The In- and Out-Licensing of Plant Varieties

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ABSTRACT

Variety licensing is a tool for plant breeding companies and institutions to commercialize their varieties and to transfer technology to farmers efficiently. As the seed industry becomes increasingly privatized, interest in in-licensing new varieties, both from national and international sources, is likely to increase. Likewise, financial pressure on public sector breeding will increase the need for the targeted commercialization of varieties through out-licensing. As the seed sector becomes more transparent, the market should see more foreign investment from companies who wish to make their varieties available through licensing. That, in turn, should promote local seed production and variety testing. The licensee and the licensor should focus primarily on the practical content of the license agreement, specifically, exclusivity to plant material and territory, plant variety protection, variety trials, national registration, royalty payment, and information transfer. The purpose of this chapter is to provide guidance for prospective licensors and licensees in the practical issues of in- and out-licensing of varieties.

1. INTRODUCTION

Variety licensing allows breeding companies or institutions to commercialize their products (plant varieties) and is also an efficient tool for technology transfer. New technology in a variety, represented by improved genetics and expressed mostly through improved agricultural performance, can be transferred to farmers by licensing out seed production and distribution rights to seed companies. The variety license itself consists of an agreement between the owner of the varieties, or an authorized representative, and a legally eligible person who wishes to commercialize the variety.

As described by Louwaars,[1] the first problem in seed policy development is the dual function of seeds. Seeds are a method of technology transfer, *and* each seed itself is a commercial commodity. These two functions are among the most important issues to address in establishing long-term success in variety in- and out-licensing. The technology embedded in the seed of a new variety is easily transferred to farmers on a large scale and can be used instantly. In many countries, public breeding has supplied varieties for use by seed producers and farmers at no cost. This free sharing of varieties makes it difficult to give recognition, in terms of royalty payments, for the variety improvement work.

Further use of the technology—and its improvements—depend on the seed's other function, that of a commercial commodity. The seed must be used in trade. Once the seed is circulating in the marketplace, a portion of the profits can be re-invested in further breeding and the development of new technology and plant varieties. This is possible because the incentive, especially for the private seed business, for continued crop development lies in the possibility of getting a return on the investment.

Nilsson M. 2007. The In- and Out-Licensing of Plant Varieties. In *Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices* (eds. A Krattiger, RT Mahoney, L Nelsen, et al.). MIHR: Oxford, U.K., and PIPRA: Davis, U.S.A. Available online at www.ipHandbook.org.

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Development of the private seed sector will increase competition and could speed up efforts to reach a larger part of the farming community. Small- and medium-sized seed companies need to develop their product portfolios through in-licensing of varieties (whereas public institutes could increase profitability by out-licensing their varieties). The privatization and increased transparency of the seed sector could promote foreign investment from companies wishing to make their varieties available through licensing, which in turn would promote local seed production and variety testing.

Access to new varieties requires proper handling of intellectual property (IP). This can be accomplished through variety license agreements, which also provide a strategy for developing and introducing new varieties. A variety license agreement can be divided into two main parts: first, those clauses describing the key rights and obligations of the parties and the conditions that make the framework of the license—these clauses will set the standards for cooperation and outline what the parties wish to achieve—and second, "boilerplate" clauses that are not specific to the agreement but are legally relevant (for example, processes for dealing with arbitration, relevant law, legality, assignability, warranty, and force majeure). The purpose of this chapter is to provide guidance for establishing the first part of a variety license, and the key elements have been divided into the following sections:

- exclusivity
- territory
- evaluation of the licensed material
- protection of germplasm
- national registration and plant variety protection
- royalties
- effect of termination
- reporting to licensor

In this chapter, the words *breeder* and *variety owner* will be used interchangeably, to mean a breeding company, an individual plant breeder, or a person with the legal rights of ownership to a licensed plant material.

2. THE DRIVING FORCES BEHIND LICENSING

2.1 *In-licensing*

In-licensing plant varieties can raise market share or offer competitive advantages by increasing the ability to meet customer demands. The most obvious reason for in-licensing varieties is to enhance or complete a company's variety portfolio. This applies both to companies with their own breeding programs and to companies working exclusively with in-licensed varieties. Those species for which a company has existing breeding programs—or other species that may be of interest to the market—are potentially subject to in-licensing. Demand for certain products from farmers, the processing industry, or consumers could be met by a company obtaining a license from the variety owner to supply the market with seed of that variety. These parties may demand things such as a species not available on the existing market, varieties with improved agricultural characteristics, or improved nutritional value.

In-licensing gives breeding and seed companies access to new technology (like hybrid varieties); breeding companies may profit from this new technology without obtaining a license to use the hybrid system itself in variety development. Another advantage, or, rather, side effect, is the possibility for breeders to compare their material with that of their competitors in the early stages of variety development.

2.2 *Out-licensing*

The most common reason for a company to out-license its varieties is to maximize the return on its investment by allowing others to produce and sell its varieties in markets that the company cannot reach. Small- or medium-sized breeding companies, for example, may not have the resources to establish their own sales organization either within their own country or in different countries. Thus the companies will use out-licensing to fully exploit the potential of their breeding program.

2.3 *Plant variety protection*

The importance of *plant variety protection* (PVP) legislation as a driving force for successful variety

licensing cannot be stressed enough. PVP confers IP rights, known as *plant breeder's rights* (PBR), which provide an incentive to plant breeders for the development of new varieties of crops. This, in turn, fosters progress in sustainable agriculture and generally improves the economic circumstances of farmers and growers, since it gives them access to new and improved varieties. However, without the legal framework for acknowledging the ownership of the licensed varieties, the variety owner will have difficulty getting a return on investments made in variety development. Effective PVP legislation supports the interests of both the variety owner and the farmer. It will also facilitate the transfer of technology and provide incentives for further investments in the development of new plant varieties. In many countries, PVP legislation is based on the International Union for the Protection of New Varieties of Plants (UPOV) Convention, which exists in three revised versions (adopted 1961, 1978, and 1991, respectively). Currently, 61 countries[2] have ratified the UPOV Convention. This makes it the most widely adopted form of a sui generis IP protection system developed specifically for plant varieties. The latest revision of the Convention has not been ratified by all member countries; however, all new members are required to ratify the Convention of 1991.

Major differences in the conventions will affect the approach to licensing. These differences include the species and genera for which PVP provides IP protection, exemptions from PBR (that is, the plant breeder's exemption and the farmer's, or crop, exemption, also known as the "farmer's privilege"), the period of protection, and the scope of protection under PBR. The latest UPOV Convention strengthens the rights of the breeder: member states are obliged to provide protection to all botanical genera and species (Chapter II, Article 13(1–2)); the Convention also extends the duration of the breeder's right by five years (Chapter V, Article 19(2)), and extends the scope of protection to include conditioning for the purpose of propagation, export, import, and stocking (Chapter V, Article 14(1)). The farmer's privilege is an optional exemption from the PBR (Chapter V, Article 15(2)). It may limit the farmer's rights to use on-farm harvested material—obtained from a protected variety on the same farmer's holdings—as propagating material. This propagating material is commonly called *farm-saved seed* (FSS), and this exemption stems from the basic rights outlined in the 1961 and 1978 UPOV conventions (though the exemption is not optional in either and is not as clearly defined as in the 1991 version).

The PVP legislation of the UPOV members is well documented and should not pose any large problems for prospective licensors and licensees. An awareness of the differences will facilitate the development of the variety license agreement. On the other hand, it may prove more difficult to influence PVP legislation in nonmember countries, and licensors are strongly advised to gather as much information as possible about the PVP system in a new territory so that they can adapt their licensing strategy accordingly.

3. KEY ISSUES IN VARIETY LICENSING

When establishing a license agreement, whether for in- or out-licensing, it is important to discuss and agree upon those issues that will constitute the spirit of the agreement and set the foundation for good cooperation.

3.1 *Exclusivity*

The following section on exclusivity has been divided into two parts. The first section discusses the rights granted under the license. The second defines the material for which an exclusive license is granted.

Nonexclusive licenses are rare, and experience has shown that breeders grant exclusive licenses more willingly than nonexclusive ones. Exclusive licenses are preferred because breeders believe that the mutual commitment will be stronger when working exclusively. A good variety provides a competitive advantage and will thus create revenue for the company with the exclusive rights. It is in the best interest of both parties to make the variety as profitable as possible, and the commitment resulting from exclusive rights is considered to lead to the best market coverage possible. Indeed, working on a nonexclusive basis is considered to have smaller market potential.

The extent of exclusivity is defined by various factors (such as the territory for which crop or variety exclusivity is granted) that will be discussed in greater detail later.

3.1.1 *The rights granted*

The exclusive rights granted to the licensee often correspond, either in part or in whole, to the rights that can be obtained through the plant breeder's rights (PBR) protection for a variety. As defined in the UPOV Convention Act of 1991[3, 4] (Chapter V, Article 14 (1)), the following actions shall require prior authorization from the breeder:

- production or reproduction (multiplication)
- conditioning for the purpose of propagation
- offering for sale
- selling or marketing
- exporting
- importing
- stocking for any of the purposes mentioned above

These provisions are recommended as a starting point for discussions about what rights the licensee will be allowed to exercise. The most important factors in determining the type of license to grant include: former experience, seed production and distribution infrastructure accessible to the licensee, type of species to be licensed, and plant variety protection.

There are two major types of licenses. The first type is the *distribution license*, which includes the rights to market and sell the licensed material. The second is a *production license*, which in addition to these rights includes the rights to seed multiplication and production. For varieties that are easily and rapidly multiplied, such as those of species with small seeds and low sowing rates, the licensor may prefer to keep all or most of the seed production within its own control. This would limit the exclusive rights for a distribution license. For varieties of species with high sowing rates and low multiplication factors (for example, cereals), the transportation cost of the commercial seed to the licensee is likely to be high, and so a production license is usually preferred.

Breeders can partially preserve variety protection by limiting access to seed for propagating purposes. If the licensor allows only for marketing and sales, the variety is better protected because the licensor will not have to leave out early generations of seed for multiplication from its internal control system. However, under certain circumstances, the final seed generation, or the commercial seed, may be more expensive because the total seed costs increase if the seed has to be transported between countries or over long distances within the same country. Giving the licensee responsibility for seed multiplication and production will decrease margins (actual sales revenue for the seed itself) for the licensor because the income will then be based on royalties (revenues derived from licensed use, propagation, sales, and so on), as opposed to sales margins *and* royalties, that is, a more lucrative double revenue stream. Licensed production may, however, be advantageous for the licensor because risks in seed multiplication will be spread, as will the costs for handling the seed in the production chain.

High transaction costs in the chain from the breeder to the farmer can present large problems since many factors influence these costs.[5] High transaction costs result in expensive seed, which makes it difficult to realize sales on the market. This is especially true for countries using large amounts of farm-saved seed or for places that market predominantly public varieties; these countries have a hard time realizing sales because both of these seed categories are chosen for their low costs to farmers. Still, if the licensee has access to the required seed production infrastructure (basically, farm capacity for growing, harvesting, processing, storing, and transporting seed), costs can be kept low when incorporating new varieties. This will increase the value of the seed for the licensee and promote local agricultural business. Still, as stated earlier, contracting seed production to small-scale enterprises will spread the risks in seed production and lower transportation costs because the seed can be produced closer to the market.

The number of generations of seed the licensee is allowed to multiply can also be a matter of discussion. Generally, the number of generations

is decided on a case-by-case basis rather than regulated through the license agreement. National legislation, as well as international rules and directions (such as the OECD Seed Schemes,[6, 7] as laid down by the Organisation for Economic Cooperation and Development [OECD][8]), should be consulted during licensing, since they regulate the number of generations that any seed may be reproduced. Because the reproduction system will influence the stability of a specific variety, the number of generations varies between cross-pollinated and self-pollinated species.

The rights of the licensee to hybrid varieties are most commonly restricted to marketing and sales of the commercial seed. Hybrid seed production is more expensive and considerably more complex than the production of line varieties. The owner control of the hybrid components may influence the possibilities for out-licensing the production of hybrid seed. Moreover, by keeping hybrid seed production within its own control, the licensor, to some degree, protects the hybrid components. In addition, in some jurisdictions (for example, the United States) inbred seed lines can be protected as trade secrets. Or, to be legally, technically accurate, the "information" embedded in the seeds is protected as a trade secret.

The licensor may wish to restrict the rights of the licensee to import seed from sources other than the licensor. It may also wish to similarly limit the export of seed from the defined territory. In contrast, the licensee may want to retain these rights, and it is not always possible to restrict seed import and export, since this may be prohibited by legislation. For example, according to the [European] Community Plant Variety Rights (Chapter III, Article 13(2)),[9, 10] authorization of the holder is required for export from the European Community (EC) and format import to the EC of a protected variety. Between EC member countries, the export and import of protected variety material can only be restricted if the material is for propagating purposes (that is, higher seed generations than certified seed).

3.1.2 *Defining the licensed material*

The second part of exclusivity deals with the definition of the licensed material. The access to varieties a licensor is prepared to give a prospective licensee depends on such factors as earlier experience, market penetration ability, the licensee's existing variety portfolio, and ongoing cooperation with other breeders. The exact size of the material must also be determined on a case-by-case basis. Exclusivity to the licensor's material may be granted on different levels:

- single varieties
- selected crops/species
- all crops/species

The most common type of exclusivity at the beginning of a partnership is likely to be *first right of refusal*, or exclusivity based on single varieties provided by the licensor. The licensor provides a few varieties of its choice, or it may allow the licensee to choose its candidates among a number of varieties for commercialization. The licensor may freely dispose of the remaining varieties through other marketing channels within the same territory. Exclusivity is maintained, for single varieties only, and the licensor has the opportunity to evaluate the licensee's ability to commercialize the licensed variety. This can also be a strategic tool to distribute varieties among a number of licensees, in the hopes of stimulating competition and obtaining a larger total market share in a particular market.

Granting a licensee exclusive rights to the whole set of crops in a breeding program occurs rarely, but this differs based on the number of crops or species within which the licensor is active. This kind of exclusive relationship between the breeder and the licensee is likely to result from strategic decisions concerning the long-term relationship between companies, a wish to strengthen connections with key partners or between mother/daughter companies, and so forth.

The other type of exclusivity is to grant exclusive rights to selected crops or species. In a country with limited participants in the seed business, participants will likely specialize in certain crops. In such cases it could be appropriate to grant exclusivity to all material from a breeding program.

In certain circumstances, exclusivity may limit the work of a company or public institute. The public sector or other external funding

source might support a company's breeding program in whole or in part. These funds may come with provisions restricting the breeder's options to offer exclusivity in out-licensing. Public sector breeding may also be unable to grant exclusivity to selected licensees, because this may limit public access to the varieties.

License agreements may regulate continued access to new varieties from the same licensor. Where the license agreement is limited to a single variety, it is likely that continued access would require a request from either party and could be part of the written agreement. For collaboration based on more-extensive variety trials, it would be sensible to settle an appropriate number of new breeding lines or varieties to submit each year to the licensee, subject to availability and request from either party.

3.2 *Territory*

Territory defines the geographic area where the licensee has the right to exercise its exclusive rights. The territory is not necessarily restricted to a country; it could be a part of a country, one or more countries, continents, or even the world.

In variety licensing, however, the most common territory is that of a country. Depending on the market coverage capabilities of the licensee, it may also be suitable to instead define the territory as a group of countries or established unions, such as the European Union,[11] the African Union,[12] or the Mercosur.[13] In places such as these, the common rules for PVP, seed trade, and other relevant areas are more harmonized. Such territories have a tendency to change over time, and so it is recommended that parties in a licensing agreement consider defining a union as its member countries when the agreement is signed.

Definition of the territory may be influenced by existing PVP legislation. As discussed above, not all countries are UPOV members, and even UPOV members differ in PVP legislation depending on which version of the UPOV Convention the country has ratified. Many countries, especially developing countries, are not UPOV members. This should be taken into consideration when defining the territory and the rights that the licensee will be given by the licensor to exercise within that territory.

3.3 *Evaluation of the local adaptation of the varieties*

The aim for both parties when in- and out-licensing varieties is to select varieties for marketing that show improved agricultural performance or have other desired characteristics. Apart from the market (end-user) demand, the value of a variety is largely ascribed to its adaptation to local growing conditions. Depending on the plant species, varieties can be transferred between geographic areas and climatic zones. Introducing new varieties usually requires the local confirmation of agricultural performance, which is done for the purpose of national listing and/or marketing advantages. Either the public system of variety testing or private trials can be used to introduce the new variety.

The trial strategy and the minimum requirements for assessing local adaptation should be discussed and settled in the agreement, including any decisions about cost sharing. Commonly, the licensor will require the licensee to evaluate the value of the varieties at its own cost, with the aim of including them in the national list, recommended list, or any corresponding list of varieties officially registered for release in the territory. These trials are often referred to as VCU (*value for cultivation and use*) trials. Of course, the trial strategy can also consider whether it is necessary to have a variety officially listed in the territory or not. For example, within the European Union, varieties included on a national list in one member state or in any of the European Free Trade Association (EFTA) countries can be marketed in any other member state without any prior demand of inclusion on an additional national variety list.

Plant variety protection has to be applied for separately from the local adaptation trials. All three versions of the UPOV Convention provide the legal means to provisionally protect the variety from the date of filing an application until the grant of PBR. This gives the applicant the right to enforce the provisional rights in case of breach during the evaluation period, whether in a private or an official trial network, provided an application for PBR has been filed. If no such system for provisional protection exists, the licensor

may add clauses in the license agreement that will regulate the distribution conditions of the plant material for trials.

3.3.1 *Private trials*

Private trials in this context are defined as all trials that are not part of publicly performed trials. The trials can be conducted by the licensee or any other skilled partner equipped to perform them (for example, other seed or breeding enterprises, farmers' cooperatives, universities, or agricultural extension service centers). In countries without an official trial system, the role of the private trials can be significant.

Private trials are a potential tool for the licensee to test varieties and select the best candidates for official trials. Some countries require a minimum number of *station data* for entering a variety into official trials. Collection of these data can occur either in one year from the number of stations required for the application, or on fewer stations over a period of two or more years.

Unfortunately, breeders, either through neglect, procrastination, or possibly selfish motivation, might abuse the private trial system by keeping varieties within the private trial system until they are too old for market introduction. This could either prevent competitors from including the variety in their portfolio or prevent breeding companies from entering the market with that specific variety. In order to avoid this abuse, it is necessary to limit the number of years a variety can be tested in the private trial network before it will be included in national list trials. For annual crops, a maximum of two years or two growth cycles should be sufficient for evaluation unless some unpredictable event occurs, in which case the period can be extended by one year or growth cycle.

3.3.2 *Official trials*

Official variety trials, also referred to as national or recommended list trials, are carried out to evaluate the candidate variety's value for cultivation and use. This incorporates the varieties' agricultural performance and quality characteristics. Varieties that show an improvement compared to standard control varieties qualify for inclusion in the national list, a register of varieties approved for release on the national market. A national list or register of varieties does not provide any PVP for the varieties included. Instead, it is a means of safeguarding the quality of the varieties released on the national market—they have been tested and proved valuable in cultivation and use, in comparison to the other varieties on the list.

The private sector can undertake VCU trials in countries where the public sector does not perform such trials. It is possible also to establish private trial networks that will enable new varieties to be independently evaluated.

3.4 *Germplasm protection*

It is important for a breeder to obtain protection for finished varieties and those still in trials. Due to the importance of protection, it is essential to include a section in the agreement outlining the handling and supervision of plant material before it has obtained plant breeder's rights (PBR) protection. If the production and sale of a variety is initiated before PBR has been granted, there is a risk that the variety will not be eligible for protection. It is advisable to restrict the licensee's distribution rights of the not-yet-protected material to third parties and use of the germplasm to the licensee's own breeding programs. This restriction could either be part of the license agreement or part of a separate material transfer agreement.

3.5 *Plant breeder's rights and official variety registration*

3.5.1 *Plant breeder's rights*

Plant variety protection (PVP) is important when granting access to new varieties. It provides protection of the proprietary rights of particular species in a territory. There is no blueprint solution for implementing PVP laws because the policies between countries differ greatly. Europe and the United States, both members of UPOV, are good examples of public versus private responsibility systems. Both systems provide protection for plant varieties and a legal means of enforcement of the rights, and both seek to grant PBR based on trials, usually referred to as *DUS* trials, that

show that the variety is *distinct, uniform, and stable*, and have received a novelty declaration from the breeder. The European Union (E.U.) has harmonized PBR legislation, and European countries have generally adopted a system based on testing and registration that is fully controlled and performed by designated authorities. PBR can be applied for at the *community plant variety office* (CPVO) and will be valid throughout the entire union. The system in the United States is based on self-control. The plant variety protection office (PVPO) issues PBR certificates, and the applicant is responsible for carrying out the necessary trials and filing an application based on forms and guidelines from the PVPO.[14]

The PBR legislation in the defined territory will determine two matters: the strategy chosen by the licensor and the licensee to protect licensed varieties and what action to take if there is a breach of rights of the protected varieties.

In the first case, the licensor and the licensee can jointly decide on the appropriate way to protect the licensed varieties, as well as when to apply for protection. In some countries, even though there is PBR legislation in place, it may prove difficult to enforce the rights. Critics argue that, in these cases, the PVP system is a way to finance and maintain the bureaucracy rather than protect IP. Others claim that using the system, despite enforcement difficulties, is a way to ensure its improvement. At any rate, the licensor and the licensee have to decide jointly on the best approach for protecting the varieties under the current circumstances. This strategy should be clearly stated in the agreement.

The use of hybrid technology can provide additional IP protection in plants. Although F_2 seed harvested from hybrid varieties can be used as seed, the agronomic advantages from hybrid vigour and a homogenous crop cannot be maintained in the second seed generation. This provides a self-regulating kind of protection for hybrid varieties and increases profitability for the licensee and the licensor through repeated seed sales. It should be noted that national PVP legislations differ: some permit the use of farm-saved seed of the F_2 seed from hybrid varieties, others do not.

3.5.2 *Official registration of varieties*

Many countries require that new varieties undergo official trials following official registration of the approved varieties. Official registration of a variety results in its inclusion in a national list of recommended varieties approved for market release. As mentioned above, the official trial system is one method of maintaining quality control for a variety, since the listed varieties have been tested for their agricultural performance and quality. Release decisions are based either on results from independent public trials, on testing data supplied by the breeder, or on both. The appropriate trial strategy for the official registration should be jointly decided by the licensee and the licensor and included in the license agreement.

3.5.3 *Responsibility and cost sharing*

In addition to decisions concerning PBR and official registration strategies, the licensor and the licensee must agree upon who will be in charge of applying for and maintaining the PBR and national list entries. It is also important that neither party withdraw the PBR grant or the national list entry without obtaining a written confirmation from the other about the decision. Even if the licensee wishes to stop marketing a variety, continued protection may be required for other purposes (for example, if the variety is used as a hybrid component, for marketing it through another channel or to allow for continued collection of FSS royalties).

The application and maintenance of varieties for protection or official listing has associated costs. If the licensee has exclusive rights to the varieties in the territory, the licensee usually carries the costs connected to variety protection and the national list (including trials for either purpose). However, if the licensee has nonexclusive rights to the variety, the licensor will usually carry these costs. In the European Union, where it is possible to obtain either national PBR or Community PBR (valid within the entire union), the cost for maintaining national PBR protection is commonly absorbed by the licensee, whereas the licensor is responsible for the cost for community PBR.

Costs for trials, such as marketing or demonstration trials, are commonly paid by the licensee. The licensor could make other contributions (for example, providing promotional material, field signs, technical support through information material, or by attending field days, and supplying seed bags with the licensor's logotype).

3.6 *Royalties*

For the rights to commercial exploitation of the plant varieties granted under the license agreement, the licensee pays the licensor a royalty. A royalty can include not only the fee agreed to by the licensor and the licensee, but all fees connected with the use of the licensed varieties, such as fees for FSS and acreage fees.

The royalty should be at a level acceptable to the market. It must neither be so high that the farmers cannot buy the seed, nor so low that the licensor will not find it profitable. It is common practice for the licensor and the licensee to split the collected royalty. The proportions of the royalty paid to each party are a matter of negotiation. The amount depends on the structure of sharing costs related to trials, maintenance of national list entries, PBR, market support, and other factors. There is no blueprint solution: for each variety license the royalty has to be negotiated separately. Nevertheless, a few royalty-calculation principles can be used on their own or in combination: fixed royalty rate, royalties connected to the seed price, minimum royalty rate, royalty intervals and sold quantities, and multiplication acreage and end-point royalties.

3.6.1 *Fixed royalty rate*

Setting the royalty at a fixed rate is the most common remuneration system. It requires knowledge of the seed business in the territory and the farmers' ability to pay for the seed. The fixed rate is independent of the sales price and is calculated per weight unit of seed bags containing a specified quantity. One can also calculate a fixed royalty based on the units of a specified number of seeds. The latter system is used, for example, for winter oilseed rape (*Brassica napus*) in Europe, where the seed is sold in units of 1.5 or 2 million germinating seeds (hybrid and line varieties, respectively, in Germany) and 2 million seeds (hybrid varieties in France).

Royalties can also be settled centrally in negotiations between breeder and farmer representatives. This is done, for example, by GESLIVE[15] in Spain and SICASOV[16] in France. The royalties are negotiated and fixed annually for each species and seed generation—they could potentially be settled for individual varieties.

3.6.2 *Royalty connected to the seed price*

A royalty level connected to the price of the seed will instantly change as seed prices increase or decrease. The rate may be calculated as a percentage of the net sales price to the farmer, and since the actual net sales prices may be difficult for the licensor to verify, trust between the licensee and the licensor is of great importance.

3.6.3 *Minimum royalty rate*

A minimum royalty rate paid annually is a less common form of royalty and must be combined with some other royalty system. In this system, the royalty is calculated on one of the calculation principles described above, but a minimum royalty is added to it. For example, if the royalty is calculated on a fixed rate and the total royalty collected exceeds the minimum royalty, the royalty based on the fixed rate will be paid to the licensee. If the total royalty collected is below the minimum rate, the minimum rate will be paid regardless of the actual total royalty.

3.6.4 *Royalty intervals connected to sold quantity*

Royalties can also be connected to the seed quantities sold. The royalty rates per unit can be fixed at intervals of sold seed quantities. The licensee either pays the royalty rate for the highest interval achieved for all seed sold or for the royalty corresponding to each interval.

3.6.5 *Multiplication acreage and end-point royalties*

There are royalty systems that are independent of the actual seed sales. If sales volumes are difficult to control, it might be more efficient to use a royalty system calculated on the multiplication acreage with a fixed rate per surface unit.

In countries or areas where much of the agricultural produce is not used on the farm, a so-called *end-point royalty* can be successfully implemented. When the farmer delivers his or her produce, a royalty based on the delivered quantity will be charged, regardless of whether the farmer has purchased the seed or used his or her own. This royalty system can be based on variety, use of certified seed, or other criteria.

3.7 *Effect of termination*

Termination of the agreement will have both immediate and long-term effects on the licensee and the licensor. Controversy can be avoided by defining the consequences of termination on the licensed varieties and the remaining seed at termination. The varieties can be divided into three groups:

1. Marketed varieties
2. Varieties to enter the market soon
3. Varieties in trials

The varieties of the second group usually include varieties in official trials and varieties that recently have been officially listed but are not yet marketed.

If the agreement is terminated for reasons that allow for immediate termination, the licensor is likely to require that all rights to all varieties be rescinded immediately and that any seed still in the licensee's possession be retuned to the licensor.

If the agreement is terminated for other reasons, the licensor may want to treat the three variety groups differently. Usually, the agreement will continue for the lifetime of the varieties with regard to the varieties in groups (1) and (2), but will be terminated immediately with regard to the those in group (3).

3.8 *Reporting to licensor*

It is recommended that the agreement specify the information that should be transferred between the parties (usually from the licensee to the licensor) on a regular basis. This information could include anything relevant to the activities resulting from the license agreement, such as:

- marketing plans and sales targets for the season(s)
- sales reports and forecasts throughout the season
- royalty statements
- variety trialing plans
- variety trial results
- seed certification reports
- copies of documents connected to PBR and a national list, such as application forms and PBR certificates

Establishing such routines through the agreement will facilitate establishment of a transparent communication and relationship and will help both parties achieve their goals and continue to improve cooperation.

4. CONCLUSIONS

The seed sector in many developing countries is moving toward decreased funding of public sector breeding and increased privatization. This trend is leading to a decrease in new varieties entering the market on the one side and an increased opportunity for introduction of new varieties on the other. Seed companies need to in-license varieties, while private sector breeders, national and international, may need to out-license their products. The financial pressure on public sector breeding makes it difficult to maintain development of improved varieties; thus, incomes could be generated through variety out-licensing. Privatization could further attract foreign seed companies by making their varieties available for local production and sales. This would also provide local seed companies and, presumably, farmers with access to new technology. The development of new varieties—as well as good geographic coverage of the private seed sector—requires that breeders and seed companies get a return on their investment. This is achieved when farmers buy seed and a royalty is paid to the breeder. It is also important for a breeder to obtain proper protection for the IP of a new plant variety. Proper PVP legislation is also needed. Providing the legal framework for breeders to get a fair chance to profit from their breeding efforts will promote further incentives for investments in variety development.

The discussions around PVP in this chapter have dealt exclusively with PVP based on the acts under the UPOV Convention. Granting PBR is the predominant system for IP protection of plant varieties; in most countries of the world where plant varieties are not patentable, it is the only system for such protection. The major difference between PBR and patent rights lies within the breeder's exemption and the farmer's privilege of the PBR, as there are no similar exceptions from the rights in the patent.

The license agreement is a written statement of what the licensor and the licensee wish to achieve together. The principal objectives of the license must be clearly stated; otherwise, they will never be achieved. This chapter has described the key elements of variety licensing and how to approach them. The conditions of the license agreement should set out the framework and the standards for cooperation, but it is also important to recognize that a license agreement is not static. There are certain provisions to follow, but these provisions also need to be flexible. Changes in the market, seed legislation, and PVP laws should be reflected in the agreement, because it is partly built upon them.

The issues discussed in this chapter should make it possible for prospective licensors and licensees to focus on the part of a license agreement that will have the largest impact on its successful implementation. ■

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1 Louwaars, NP. 2002. Seed Policy, Legislation and Law: Widening a Narrow Focus. In *Seed Policy, Legislation and Law: Widening a Narrow Focus.* (ed. NP Louwaars). The Haworth Press, Inc.: Binghamton, New York. pp. 1–14.

2 www.upov.org/en/about/members/index.htm.

3 UPOV. 1991. Act of 1991. International Convention for the Protection of New Varieties of Plants.

4 www.upov.org/en/publications/conventions/index.html.

5 van der Meer, C. 2002. Challenges and Limitations of the Market. In *Seed Policy, Legislation and Law: Widening a Narrow Focus*. (ed. NP Louwaars). The Haworth Press, Inc.: Binghamton, New York. pp. 65–75.

6 OECD. 2005. OECD Seed Schemes 2005: Rules and Directions.

7 www.oecd.org/agr/seed.

8 www.oecd.org.

9 European Union. 1994. Council Regulation (EC) No 2100/94 of 27 July 1994 on Community Plant Variety Rights.

10 www.cpvo.fr/default.php?res=1&w=1024&h=583&lang=en&page=droit/legislation.htm.

11 www.europa.eu.int/.

12 www.africa-union.org/.

13 www.merco-sur.net/.

14 www.ams.usda.gov/science/PVPO/apply.htm#proof.

15 www.geslive.com.

16 www.sicasov.com.