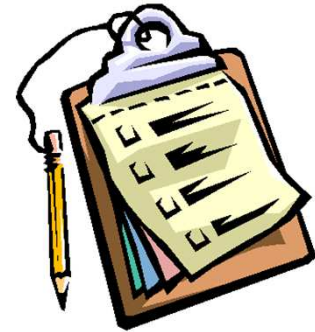




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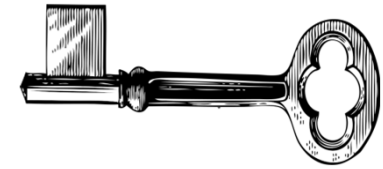
Key elements of management of crops and livestock portfolios; Polish Re's reinsurance support

AGENDA



1. Potential of the market
2. Crops' portfolio profile
3. Main perils which threat crops
4. Coefficient of insurability
5. Materialization of particular perils (definitions, franchises & deductibles)
6. Loss adjustment expenses
7. Expected profit margin
8. Tariff rates
9. Some general remarks concerning livestock
10. Expected spendings and amount of premium
11. Polish Re for business partners.

Potential of the crop market – key elements



List of main crops which takes into account:

- total number of hectares of particular type of crops (cereals, oil plants, fruits, vegetables, fodder etc)
- number and sizes of farms (big farms insure typical agricultural cultures, small ones horticulture and herbs); segmentation of farms in term of area is recommended
- average yield per particular type of crops
- unit price (per ton or decitonne or kilogram)
- value of production (also per hectare)
- margin profit of particular type of crop
- if possible amount of outlays per crop
- subsidies to premium (if exists) ?
- most dangerous perils
- products which are to be sold

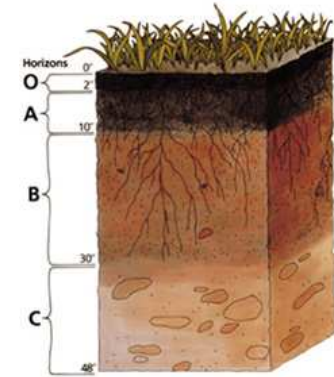


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Crops portfolio profile

- types of crops and their shares in the portfolio
- types of perils covered and exposure of the portfolio per particular peril
- above per regions (regions most and less exposed)

....all above constitute the safety of the portfolio



Core principles of sale (crops)

- only hail, heavy rain and fire can be sold separately,
- don't sell winterkilling, drought, spring frost as a single risk (always in a package as a MPCl),
- do not insure risks that are hazardous (systemic risks) without counterbalancing with risks of a relative safety,
- insure only varieties tested in the country (in case of the risks of overwintering and frost) - this issue can also be regulated in tariff rates,
- high commission for desirable risks and perils, low commission for dangerous ones,
- the requirement to insure all fields of a given crop which belong to a given farm



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Main perils which threat crops.1.



The identification of most dangerous perils and their classification is essential!
Is it a matter of truism?

In most countries:

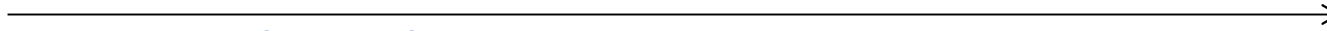
possibility of risk acceptance



rapeseed – fire
wheat – hail
rye – spring frost

raspberry, potatoes - drought
fruits, vine - frost
rapeseed – winterkill

increase of rates, franchises, deductibles



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Key elements of crops portfolio modeling

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Main perils which threat crops.2.

Graduation of risk acceptance

- fire
- windstorm
- excessive rain
- flood
- hail
- spring frost

easy to accept



underwriter's comfort ends

- winterkill
- drought

control the exposure!

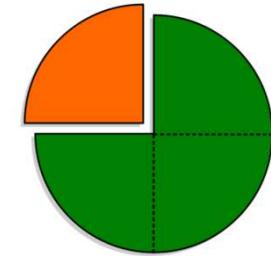


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Key elements of crops portfolio modeling

Materialization of perils (which part of sum insured is indemnified)



This indicator always shows the truth!

Materialization varies according to type of perils and type of crop.

Deep analysis of materialization allows to develop:

- franchises and deductibles per type of crop and peril
- definitions of perils

..... which are attractive for farmers at a reasonable tariff rate



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Coefficient of insurability

coefficient of insurability – assumptions based on:

- a type of farming in a given country
- analyzed information with regards to the potential especially
 - volume of production
 - profitability of particular crops
 - legal environment
 - scope of coverage offered
 - state policy
- the loss history (big loss events and characteristic of regular losses)
- country's statistics referring to crop business
- own feeling and experience of underwriter



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Non-insurable perils - recommendation



- plants' diseases (fungal, viral),
- pests attacking plants,
- weeds that reduce the yield,
- defective seeds,
- harvest delays,
- defective treatment,
- wild animals (wild boars, deers, dolphins, camels etc.) – in livestock insurance,
- the losses caused by wild animals in crops,
- a theft of the yield,
- the risk of war, terrorism, riots, nuclear power.

Recommended waiting periods



Crops:

- hail, spring frost, heavy rainfall - at least 7 days,
- winterkill - should be concluded before the winter time (for example 30th November),
- flood - at least 14 days,
- drought - should be concluded before the start of the vegetation period (for example 20th of April).

Livestock:

- accidents and FLEXA- no waiting period,
- diseases - at least 2 weeks (*those occurred before the insurance period - excluded*).



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Loss frequency in %



Also very important factor. Should be examined together with average loss amount per:

- type of crop
- region
- peril

Allows to plan the allocation of workforce and spendings for loss adjustment.



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Loss adjustment and sales expenses



.....varies in different countries and types of business

Predominantly one can calculate costs loss adjustment as:

- 6-7% of amount of indemnities
- or
- flat amount per loss (20-60 EUR)

Commission for channels of distribution should not exceed 20% of premium.

Commission for more valuable crops can be lower (10-12%)

Example: 25 hectares of wheat, yield 5 t/h, price 150 eur/t; rate 2%;
commission 20% which gives the amount of commission for agent 75 EUR

Expected profit margin



Crops insurance is a very volatile business which needs reinsurance support.

Nature is not an excel table but in medium and long terms one can notice some regularities!

In general, in crop business one can expect **profit margin at 5%-15%** (premium less all deductions like losses, admin costs, sales, loss adjustment, reinsurance) in a long period.

Reinsurance can help in bad years and allow to earn additional money in good seasons.



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Tariff rates. Amount of premium



- tariff rates and possibility to achieve amount of premium are the result of earlier considered aspects of crop business
- if there is lack of local data, Polish Re is able to help to develop draft of rates basing on statisticks from neighbor countries
- amount of premium is considered together with exposure one can afford
- exposure should be evenly spread in order to avoid:
 - risk correlation,
 - concentration the subject of insurance and perils in dangerous area

Potential of the market. Example from another country.

market potential

Type of Crop	Area (hectares)	Total Yield	Yields obtained (t/hectare)	Unit Price	av. Value per hectare	Tariff Rate	Coefficient of Insurability	Expected Premium
Cereals	963 688	2 179 729	2,26	150	339	6%	25%	5 184 028
Corn	37 695	203 596	5,40	175	945	6%	25%	559 653
Tobacco	1 109	2 858	2,58	1250	3 221	10%	50%	170 580
Potato	61 648	819 283	13,29	200	2 658	5%	5%	388 855
Field Vegetables	75 536	1 180 120	15,62	300	4 687	9%	10%	3 342 066
Melon and Water M	28 016	440 685	15,73	125	1 966	10%	20%	1 064 373
Fruits	115 727	843 678	7,29	500	3 645	9%	20%	7 952 879
Grapes	12 053	138 783	11,51	100	1 151	10%	20%	266 998

Cereals	1 837	2 518	1,37	150	206	6%	25%	5 989
Corn	5	14	2,80	175	490	6%	25%	38
Tobacco	0	0		1250	0	10%	50%	0
Potato	48	335	6,98	200	1 396	5%	5%	159
Field Vegetables	493	9 316	18,90	300	5 669	9%	10%	26 383
Melon and Water M	198	1 720	8,69	125	1 086	10%	20%	4 154
Fruits	2 744	1 397	0,51	500	255	9%	20%	13 169
Grapes	191	257	1,35	100	135	10%	20%	494
Cereals	89 213	236 931	2,66	150	398	6%	25%	563 491
Corn	5441	27 834	5,12	175	895	6%	25%	76 511
Tobacco	0	0		1250	0	10%	50%	0
Potato	29 828	453 697	15,21	200	3 042	5%	5%	215 338
Field Vegetables	11 906	199 158	16,73	300	5 018	9%	10%	564 010
Melon and Water M	1 084	18 636	17,19	125	2 149	10%	20%	45 011
Fruits	13 360	134 135	10,04	500	5 020	9%	20%	1 264 415
Grapes	3 595	55 652	15,48	100	1 548	10%	20%	107 066



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Key elements of crops portfolio modeling

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Key elements of portfolio analysis. Another country.

Crop	Area (hectares)	av. Area per Policy	av. Sum Insured	Number of Policies	Number of Claims	Claims Paid	Claims Frequency	Technical Materialisation	Cost of Claims Handling	Cost of Sales	Administration Costs	Profit Margin
Cereals	963 688	20	6 786	12 046	1 205	3 269 594	10%	4,0%	40	15%	6%	15%
Corn	37 695	20	18 904	471	47	356 293	10%	4,0%	40	15%	6%	15%
Tobacco	1 109	1	3 221	555	50	107 175	9%	6,0%	40	15%	6%	15%
Potato	61 648	2	5 316	1 541	77	245 785	5%	3,0%	40	15%	6%	15%
Field Vegetables	75 536	2	9 374	3 777	368	2 124 216	10%	6,0%	40	15%	6%	15%
Melon and Water Melon	28 016	1	1 966	5 603	504	661 028	9%	6,0%	40	15%	6%	15%
Fruits	115 727	3	10 935	7 715	694	5 062 068	9%	6,0%	40	15%	6%	15%
Grapes	12 053	2	2 303	1 205	108	166 540	9%	6,0%	40	15%	6%	15%
	1 295 472			32 913	3 053	11 992 698						

11	number of necessary loss adjusters trained for crops
5	number of crop losses adjusted daily by one loss adjuster
60	number of loss days in crop line

Crop	Claims Frequency	Technical Materialisation	Cost of Claims Handling	Cost of Sales	Administration Costs	Profit Margin
Cereals	10%	4,0%	40	15%	6%	15%
Corn	10%	4,0%	40	15%	6%	15%
Tobacco	9%	6,0%	40	15%	6%	15%
Potato	5%	3,0%	40	15%	6%	15%
Field Vegetables	10%	6,0%	40	15%	6%	15%
Melon and Water Melon	9%	6,0%	40	15%	6%	15%
Fruits	9%	6,0%	40	15%	6%	15%
Grapes	9%	6,0%	40	15%	6%	15%

av. SI per ha	av. Loss per ha	av. Cost of Sale per Policy	Total Cost of Sales	Total Cost of Claims Handling
339	136	65	777 604	48 184
945	378	178	83 948	1 885
3 221	2 148	46	25 587	1 996
2 658	1 595	38	58 328	3 082
4 687	2 889	133	501 310	14 706
1 966	1 311	28	159 656	20 172
3 645	2 430	155	1 192 932	27 774
1 151	768	33	40 050	4 339
			2 839 415	122 139

av. Gross Rate	av. Premium per Policy
6%	430
6%	1 188
10%	308
5%	252
9%	885
10%	190
9%	1 031
10%	222



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Key elements of crops portfolio modeling

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Expected premium income. Another country.



all figures in EUR

expected GWP	18 929 432
Crops	18 929 432

Plant Production

Type of Crop	Area (hectares)	Total Yield	Yields obtained (t/hectare)	Unit Price	av. Value per hectare	Tariff Rate	Coefficient of Insurability	Expected Premium
Cereals	963 688	2 179 729	2,26	150	339	6,34%	25%	5 184 028
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Potato	61 648	819 283	13,29	200	2 658	4,75%	5%	388 855
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Fruits	115 727	843 678	7,29	500	3 645	9,43%	20%	7 952 879
Grapes	12 053	138 783	11,51	100	1 151	9,62%	20%	266 998



Key elements- expected premium income. Macedonia *initial estimation*



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all figures in EUR

expected GWP	13 113 540
Crops	13 113 540

Plant Production

Type of Crop	Area (hectares)	Total Yield	Yields obtained (t/hectare)	Unit Price	av. Value per hectare	Tariff Rate	Coefficient of Insurability	Expected Premium
Wheat	72 000	194 400	2,70	200	540	4%	25%	340 200
Barley	43 000	90 300	2,10	180	378	4%	25%	162 540
Grapes	86 000	172 000	2,00	1800	3 600	7%	50%	10 836 000
Tobacco	16 000	24 000	1,50	1500	2 250	6%	50%	1 080 000
Tomatoes	5 000	150 000	30,00	240	7 200	5%	25%	450 000
Apples	4 000	80 000	20,00	170	3 400	9%	20%	244 800



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LIVESTOCK

GENERALITIES



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Key elements of crops portfolio modeling

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Livestock- business importance

In most countries the value of livestock production constitutes more or less 60%-65% of crops production,

but

premium volume constitutes no more than 15% of crops' premium (mostly a few percent)



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Animals to insure

In general almost all kinds of animals kept can be insured but one should focus on typical animals for particular country.

truism?

As comes from the experience, insurance of exotic animals (bears, deers, dolphins, tigers etc) in Europe can destroy financial results of the livestock portfolio.



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Recommended animals to insure

- Cows

cattle kept for meat up to the age of 2

milk cows up to 5th lactation or the age of 7

small herds- deductible per head

big herds – natural losses/mortality of animals in herd excluded (usually 1%-3% of the population)

- Horses

those kept for recreation, working animals

race horses = risky business

- Poultry

chicken, laying hens, geese, ducks, turkey

preferably those kept in closed buildings where bio-safety standards are met

natural losses/mortality excluded (usually 4%-8% of the population)



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Livestock. Recommended scope of coverage and exclusions

Common scope of coverage comprises death of animals due to:

- diseases
- accidents
- FLEXA

Do not cover:

- epidemic diseases (only BI can be offered, not value of animals)
- very young animals
- old animals (for example horses over 20, cows over 8)
- race horses against diseases and accidents



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What Polish Re can offer



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Key elements of crops portfolio modeling

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Polish Re for business partners

Polish Re offers not only capacity but also support (help) in an original business which relies on:

- deep analysis of the market and the existing portfolio,
- draft of rates,
- draft of a policy wording (definitions, franchises/deductibles, exclusions, sublimits, etc.),
- risk assesment questionnaire,
- loss adjustment draft of guidelines (if needed short training with Polish loss adjusters),
- seminars dedicated to various issues of crop and livestock business,
- consultancy which refers to special acceptances,
- consultancy which refers to new type of businesses,
- daily contact of your agricultural underwriter and Polish Re team



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Reinsurance protection from Polish Re

Polish Re offers 3 types of reinsurance protection, namely:

- QS , quota share
- SL, stop loss
- XL , rarely applied



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Key elements of crops portfolio modeling

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Reinsurance protection from Polish Re. QS



The reinsurer and the cedent consistently participate in the premium and damages in the proportions specified in the contract.

Retention: part of the portfolio remaining on the share of the cedent.

Cession: part of the portfolio ceded to reinsurers.

Share of the cession: part of the portfolio accepted by a particular reinsurer.

EPI (estimated premium income): volume of premium which is expected to be achieved in the season (year) to come.

It is understood that premium volume can differ from EPI; this issue is very often regulated in a treaty wording (for example, it cannot be higher than 20%).



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Reinsurance protection from Polish Re. SL



Stop Loss treaty covers all losses covered by a contract up to an agreed limit, in excess of an agreed monetary amount known as 'priority' (sometimes called 'deductible').

The coverage and priority are expressed as loss ratios – LR (a percentage of losses divided by premium income).

SL covers:

- a retention, if a part of the portfolio is ceded based on a QS,
- the whole portfolio, if a cedent decides to protect the portfolio only against unpredictable and severe events (mainly materialization of systemic perils).



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THANK YOU FOR YOUR ATTENTION

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Key elements of crops portfolio modeling

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