintering and spring frost only. The other risks are excluded from the coverage by the compulsory insurance. Also the farmers not benefiting from direct subsidies to land are not covered by the requirement to insure their crops. That group may, voluntarily, opt for insuring their crops to the extent and against the risks of their choice. The insurance of crops may cover crops or/and their harvests, one year sown or planted to ground (spring crops), winter crops, multiyear and permanent crops or/and their harvests, crops of hops, tobacco, herbs in the technical process of curing, grasses of meadows and pastures, fruit trees and bushes and plantations of berries. Crops can be covered against the risk of fire, hurricane, flood, torrential rain, hail, thunder explosion, landslide, avalanche, drought, negative consequences of wintering and spring frost.

– **insurance of livestock**

The law does not require farmers to insure the livestock to any extent of coverage. They may do that voluntarily according to one of the two modes of risk coverage: basic – damages caused as a consequence of death resulting from disease, accident or disaster (fire, flood, hurricane, thunder, avalanche, landslide) or extended covering the earlier mentioned risks resulting from slaughter out of necessity. In the insurance application the farmer declares that the insured livestock is healthy and with no defects. In some cases the insurance company may require presentation of the veterinary opinion confirming the welfare of the animals.

## **Materials and methodology**

The studies aimed at formulating the diagnose of agricultural insurances in family farms of northern Poland. The studies covered family farms from 3 voivodships of northern Poland: Warmińsko-Mazurskie, Pomorskie and Kujawsko-Pomorskie. There are around 213,600 farms exceeding 1 ha representing the total area of around 2,890,000 ha in the above-indicated voivodships (GUS 2008).

The farms for the study were selected according to the random-strata sampling method. The voivodships were divided into counties and counties into municipalities. In the municipalities farms for the study were drawn at random to obtain the sample proportionally to the population. The farms covered originated from every municipality and every county of the 3 voivodships covered in the macroregion of northern Poland. The sample population was estimated for large populations at the minimum level equal to:

$$n = \frac{u_{\alpha}^2}{4d^2}$$

- $n$  – necessary minimum sample population  
 $u_{\alpha}^2$  – number of standard deviation units that should be read from the table of normal distribution for the confidence level of  $1-\alpha$   
 $d$  – error or maximum difference between the fraction from the sample and fraction of the population that we want to assume at the chosen confidence level.

The minimum population of farms for the study at the confidence level of = 0,95 is:

$$n = \frac{1.96^2}{4 \cdot 0.05^2} = 384 \text{ at the significance level } \alpha = 0,05\%.$$

Actually, the questionnaire-based study covered 420 farms at the end of 2009 during the period of October-December. The sample structure was determined on the base of the farms population structure in the macroregion. The typology of the population was maintained.

The questionnaire consisting of 23 questions, mainly semi-open ones with a menu of several answers but not exhausting all the possibilities offering the opportunity to the respondent to present opinions and own comments was the research tool. The respondents were personally served the questionnaires that were completed in the presence of the interviewer, which facilitated clarifying possible doubts to the respondent agricultural producers.

The questions concerned, among others:

- typology of farms covered: area, production type, number of household members, main sources of support for the family, etc.
- motivating factors influencing insurance policy purchase,
- level and type of compulsory and voluntary insurances purchased by farmers,
- risks covered by crops insurances purchased,
- financial burden related to compulsory and voluntary insurance in farming

The source material collected was subject to comparative analysis and it was presented in graphic, tabulation and descriptive formats.

## Characteristics of the farms covered

The study covered family farms with the area exceeding 1 ha. The farms were divided into the following area groups: 1.01 – 5 ha; 5.01 – 10 ha; 10.01 – 20 ha; 20.01 – 30 ha; 30.01 – 50 ha and over 50 ha. The respondents possessing farms of 1.01 – 5 ha had the highest share (39,2%) in the population covered. Farms of 10 to 20 ha represented ca. 20%, 5 to 10 ha and over 50 ha – 12.5%. The smallest numbers of farms belonged to the groups of 20–30 ha – 7.5% and 30–50 ha – 9.2%. In the farms covered the average area of arable land was 18 ha, and permanent green land 4.5 ha. A more detailed characteristic of the farms is presented in table 1. The major production specializations were cereals (40.2%) and live pigs (15.2%).

Table 1  
Characteristics of farms covered

Item	Farms	
	number	share (%)
1. Types of production in covered farms		
– cereals	169	40.2
– mixed	84	19.8
– live pigs	64	15.2
– dairy	54	12.9
– other	50	11.9
2. Main source of family support		
– farm income	253	60.2
– work outside agriculture	137	32.6
– pension, disability pension	26	6.2
– other	4	1.0
3. Number of household members		
– up to 2	88	21.0
– 3–4	225	53.6
– 5–7	100	23.8
– 8 and more	7	1.7
4. Education of farm owner		
– elementary	39	9.3
– vocational	152	36.2
– secondary	168	40.0
– tertiary	61	14.5

Source: own work based on the studies conducted.

Around 20% of the farmers indicated at least two responses, which means multidirectional production at their farms. In most cases that was cereals plus live pigs. In case of the response “other” indicated by 12% of the respondents, vegetables and rape as well as rearing of horses and poultry were the most frequent answers.

For over 60% of the farmers covered the farm income was the main source of support. The larger the area of the farm the higher share of such responses was with over 90% of responses among the farmers possessing farms of more than 50 ha and only about 25% in case of the owners of the smallest farms. Around 1/3 of the owners of the farms covered supported themselves on work outside the farm and over 6% of the farmers have pension or disability pension for the basic source of support. The living standard is also determined by the family size in the farmer's household. Most frequently the family consists of 3–4 persons (53.6% of the respondents). In 21% of the farms 2 or just 1 person works. This might indicate the decrease in the number of farms in the near future. There are very few families consisting of 8 or more persons. This indicates that the model of the rural family is nearing that of the urban family. The share of families with many children is very low (1.7%), while still several years ago such families formed the majority among rural families.

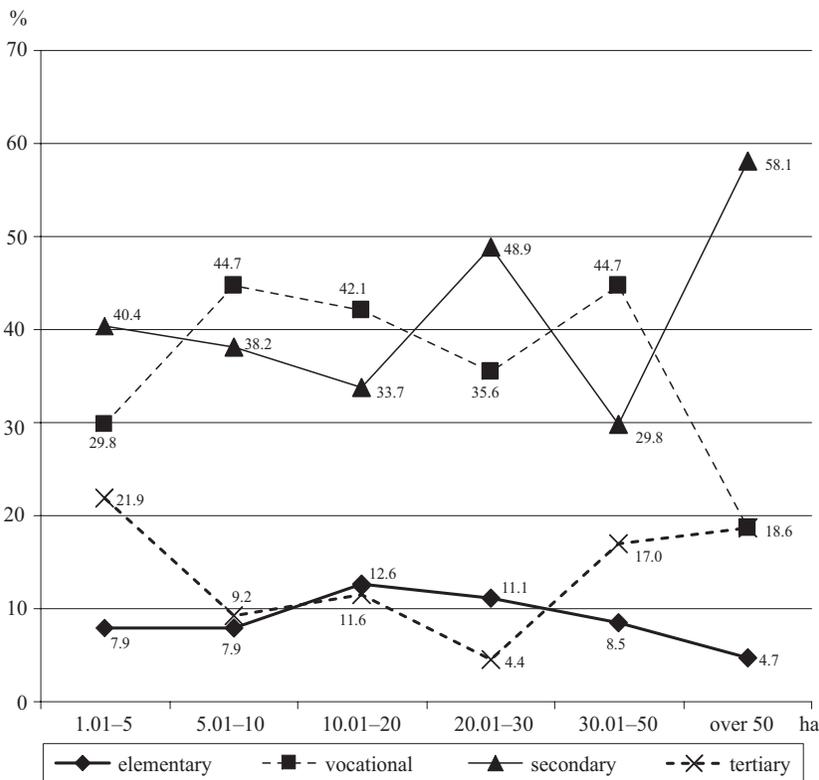


Fig. 1. Farmers' education and farms' area

Source: own work based on the studies conducted.

Education level of farm owners represents an important aspect, to a large extent determining success in business, which farming currently is. In the rural areas of Poland slightly more than a half of the population has education higher than elementary, in urban areas it is more than 3/4 of the adult population. Also the percentage of people with no education in rural areas is 3 times higher than in the urban areas. Respondent farmers, in their majority, possessed vocational and secondary education (over 3/4 of the population covered). Only 14.5% of them possessed tertiary education while 9.3% just elementary education. As indicated by the study, certain correlations between the level of farmer's education and the size of the farm operated could be noticed (Fig. 1).

Among the farmers with tertiary education the two largest groups are farmers possessing farms of up to 5 ha who treat them as recreation objects and support themselves on full time jobs, in most cases in towns, and farmers possessing farms of over 50 ha who support themselves on incomes from own farm only. At the farms of over 50 ha the share of farmers with secondary and tertiary education is the highest. Those two groups together represent over 3/4 of the owners of the largest farms. The largest proportion of farmers with vocational and elementary education works at farms of 5 to 20 ha in area.

### **Coverage with agricultural insurances in the macroregion of northern Poland**

Prevalence of the individual types of agricultural insurance was diversified. Around 89% of the farms covered purchased the compulsory insurances. Only farmers from the area group exceeding 50 ha, who were able to identify the risk and economic benefits of decisions taken purchased it 100%. Despite penal sanctions, as much as 11% of the covered farmers' population did not purchase compulsory insurances giving excessive costs and difficulties with obtaining damages as the reasons while 1/3 of them did not fear the risks (Fig. 2).

In the population covered, 80% of farm owners insured farm buildings, 77% purchased third party liability insurance and 38% the compulsory insurance of crops (Fig. 3). The insurance of buildings is the most frequently selected compulsory insurance product. As the farmers point out, it is not the fear of penalty for not possessing that insurance that plays the decisive role but the risk and possible large losses in property as well as the fact that the insurance also covers the residential buildings. 23% of farmers did not purchase the third party liability insurance. Educated people and those with long work experience in agriculture most frequently purchase that coverage. Many farmers do not understand the nature of that insurance and not all are aware what risks can

be involved in the profession of a farmer and what harm can be done to third parties.

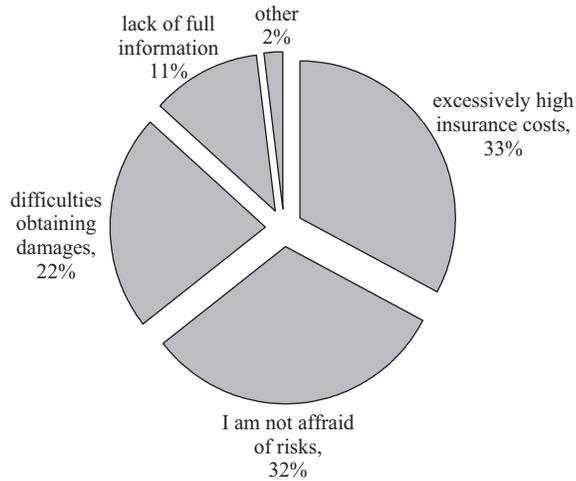


Fig. 2. If you do not use compulsory insurances, then why?

Source: own work based on the studies conducted.

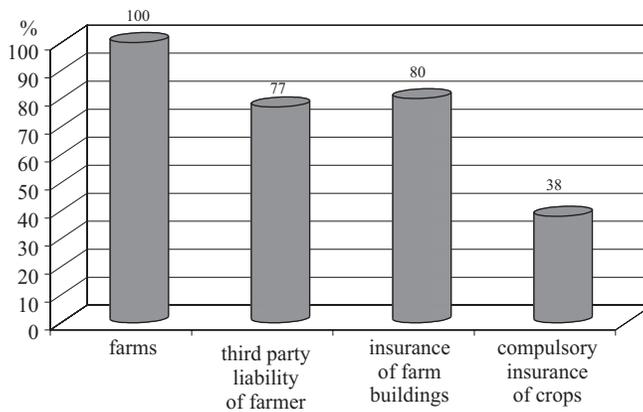


Fig. 3. Level of compulsory insurances purchased by farms covered

Source: own work based on the studies conducted.

It seems that the low level of coverage with the compulsory insurance of crops results from still low proliferation of knowledge on the subject among farmers, in particular owners of small farms. That is confirmed by the information in Figure 4.

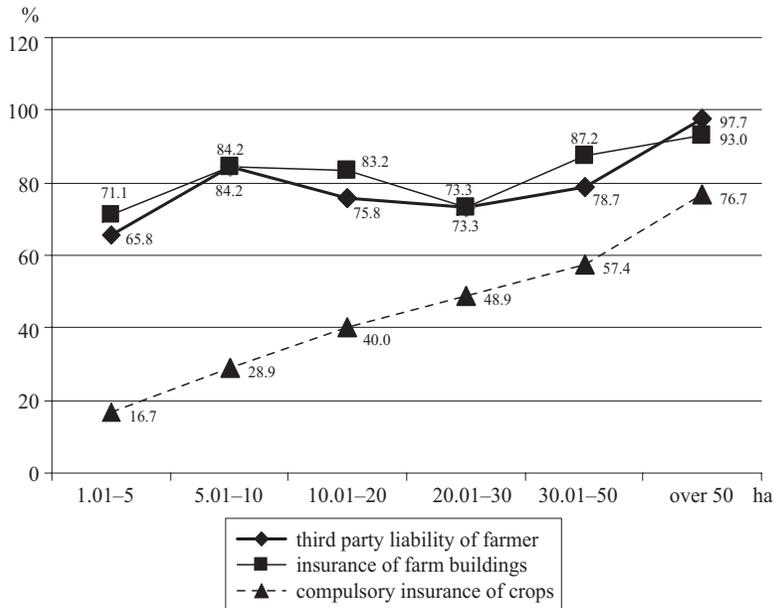


Fig. 4. Farm area and insurance coverage

Source: own work based on the studies conducted.

An obvious correlation can be noticed between the farm size and the insurance level. With the increase of the farm area the number of farmers purchasing insurance coverage increases. This is particularly well visible in case of the compulsory insurance of crops. Almost 77% of farmers possessing farms exceeding 50 ha in area purchase that coverage while in the group of the owners of the smallest farms (up to 5 ha) that coverage is just 17%

The proportions of the individual risks in compulsory insurance are diversified (Fig. 5).

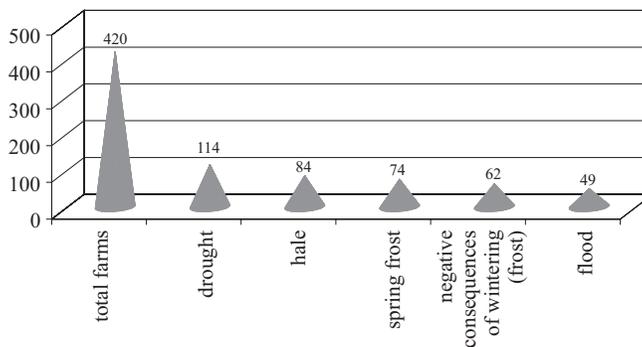


Fig. 5. Risks in the compulsory agricultural insurances purchased

Source: own work based on the studies conducted.

As much as 1/4 of the farms possessing crops coverage insured them against drought, 1/5 against hale and 1/6 against spring frost. Also the responses to the question concerning the major threats for the farms covered indicate the same rankings concerning natural risks for their farms (Fig. 6).

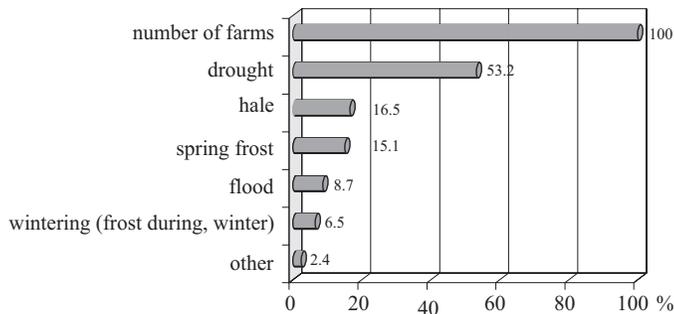


Fig. 6. Which risks to crops you consider the most dangerous at your farm?

Source: own work based on the studies conducted.

The farmers fear drought the most (53% of responses), which is followed by hale and spring frosts.

The costs of compulsory insurances were diversified. The average year cost for insurance of crops was PLN 300, insurance of farm buildings PLN 280 and the third party liability PLN 70 (Fig. 7).

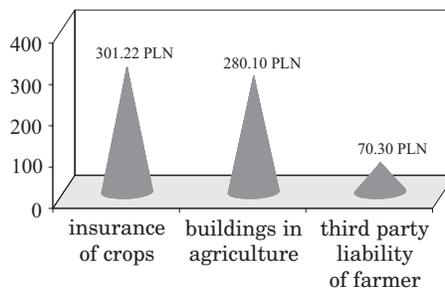


Fig. 7. Amount of year premiums of individual compulsory insurances per 1 farm covered

Source: own work based on the studies conducted.

More than a half of the farmers considers that cost a moderate burden to the farm while 17.7% a large one (Fig. 8).

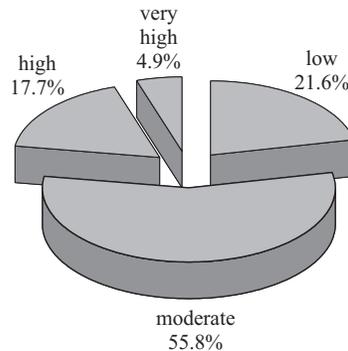


Fig. 8. Burden, according to farmers, with year compulsory insurance

Source: own work based on the studies conducted.

The fact that 22% of farmers considered the burden with compulsory insurances to be small and only 5% a very high can be a surprise.

The basic reasons that made farmers purchase the compulsory insurance were satisfying the imposed statutory duty (57% of responses) and fear for the future of the farm (39.5%) (Fig. 9).

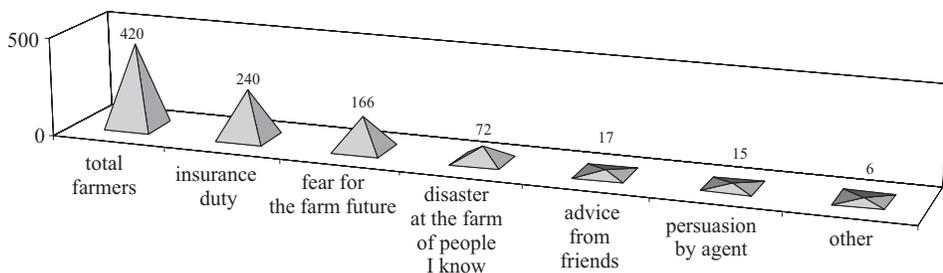


Fig. 9. Motivations for purchasing the compulsory agricultural insurance

Source: own work based on the studies conducted.

As concerns the group of voluntary insurances, the farmers purchased movable property insurance (38.5%) and agricultural machines insurance (28.3%) most frequently. Insurances of field crops and livestock were purchased by 16% of farmers covered each (Fig. 10).

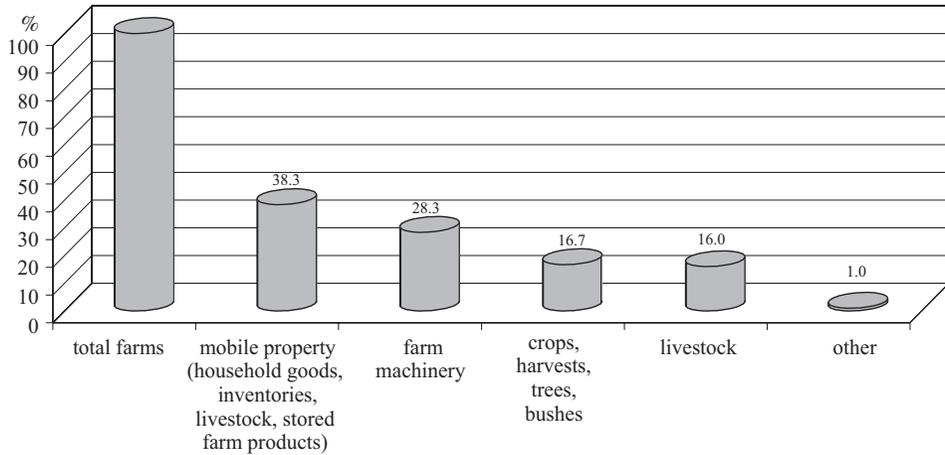


Fig. 10. Voluntary insurances used in the farm

Source: own work based on the studies conducted.

Cereals and rape were the most frequently insured crops. The average area of crops insured was 5.76 ha covered by the compulsory insurances and 1.7 ha by the voluntary insurances per farm (Tab. 2).

Table 2

Insurance of field crops in the population covered

Item	Farms covered	Insurance of crops	
		compulsory	voluntary
Number of farms – total	420	156	63
– with the insurance purchased			
Area under crops [ha/farm]	22.5	5.76	1.70
– total			
– insured			
Percent of area under crops insured [%]	x	25.6	7.6
Cost of the insurance of crops [PLN/farm]	x	301.22	92.43

Source: own work based on the studies conducted.

Insurances in the farms covered by the study covered: compulsory insurances – around 1/4 of the area under crops and voluntary insurances only around 7.6% of that area while their costs were under PLN 100 per farm. Frequently they were insurances providing coverage against just one risk.

## Summary and conclusions

Among the farmers covered the owners of farms with the area of 1.01 – 5 ha (39.2%) and 10–20 ha (ca. 20%) were the two largest groups. The major production areas were production of cereals (for 40.2% of farms) and live pigs (for 15.2%). For over 60% of farmers covered the farm income was the major source of income. The larger the size of the farm the higher was the percentage of such responses. Around 1/3 of the owners of farms covered supported themselves on work outside the farm. Most frequently, the farmer household consisted of 3–4 persons (53.6%). In 21% of the farms only 2 people or just one person worked while only 1.7% of farmer families consisted of 8 and more people. The majority of the responding farmers possessed vocational or secondary education (over 3/4 of the population studied). Only 14.5% possessed tertiary education while 9.3% elementary education.

Among the farms covered, as much as 11% of the owners did not purchase any compulsory insurance specifying high costs (33% of responses) and difficulties in obtaining damages (22%) as the reasons for the situation and 1/3 of them did not fear any risk. Around 80% of the farmers insured the buildings while 77% purchased the third party liability insurance of the farmer and 38% the compulsory insurance of crops. The average year cost of the insurance of crops was PLN 300, insurance of agricultural buildings PLN 280, and third party liability insurance PLN 70.

In the group of voluntary insurances the farmers purchased most frequently the insurance of the mobile property (38.5%) and agricultural machines (28.3%). The insurances of crops and livestock were purchased by around 16% of farmers covered each. The most frequently insured crops were the cereals and rape. As many as 1/4 of the farms covered their crops against drought, 1/5 against hail and 1/6 against spring frost in the insurance of crops. The farmers indicated the same ranking of risks to their crops in responses to the questions concerning the major risks to their field crops.

The clear correlation between the farm size and insurance coverage was noticed. With the increase in the farm area the number of farmers purchasing insurances increases. The average area of the insured crops was 5.76 ha covered by the compulsory insurance and 1.7 ha by the voluntary insurance per farm, which represents 25.6% and 7.6% of area coverage with insurance respectively.

The coverage of crops and livestock is particularly inadequate. Farmers expect introduction of systemic solutions appropriate for individual lines of agricultural production and State aid (also financial) in that area.

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