

# **Canadian Organic Growers A Response to the Proposed Amendments to Plant Breeder's Rights Legislation and the Seed Sector Review.**

## **Table of Contents:**

<b>1. Introduction .....</b>	<b>1</b>
<b>2. Historical Background .....</b>	<b>2</b>
<b>3. COG's Response to PBR Proposed Amendments.....</b>	<b>5</b>
<b>4. Comments on the Seed Sector Review .....</b>	<b>7</b>
<b>5. The Needs of Organic Agriculture.....</b>	<b>8</b>
<b>6. Sources of Information .....</b>	<b>11</b>

## **1. Introduction**

Canadian Organic Growers (COG) is a national charitable organization with a mandate to promote organic growing in order to build healthy local communities and ecosystems. Our 2000 members are organic farmers and gardeners and others interested in the development of an organic food system in Canada. We are concerned about the ongoing global erosion of farmers' rights to save seeds and subsequent loss of food security, and about the increasingly negative impact on organic agriculture of transnational corporations involved in the seed business and their control over our food supply. The Plant Breeders Rights (PBR) Act and the Seed Sector Review have relevance for all these issues.

There are two pieces of legislation which affect seeds and plant breeding in Canada: The Seeds Act 1970 amended 1985. The Act and regulations establish a variety registration system. One cannot sell or advertise for sale a seed variety by variety name that is not registered. Originally seed legislation in Canada was designed to protect farmers from false claims about varieties.

The 1990 PBR Act allows for breeders of new varieties to hold exclusive rights and receive royalties when the varieties are sold. The stated purpose was to encourage further development of agricultural and horticultural crops.

In May 2004 the Seed Sector Review, an industry led initiative, released its report. The recommendations clearly seek to increase the profitability of the seed trade at the expense of the farmer. In concert with this initiative the Canadian Food Inspection Agency is proposing changes to the PBR legislation to bring it into line with the 1991 Convention of the International Union for the Protection of New Varieties of Plants (UPOV) .

Farm organizations have expressed concerns about the proposals. The National Farmers Union (NFU) launched a "Save our Seeds" Campaign in November 2004 to draw attention to the issues. The Canadian Federation of Agriculture is also concerned

about the erosion of farmers' rights to save seed. COG adds the voice of organic farmers and organic farm organizations across the country to their concerns.

## 2. Historical Background

When PBR legislation was proposed COG and many individual farmers and growers as well as consumers, made submissions to the Prime Minister and the Agriculture Minister in 1988 and to the Chair of the Legislative Committee on Bill C-15 in 1989. It is interesting and informative to note the concerns COG expressed at that time, the government's response, and today's reality after 14 years of implementation of the legislation. (These are set out below).

COG was opposed to the PBR legislation in principle. Among other things we believed it would encourage the escalating use of chemicals in agriculture rather than encouraging the development of seed varieties which promote sound agricultural practices. At that time 50% of all "new varieties" of some crops were genetically engineered (GE) and being developed for tolerance to herbicides.

COG's suspicions proved correct as many of the "new varieties" that have been introduced are indeed GE and have caused an increased use of herbicides on Canadian farms. Although corporate-funded scientists would have us believe that GE foods are safe, virtually all of the independent research done on GE crops raises questions associated with risks to human health, soil quality, biodiversity, pollution, and increased input costs to farmers.

**Concern:** Plant breeding would be increasingly in the private domain and motivated by profit rather than for the public interest.

**Minister's Responses:** "It is not the intention of Agriculture Canada to reduce its plant breeding program." "It is essential to maintain a strong government breeding effort." "The continued public effort in plant breeding will ensure farmers in all regions have the best crop varieties available to make their land as productive as possible."

**What happened:**

In the early 1980s public sector accounted for over 95% of formal plant breeding in Canada and 100% for cereals and oilseeds (Kuyek, 2004). In 1989 84% of cereals and oilseeds planted were bred by Agriculture Canada. Private sector variety breeding was still a distant third behind Agriculture Canada and University programs. In 1970, 83% of the total research spending on canola was public investment. By 2000 the private sector accounted for 85% of research on this Canadian crop and two thirds of the seed sold was sold under contract. (Kuyek, 2004).

Presently, the majority of plant breeding is in the hands of large agri-businesses. The federal government has, both through policies and direct subsidies, contributed to the dismantling of the public plant breeding programs. Publicly funded research budgets have been slashed.

**Concern:** Allows for monopoly control of our food supply not just opportunities for royalties.

**Minister's Response:** "The significance of multinational corporations is greatly overstated. Multinational companies play a minor role in the development and marketing of seed. There is no reason to believe the proposed legislation will change the current balance."

**What happened:**

The private domain now dominating plant breeding in Canada essentially consists of a handful of seed companies, virtually all of which are in one way or another owned by large US or transnational conglomerates. In other words, the power and control over our food sources has increasingly been handed over to about half a dozen corporations thus significantly compromising Canadian food security.

The transnational corporations involved in the development and marketing of seed have only one obligation, which is to maximize their shareholders profits. When profits come before safety, health and environmental concerns, the survival of small farms is threatened as well as human and soil health, ecosystems and biodiversity, and the ability of this country to have a self reliant food-production system.

**Concern:** Greater costs to the farmers

**Minister's Response:** "Existing varieties will not be affected so their prices will not be affected." "Farmers will always have the option of using grain from their own bins, should they find it more economical than buying new seed each year." "Legislation would only apply to the reproductive material of the variety for sale and not to the end product such as grain used for feed or food."

**What happened:** In 1987 seed costs were 3% of a farmer's operating expenses. Today escalating levies and royalties with more private proprietary varieties have resulted in substantially increased costs to farmers at a time when farm incomes are declining. Proposed amendments to PBR include extending the scope to harvested material if royalties were not collected on the planted seed. These proposals are in direct contradiction to the Minister's statement above. Increasingly seed companies are selling seed under contract which prohibits the saving of seed for planting the following year.

**Concern:** PBR would contribute to the continued decline in variety choice and erosion of our genetic resources.

**Minister's Response:** none

**What happened:** 1987 - 6000 seed growers/sellers in Canada; 120 seed companies with 30 engaged in plant breeding. Pedigree seed was sold by farmers and farmer owned cooperatives.  
2004 - 4500 pedigree seed growers/sellers, 165 seed companies, but few engaged in breeding and many are now subsidiaries of transnational corporations. The number of protected varieties are increasing ever year, while

older varieties are disappearing from catalogue listings. In 2002 there were 59,200 protected varieties worldwide.

Much of today's breeding involves genetic engineering and seed companies are increasingly controlling genetic stocks and limiting availability of germplasm to farmers or independent researchers. Four companies (Syngenta, Bayer, Monsanto and Dupont) dominate, and they are all working to further expand patent and PBR protection.

**Concern:** PBR will encourage an agricultural system which is environmentally damaging and incompatible with the concept of sustainable development. PBR will undermine efforts to establish an environmentally responsible system of agriculture.

**Minister's Response:** "It is very unlikely that companies will breed varieties requiring excessive use of fertilizers and pesticides." "Need to show advantage over existing varieties."

**What happened:** Many of the seed companies are also involved in the production of agricultural chemicals or pharmaceuticals. Herbicide resistance bred into new varieties encourages increasing use of chemicals. Varieties of GE canola have made it impossible for organic farmers to grow an organic canola crop in many regions of Canada; they cannot sell the crop because it is likely to be contaminated by GE canola crops grown in the vicinity. This not only resulted in significant loss of income but also impacted the farmers' ability to add diversity to their rotations. The new varieties have indeed undermined efforts to establish environmentally responsible agriculture. If GE varieties of wheat and alfalfa are introduced the results for organic agriculture will be equally devastating.

Seed companies also propose the use of genetic engineering 'terminator' technology to develop varieties which will produce sterile seed preventing farmers from replanting saved seed. Public opposition to such technology is widespread but our federal government is attempting to overturn an international moratorium and allow field trials and commercialization of such varieties. We fail to see the advantage of these varieties over existing varieties for anyone other than the companies involved. Indeed there is widespread concern that the terminator trait might escape and impact other plants to everyone's detriment.

Over the last 14 years the transnational corporations involved in the seed business have become increasingly powerful; they buy up the competition, undermine public breeding programs (for example by funding university breeding programs) and control most of the seed supply.

Proponents of the legislation claim many of these changes would have happened anyway and are not related to enactment of legislation. Our opinion differs. Were our concerns justified? The answer is most definitely yes.

There is no justification for new legislation that would only make it easier for such changes to continue. Any legislation that would increase the rights of large corporations developing "new varieties" and significantly limit the rights of farmers to save seed are dangerous on many levels – economic, environmental, nutritional, and social.

### **3. COG's Response to Proposed PBR Amendments**

COG has not changed its opinions and remains fundamentally opposed to Plant Breeders Rights legislation. However given that the PBR Act exists and is not likely to be abolished, we take the opportunity to respond specifically to the proposed changes to this legislation.

Plant Breeders Rights has always been controversial legislation. In 1980 the Controversial B C-32 did not go beyond 1st reading. After much public debate the Plants Breeders' Rights Act came into force in 1990. The Ten Year Report (June 2002) on the impacts of the PBR Act concluded that the Act contributed to increased investment in plant breeding and improved access to foreign varieties. But we have been unable to determine the extent to which it benefited Canadian companies and farmers and Kuyek (2004) explains how many of the claims made in the report are dubious. In 1992 Canada signed the amended Convention of the International Union for the Protection of New Varieties of Plants (UPOV) signifying intent to ratify. Ratification requires amendments to the PBR Act.

#### ***Proposed Amendment***

***Definitions:*** The current legislation defines a breeder as "any person who originates or discovers the plant variety". The definition would be modified to state "any person who originates, or discovers and develops, the plant variety".

COG thinks that this change is a slight improvement on previous wording. Without qualification the word 'discover' effectively allows for the pirating of genetic material developed by farmers over generations without any effort on the part of the breeder. While pirating of genetic material can and does still occur, with the new definition at least some work has to be done before the breeder might be recognized as such.

***Scope of PBR:*** Within the current scope of the PBR only the holder or person licensed by the holder, may sell, advertise for sale and produce for the purposes of selling propagating material of the variety and make repeated use of propagating material to commercially produce another variety. Amendments would extend the scope to include exporting, importing and stocking, and to harvested material (e.g. the grain, fruit, cut flowers) obtained through the unauthorized use of propagating material. For example propagation of a protected fruit tree variety for non-sale purposes and the subsequent sale of the fruit is not an infringement, but it would be when the PBR is amended. A further option is to extend the scope even more to the products of harvested materials e.g. juice from the fruit.

COG does not believe rights should be extended to harvested material or to products of harvested material. Providing more money in the way of royalties to the companies currently dominating the seed market will not help address the issues of concern for farmers and particularly organic farmers (e.g. the traditional practice of saving and exchanging seeds, the ability to adapt varieties for local conditions, etc.). Canadian farms are in severe financial stress. Extra seed costs

will not help and will force more farmers off the land. Money needs to be kept in the agricultural system at farm level and not siphoned off for corporate interests.

***Exceptions to the Breeder's Right (Including Farmer's Privilege):***

Further breeding work or saving and using one's own seed of a protected variety is not currently prohibited. This 'farmer's privilege' was allowed because it was the only way the government could get support for the legislation from farm organizations. The 91 Convention still allows for adopting the farmers privilege as an exception. The CFIA is asking for comment on whether the concept of farmer's privilege is supported and whether it should be limited to certain crops only.

COG strongly believes that what is being referred to as farmer's privilege should be maintained and that it should not be limited to certain crops. Furthermore we believe it is the farmer's right to save seed. We believe loss of the farmer's privilege would give too much control to breeders and companies who do not have interest in the common good or in developing a sustainable system of agriculture. It would also prevent farmers being able to participate in solutions.

The International Treaty for Plant Genetic Resources for Food and Agriculture came into effect as of June 2004; it was signed and ratified by Canada 10/06/2002. This treaty recognizes the contribution of farmers to the conservation and development of genetic resources. This is the basis for Farmer's Rights. It is not intellectual property rights; it is recognition of the collective innovation of farmers on which agriculture is based. This treaty protects farmers traditional knowledge granting them the right to participate fully in benefit sharing (including monetary benefits) and in national decision making about plant genetic resources. PBR legislation which seeks to further erode farmers' rights would seem to be in direct contradiction to the provisions of this treaty.

***Duration of the Breeders Right:*** Proposed is an extension from 18 to at least 20 years for all varieties except vines, forest, ornamental and fruit trees which are allowed 25 years.

COG believes it is not in the public interest to extend rights further and would prefer to see them cut back to five years.

***Annulment & revocation of rights:*** It is proposed that a right may be annulled or revoked if the variety was not uniform or stable or if it was granted to a person not entitled to it. Similarly rights may be revoked if the variety is no longer stable. Currently rights may be annulled if the variety was not distinct.

Any amendment which provides additional circumstances when rights may be annulled or revoked is an improvement on the current situation.

#### 4. Comments on the Seed Sector Review

The Seed Sector Review was a review by stakeholders, at least those stakeholders involved in selling seed ("the conventional seed industry") not the end users (the farmers and the citizens whose future food security is at stake). Organizations representing the majority of farmers in the country (CFA & NFU) were not invited to participate. Its conclusions are clearly biased by self interest and throughout the report only lip service was given to balancing farmers needs with the need for greater profits by the trade. Recognizing that consumers are a force in food supply chains and that they have preferences for environmentally sustainable production systems, the report emphasizes working towards greater consumer acceptance of new varieties resulting from the new GE technologies. In fact most of the recommendations are to benefit the large transnational companies who are involved in such research. The review recommends more regulatory flexibility, the creation of a supportive environment for innovation, and outlines potential mechanisms to increase profits.

##### *Proposals of particular concern:*

- The proposed **stakeholder consultative body** to interface with regulatory authorities is biased towards the seed trade and needs representation from farmer organizations and civil society.
- In order to encourage farmers to buy more certified seed it is proposed that consideration be given to **linking crop insurance premiums to use of certified seed**. We think that it is unreasonable to create penalties or disincentives in this manner. It does not take into consideration the farmer's yield history or the actual risk level. Farmers working towards developing varieties to suit their particular growing conditions would be unfairly penalized.
- Another proposal is to **require the use of variety names on all seed sold**. This would require increased inspections and more paper work further increasing farmer costs and increasing the cost of common seed making, according to the report, certified seed more 'economical'. There would be no reduction in the price of certified seed so there would be no benefits to the farmer just increased costs for those who do not need to purchase certified seed. Organic farmers make extensive use of green manure crops using common seed because they want to keep costs down when there is no direct financial return from the crop.
- Proposals for **collection of royalties on farm saved seed** are based on the premise that the farmer benefits from characteristics of the variety and should therefore pay to support further research. Suggestions include collecting royalties at the elevator or when seed is cleaned. Three reasons have been given why organic farmers oppose these suggestions:
  - 1) It reduces the bottom line for farmers already struggling to make a reasonable profit. When the cost of seed becomes a threat to the viability of the farm it means the system is creating problems not solving them.
  - 2) Any royalties collected are likely to go for research into varieties that have limited benefits for organic farmers and are increasingly likely to be GE varieties that explicitly cannot be used by organic farmers;

3) It discourages variety adaptation at the farm level which would be of benefit to other farmers in the region and ultimately of benefit to all humankind.

- The review suggests **removal of 'merit' as a registration requirement**. Rather than moving away from the merit principle, there is a need to increase the importance of this criteria. We need to redefine 'merit' to ensure that varieties introduced have merit in sustainable systems. This would be in contrast to a breeding focus which introduces new varieties to overcome problems created by a variety in the first place e.g. weed resistance to chemical controls or resistance of pests.
- The report recommends **adopting provisions of UPOV 91** which would provide more protection for plant breeders at the expense of the farmer. It also opens the door to more patenting of seeds protected under Plant Breeders Rights which will have a negative impact on availability of germplasm.

### **Conclusions**

COG recognizes the ingenuity of generations of farmers whose efforts shaped the genetic potential. Each generation of breeder built on the work of the previous generation. Our genetic resources are a great natural resource and the property of all humankind. The review does not consider the issues from the standpoint of public good which would include ease of access to genetic material and the availability of affordable seeds of merit for organic and sustainable farming systems.

In our view, the proposals in the Seed Sector Review further empower the dominant seed companies who are increasingly taking control of the seed supply and seek to further reduce farmers rights. Increasing costs with royalties and limitations on farmers rights to save and sell common seed puts further pressure on the smaller family farm and increasingly favours large industrial models of farming.

## **5. The Needs of Organic Agriculture**

Canada's current system is not operating in the interest of organic agriculture or sustainable agriculture systems.

PBR has not stimulated development of varieties beneficial to organic farmers:

- Increasingly breeding effort is focused on GE varieties which are prohibited in organic systems and also create a serious risk of contamination and subsequent loss of organic crop status and markets when grown in the vicinity of organic farms. Even non-GE certified seed of soy and corn is often contaminated which creates additional problems for organic farmers when there is a zero tolerance policy for GE.
- Breeding programs have focused on maximizing the performance of seed in conventional farming systems. Seeds with genetics that respond to chemical use (fertilizers, herbicides, fungicides and insecticides) are often not suited to

conditions where there are different environmental pressures (as on organic farms).

- Organic farmers are finding it increasingly difficult to find suitable commercial sources of seeds. Faced with this problem farmers have become more aware of the advantages of selecting and saving one's own seeds, and seeds suitable for use in the immediate area, soils and climate. Seed saving and development on-farm needs to be encouraged, not penalized or forbidden.
- PBR does not help address the urgent need for more organic seed breeding programs to develop varieties with superior disease and pest resistance.
- Organic farmers need seeds that perform well in diversified landscapes not simplified production systems; seed varieties that take crop rotations and regional adaptation into account.
- There are only a few people or companies in Canada responding to the variety development needs of organic farmers (see end notes).

The current royalty system needs to be changed to encourage breeding for organic systems.

- Acreage planted to organic crops is still a very small percentage of the total. For cereals and oilseeds it is usually less than one percent. Flax has the highest percentage with an estimated 4.3% of total acreage for that crop. The royalty system would not generate enough funds to support breeding programs suited to the needs of organic farmers.
- Plant breeders with an interest in conducting research adapted to the needs of organic farms appear to have limited success in obtaining the funds necessary for the work.
- It is not apparent that royalties from varieties with merit for organic farmers (even if generated by government or university programs) would reach personnel who might be interested in crop development for the organic sector.

The seed supply is dominated by protected varieties (by PBR or patent) which increasingly restrict the availability of germplasm that could be used to develop varieties of benefit in organic farming systems.

- The current system makes it more difficult to find and develop regionally adapted varieties.
- Organic farmers are concerned about the erosion of the genetic diversity of agricultural crops. We believe there are benefits to having farmers conserve heritage or landrace varieties to keep seed available in reasonable quantities. They need to be able to sell or exchange such seed without penalty. Simple selection methods to improve heritage varieties have the potential to provide the characteristics needed for a sustainable agriculture. Only by maintaining crop genetic diversity in the public domain will agriculture be able to respond to new challenges.
- Organic farmers are concerned about food security issues. PBR appears to support a system which increases vulnerability rather than ensuring we have the tools to respond to a rapidly changing environment.
- There are concerns with respect to GE contamination, that there are not precautions in place to ensure the integrity of seed varieties stored in the Canadian Gene Bank.

Organic farmers want a public sector breeding program that supports sustainable agriculture.

The work of Stephen Jones at Washington State University is a good example of the type of work that is needed. Jones grew out old varieties developed before the use of agricultural chemicals, then crossed lines to modern lines to add in traits that have improved since the 1950s. The resulting varieties consistently produce higher yields for Washington's organic wheat growers than any of the varieties selected under conventional regimes.

Organic farmers want a different and better system; one that takes into consideration the following:

- There is a need to find ways to support the development of the organic seed industry. Currently the organic sector is in a Catch 22 situation. Organic certification standards requiring that 'certified organic' seed be used have been introduced in Europe and North America but these are continually subject to derogations for a limited time period because of the lack of availability of organic seed in commercial quantities. This is the case for vegetable varieties in particular. The seed industry claims these derogations are unworkable and is reluctant to invest in developing organic varieties when there is no guarantee that farmers will purchase the seed. And farmers are understandably concerned about being forced to buy seed of the few organic varieties available at considerably higher costs if there are non-organic varieties better suited to their operation which they are currently allowed to use under the derogation. The organic industry will need scientists, breeders, farmers and authorities to work together.
- Seed borne diseases present a challenge for organic seed production because chemical seed treatments are not allowed. Better quality seed is required to produce vigorous, healthy seedlings that are competitive with weeds. Seed treatments appropriate for organic agriculture will need to be developed (currently hot water treatment is most commonly used).
- Currently organic vegetable seed costs can be nearly twice the cost of conventionally produced seed and frequently germination rates are lower.
- Improved documentation including listings of varieties known to be suited to organic agriculture as well a listing of those varieties available as certified organic seed would be of benefit.
- An alternative system might still include paying royalties but these would be collected by an organization which would pass on the funds to breeders developing varieties specifically for organic agriculture. However in the near future this will not generate enough funds to be a driving force.
- From environmental, social and cultural perspectives, this sector should be publicly supported, as everyone shares in the benefit. There needs to be continued plant breeding and research done at public institutions with the results shared as widely as possible with the least possible cost and lowest restrictions.

- Participatory plant breeding should be encouraged with the goal to produce varieties that meet local farmer needs and that farmers can reproduce. Farmers play a vital role in variety development through 'on-farm' selection, conservation and development of varieties suited to local conditions. It should be acknowledged that seed companies will never develop a wide enough range of adapted varieties to allow organic farmers to make the best choice for their farming system and the market.
- A new concept of ownership of germplasm should be acknowledged recognizing the collective ownership by a community and which reduces variety registration fees.

### **In Conclusion**

Organic farmers want to see government policy and legislation which support the development of agriculture which is both environmentally and economically sustainable, and in the interests of the Canadian people, not proposals which will further erode farmers' rights and our ability to develop varieties to perform better on organic farms.

We are concerned that allowing free market forces and corporate self-interest to direct government legislation is not without serious ecological risk. Reliance on fewer and fewer varieties or varieties best suited to an unsustainable agricultural system will weaken our ability to respond to climate change. There is no evidence to suggest that increasing profitability for the seed trade by the methods proposed will help develop varieties with long term benefits or increase the ability of the agricultural sector to respond to global warming or other challenges of the next few decades. We need to find ways to increase plant breeding for sustainable agriculture systems that do not rely on increasing use of GE varieties.

COG believes it is imperative that Canada embraces a system for plant breeding and seed production developed for the benefit of society at large and which puts sustainable food production as a priority rather than a system that increasingly favours corporate profits at others' expense.

## **6. Sources of information:**

Correspondence between Anne Macey (Canadian Organic Growers) and John Wise Minister of Agriculture 1988.

CFIA website. Plants Breeders' Rights Office. Proposed amendments to the Plant Breeders' Rights Act to bring existing legislation into conformity with the 1991 UPOV Convention. [www.inspection.gc.ca/english/plaveg/pbrpov/ammende.shtml](http://www.inspection.gc.ca/english/plaveg/pbrpov/ammende.shtml)

The Report of Seed Sector Advisory Committee. [www.seedsectorreview.com](http://www.seedsectorreview.com)

Kuyek, D. (2004) Stolen Seeds. Sorrento, BC: Ram's Horn (publisher) available on-line at [http://www.interpares.ca/en/publications/pdf/stolen\\_seeds.pdf](http://www.interpares.ca/en/publications/pdf/stolen_seeds.pdf)

Personal communications with COG members and persons involved in breeding, saving or selling "organic seed".

Proceedings of the Summit on Seeds and Breeds for 21st Century Agriculture, Washington DC 2003. Edited by Michael Sligh & Laura Lauffer, RAFI-USA 2004

Proceedings of the First World Conference on Organic Seeds: Challenges and Opportunities for Organic Agriculture and the Seed Industry. Edith Lamerts van Bueren, Radha Ranganathan and Neil Sorensen (eds) IFOAM 2004

### **Endnotes**

Canadian Breeders/researchers believed to be working with varieties for the organic sector

*Duane Falk.* University of Guelph.

*Dean Spanner.* University of Alberta. Wheat varieties

*Sharon Rempel.* Organic crops and seeds researcher using participatory approach for 'on-farm' variety selection and improvement. Maintains lines of heritage wheat varieties. Heritage Wheat Project <http://members.shaw.ca/oldwheat>

*Jennifer Scott.* Maritimes Heritage Wheat Project

Canadian Organic Growers  
February 2005

*Prepared by Anne Macey assisted by members of COG's Seeds Review Committee: Irena Knezevic, Peter Johnston, Chris Wells, Lloyd Strachan, Tom Manley, Jean Arnold, Celia Guilford. Also thanks to the following people who reviewed the document and/or made helpful suggestions: Brewster Kneen, Sharon Rempel, Dan Jason, Harro Wehrmann.*