

Intellectual Property Rights
for Indigenous Peoples,

- *A Sourcebook*

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**Gifts from the Creator:
Intellectual Property Rights and Folk
Crop Varieties**

Daniela Soleri and David Cleveland,
with
Donald Eriacho, Fred Bowannie Jr., Andrew Laahty,
and Zuni Community Members

In this chapter the Zuni share their experience, range of views, and decisions affecting the use of their intellectual property by non-Zunis. Drawing on the expertise of the Center for People, Food and Environment and the Zuni Folk Varieties Project, the Zuni are raising the level of appreciation within the Zuni community for their traditional crop varieties. With this comes a heightened sense of concern for the disrespectful and commercial use of these resources. Through this process the Zuni are moving toward more effective control over who may use these varieties and for what purposes. Their situation also illustrates the added difficulty of imposing meaningful control when many varieties have already been acquired in commercial quantities by non-Zunis who have no legal obligation to observe Zuni wishes. The lessons are important.

Readers of this chapter will also find a clear analysis of the local complexities that impede Zuni use of federal laws to protect their cultural heritage, and an instructive example of the sort of questionnaire that can be effective for assessing and clarifying community attitudes toward the proper use of traditional cultural knowledge. - ed.

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Gifts from the Creator: Intellectual Property Rights and Folk Crop Varieties

Daniela Soleri and David Cleveland, with Donald Eriacho, Fred
Bowannie Jr., Andrew Laahty, and
Zuni Community Members¹

Introduction

Like many other indigenous farmers around the world, Zunis regard their folk crop varieties (also known as landraces or traditional varieties²) as sacred gifts from the Creator.³ While the loss of folk varieties and their replacement through selection is part of the ongoing change of indigenous farming systems, there has been a dramatic decrease in folk varieties being grown by farmers (Cleveland et al. n.d.). Farmers' intellectual property rights to grow and to control their remaining folk variety seeds and food products is increasingly threatened by rapidly changing markets, laws, and biotechnologies largely controlled by industrial nations and corporations that also want to use folk varieties for their own purposes (Keystone 1991:4-6; Plucknett et al. 1987:3-4). Intellectual property rights in folk varieties include rights to the information encoded in their DNA as a result of selection by farmers and their farming systems, as well as knowledge about production and use of folk varieties.

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² Folk varieties are the crop varieties of indigenous farmers, and were the *only* crop varieties until the advent of modern, formal plant breeding after 1900. They are genetically distinct local populations created through selection by the local environment and by farmers (Brown 1978:145; Harlan 1992:147-149).

³ See Cushing (1979:361) for an outsider's account generally considered to be authentic: "As a mother of her own blood and being gives life to her offspring, so have these [corn maidens] given of their own flesh to you....ye shall treasure their gift...."

How do indigenous farmers' want to define intellectual property rights in their folk varieties, and how can they protect these rights in an age of gigantic multinational seed companies, genetic engineering in plant breeding, patents on plants and crop varieties, and a global marketplace hungry for exotic foods? These are the questions we begin to answer in this chapter, using Zuni as an example.

The Industrial World System and its Effect on Folk Varieties

In the industrial world the policy on intellectual property rights in crop genetic resources differs for folk varieties and modern varieties:

- (1) free exchange of folk varieties with no recognition, control, or compensation to the farmer breeders who developed them, when outsiders collect their folk variety seeds, or when folk varieties or their genes are used to develop modern varieties,
- (2) maximum legal protection and monetary compensation for individual scientists and corporations who manipulate folk varieties in their laboratories and experimental plots to create modern varieties.

For example, the current US guidelines for collecting folk varieties states only that collectors should "respect the local farmers" for their knowledge and encourage them to share it, with no mention of requesting permission to collect seed, or of any formal recognition or compensation (USDA 1992).

Two of the most important influences in promoting industrial world intellectual property rights policies in crops today are the legal provisions of the United States government and the Union *Internationale pour la Protection des Obtention Végétales* convention, created in 1961 by European nations and joined by the United States in 1980. What are generally referred to as plant breeders' rights are provided in the United States by the Plant Patent Act of 1930 for asexually reproduced crops for a period of 17 years, and the Plant Variety Protection Act of 1970 for seed and plants of sexually reproduced crops for a period of 18 years (Jondle 1989)⁴.

In the United States utility patent protection (granted for 17 years) was extended in 1985 to plants, and is replacing PPA and PVPA protection for commercial purposes, since the utility patents offer the patent holder much greater control (Williams and Weber 1989; Williams 1991). Although there is confusion on the issue, the potential seems to exist that a slightly modified folk variety, or a trait from a folk variety,

could be patented. "The patenting of useful genes found in nature" could mean that Third World farmers would have to "pay royalties on biotechnology products which are based on their own knowledge and experience" (Shand 1991:137).

The Western industrial nations, the United States foremost among them, are exerting pressure on Third World countries, most of which do not recognize patents on living things, to accept industrial notions of intellectual property rights, and create and enforce national laws supporting them (Belcher and Hawtin 1991:14-15). This has been occurring in such international fora as the General Agreement on Tariffs and Trade (GATT), and the UN Conference on Environment and Development (Seedling 1992). The influential Consultative Group on International Agricultural Research (CGIAR) that spearheaded the "green revolution" and is dominated by industrial countries, holds a large proportion of all *ex situ* germplasm. It is looking for approval of a "trust" status of crop germplasm holdings, which may involve patenting (Seedling 1993a; Siebeck and Barton 1992). One CGIAR center, the International Rice Research Institute (IRRI) in the Philippines has stated that it will not seek any intellectual property rights on germplasm it holds in "trust," but leaves open the question of what happens when IRRI germplasm is used to develop new varieties (Seedling 1993b).

While no one knows how the expansion and extension of industrial nation concepts of intellectual property rights in plants could ultimately affect farmers and their folk varieties, it is likely that poor farmers will "be at a disadvantage without construction of proper safeguards" (Keystone 1991:12), and also "very likely that the profound and far-reaching questions raised by this issue will not even be evaluated before the decision is taken" (Belcher and Hawtin 1991:14). The United States has not even examined or resolved these issues as they relate to the indigenous Native American groups within its own borders. Desirable traits for commercial plant breeding and industrial agriculture continue to be borrowed in good faith from Native American folk varieties, but without apparent permission or compensation (e.g. Gulya 1992).

In addition to control over genetic information, the intellectual property rights of indigenous farmers in folk varieties are also being threatened by outsiders using folk variety names and foods without permission or compensation, or gaining legal control of names. This may restrict the marketing of seeds or food products by indigenous groups. In the US, for example, there is increasing consumer interest in Native American folk varieties and food products, and indigenous names are frequently used. One manufacturer of blue corn chips in the US states on the package that they are "dedicated to the Pueblo Indian tribes of the South West who *believed* this blue corn to be a sacred gift from the Kachinas, their gods" (emphasis added). There is no acknowledgment that any of these cultures and their beliefs are still in existence, for

⁴ By 1988 over 6,500 plant patents and 2,133 plant variety protection certificates have been issued (Brown 1991:204-205).

example that living Pueblo Indians continue to maintain blue corn folk varieties, much less any indication that they are in any way compensated. Legal control over indigenous names by outsiders, for example by trademarking, is also possible. For example, one company has trademarked the name "Hopi Blue," and uses it to market a blue popcorn purported to have been created by crossing "authentic" blue corn with white popcorn, stating that colored corn "was" grown by Hopis. There is no indication of compensation to the Hopi Native Americans who implicitly contributed the "authentic" blue parent in the cross, and who continue to produce their own blue corn folk varieties in large amounts (e.g. Soleri and Cleveland 1993).

Alternative Approaches to Intellectual Property and Folk Varieties

Many indigenous farmers disagree with the dominant industrial world viewpoint. One of the first questions a Hopi farmer in his 80s asked us suspiciously when we began talking with him about the Hopi bean folk varieties he was harvesting was "Are you going to take Hopi seeds away and make money with them?" (see Soleri and Cleveland 1993). The concern of indigenous farmers world-wide for safeguarding their intellectual property rights in crop genetic resources has increased as plant breeders' rights, patents, trademarks and other Western forms of intellectual property right threaten to alienate them from control of, and compensation for, these resources. While the industrial world is pressing for their version of intellectual property rights in crop genetic resources, indigenous farmers and their supporters see a need to safeguard the rights of farmers to (a) grow folk varieties and market folk variety seeds and food products, (b) be compensated when folk varieties, folk variety genes, folk variety food products and names are used or marketed by others, and (c) have a say in the manipulation and other uses of folk varieties by outsiders, which may violate the cultural and religious values with which folk varieties are often deeply imbued.

To those supporting farmers' intellectual property rights in their folk varieties, the effort and knowledge of indigenous farmers involved in creating and maintaining folk varieties implies the need for recognition on an equal footing with that of plant breeders and molecular biologists. They see the communal effort in developing folk varieties as an integrated part of making a living over generations to be as legitimate as the individual efforts of scientists in formal, segregated work settings in the laboratory or field plot. Thus, the effort to safeguard farmers' intellectual property rights in folk varieties is an attempt to reinterpret the dominant industrial system of intellectual property right using several different approaches.

The first approach is to protect the rights of farmer-breeders using industrial world intellectual property right concepts and methods such as contracts, trademarks, and patents. Plant breeders' rights or patents do not offer much promise for farm communities, in part because of the expense involved⁵. Another difficulty is that a large proportion of the genes in folk varieties of most crops probably already exists in *ex situ* collections or plant breeders' stock. An even greater complication is the likelihood that because of seed sharing between neighboring groups, there may be little or no genetic differences between folk varieties of some crops. Seeking protection of these varieties by applying the criteria of patents to them would be nearly impossible as it is doubtful that the historic and cultural complexities involved could be unraveled. Ultimately this could foster competition between communities in a region while the greater threat to control is external. There is a strong contrast between the approach to resource use of many indigenous groups and the emphasis on private ownership and commercialization of industrial societies. This has led a recent United Nations report on intellectual property and indigenous peoples to state that industrial world intellectual property right mechanisms are "inherently unsuitable" for indigenous peoples for philosophical reasons (Daes 1993, cited in Suagee, this volume). There is a difference, however, between the shorter-term, more expensive control primarily over specific genetic information offered by patents and plant breeders' rights, and the longer-term, less expensive, more general control offered by protocols, contracts and trademarks. Protocols, contracts, and trademarks could be used by indigenous communities to regulate the collection of folk variety seeds, and their subsequent use in ways much more amenable to indigenous cultures.

A second approach is to balance private plant breeders' rights with "farmers' rights" defined at a group level. Since 1987 the major international effort regarding intellectual property rights and folk varieties has been the promotion of "farmers' rights," which was endorsed in 1989 as part of the FAO Undertaking. This modified the original approach of the Undertaking, and was a concession to the predominance of private property in the world, making the Undertaking much more palatable to industrial countries. A fund has been established into which industrial countries and seed companies would contribute a fraction of a percent of the profit from sales of modern varieties, but few contributions have been made. The Keystone dialogue proposed that the money would be used at the national or regional level for "genetic

⁵ Fees during the total 17 or 18 years of protection in 1989 for Plant Patent Act protection, a Plant Variety Protection Certificate, and a utility patent were US \$405, \$2,400 and \$3,540 respectively (Knudson and Hansen 1991). This, however, may be a minor expense compared with the laboratory and legal work required before an application is filed.

conservation and utilization programs particularly, but not exclusively, in the Third World," but might also involve some sort of "technology transfer" to Third World countries (Keystone 1991:13, 25-33). This approach leaves out the local community, and ignores the widespread conflicts between local indigenous groups and nation states.

A third approach is the opposite of the first two in that it opposes control of crop genetic resources for profit, and aims to keep them freely available for everyone's use. Free access to all crop genetic resources was the original position of the 1983 FAO Undertaking on Plant Genetic Resources, which included not only folk varieties, but formal breeders' elite lines and finished varieties. This was vigorously opposed by Western industrial governments as directly opposed to notions of private property. Meanwhile, Seed Savers' Exchange of Iowa, USA, a grassroots network for heirloom seed conservancy, has systematically been publishing descriptions of their heirloom varieties (Whealy 1993). They believed, on the basis of information from the US Plant Variety Protection Office in Beltsville, Maryland, that published documentation should protect described varieties from subsequent plant breeders' rights protection. However, the strategy of publishing descriptions of folk varieties, which may serve to thwart plant breeders' rights protection, might possibly increase the chance of patenting folk varieties or their genes, if outsiders are alerted to desirable traits for the development of modern varieties.

A fourth approach is to protect folk varieties for indigenous peoples, but by very different means than those of industrial societies. This removes folk varieties from the same playing field as plant breeders' varieties, and attempts to force the world to recognize indigenous peoples' values as equal to those of the dominant society. One way is by defining protection of natural, cultural and intellectual property as part of the overall protection of indigenous peoples' human rights. For example, a recent United Nations report states that the most effective way for indigenous peoples to protect their intellectual property is to assert collective ownership of their land base (Daes 1993, cited in Suagee, this volume). This is also the approach of the report of the First International Conference on Indigenous Cultural and Intellectual Property Rights, which states that indigenous peoples are capable of managing their own traditional knowledge, but are willing to share with the rest of the world on condition that their rights to define and control their knowledge are internationally recognized and protected (Mataatua Declaration 1993). In regard to traditional plants and genetic resources, the Mataatua Declaration states that indigenous peoples must be in control of any commercialization or experiments.

More specifically, it has been suggested that folk varieties be treated as the cultural heritage of local communities under international law. For example it has been proposed (Shand 1991) that folk varieties could be protected under the *Model Law* of the United Nations World

Intellectual Property Organization (UNESCO/WIPO 1982), which recognizes the legal rights of communities to intellectual property in the form of folklore. For this reason some advocate referring to indigenous crop varieties as "folk varieties" rather than landraces or traditional varieties (Keystone 1990:26; Fowler and Mooney 1990:xvi). In 1989 UNESCO adopted a recommendation that the *Model Law* become a legally binding international convention, but it has not yet gone into effect.

Zuni Farming and Folk Varieties

Zuni folk varieties include varieties of ancient Native American crops like corn, beans, and squash. In recent generations, as Zuni farming declined, and as remaining Zuni farmers and gardeners planted more commercial varieties bought from mail order suppliers, stores, and nurseries, Zuni folk varieties began to disappear. Although new folk varieties and modern varieties are useful, existing folk varieties continue to play an important role in sustainable Zuni agriculture (Cleveland et al., n.d.; Soleri and Cleveland 1993). They are adapted to the climate and soils of Zuni, and can therefore usually produce good crops without chemical fertilizers or pesticides, and require a minimal amount of water. They are also important in making traditional Zuni foods, and in Zuni religious ceremonies.

Zunis are now revitalizing their agriculture and folk varieties are seen to be an essential ingredient for cultural and agroecological reasons. Zunis have previously been very successful in establishing rights to cultural property in case of *Ayayuda*, the twin war gods represented in wooden statues. However, no precedent in the US legal system has been established by Zuni in intangible, i.e. intellectual, property. It has not been well established in Zuni law either, according to the major study of Zuni law by outsiders (Smith and Roberts 1954). While that study did not deal with intellectual property rights, it pointed out that

there is much evidence that in the ceremonial or religious realm a very clearly formulated notion of property in intangibles obtains. This is exemplified by the 'ownership' possessed by an individual or group in certain esoteric ritual procedures, songs or dances; or by a curer in certain methods of healing (65).

Seeds of Zuni folk varieties have been given in good faith to many outsiders, but Zunis presently have not established their rights in their folk varieties to compensation and control. Consequently, use of Zuni folk varieties by outsiders may violate these rights and be against Zuni wishes. Zuni seeds, Zuni foods, and even the name Zuni itself are used by people other than the Zuni. Many people in the Zuni community are familiar with this problem in the case of so-called "Zuni" jewelry

being produced elsewhere and sold as a Zuni product. Zuni craftspeople neither make the pieces nor receive any benefits from such sales. What do the Zuni people think about this in the case of agricultural products? Should Zuni seeds, foods and the Zuni name be shared with all people? What if those people want to make money from them? Should those profits be shared with the Zuni people? These are some of the questions addressed in the intellectual property rights component of the Zuni Folk Varieties Project.

The Zuni Folk Varieties Project

The overall purpose of the Zuni Folk Varieties Project is to safeguard Zuni folk varieties for the revitalization of Zuni farming.⁶ Though the project is not yet complete, we want to share some preliminary results regarding intellectual property rights in order to encourage interaction with other indigenous communities. The Project works with the Zuni community to achieve four goals. The first three concern supporting the role of folk varieties in sustainable agriculture at Zuni: improving the understanding of the role of folk varieties through documentation and education, including curriculum development with the Zuni schools; increasing the availability of folk variety seeds through encouraging a seed exchange network, and also through maintaining the Zuni Community Seedbank and searching for seeds of Zuni crops no longer available at Zuni⁷; and increasing the planting and diversity of folk varieties by working with the Zuni Sustainable Agriculture Project and exploring commercial opportunities if approved by the community.

The fourth goal is complementary to the first three: ensuring control by Zunis of their folk varieties by formulating policy options to establish intellectual property rights based on our documentation and the community's wishes. The Folk Varieties Project is breaking new ground as we work with members of the Zuni community, the Zuni Community Seedbank Board of Directors, the Zuni Cultural Resource Advisory Team, the Zuni Irrigation Association, the Tribal government, and legal consultants, to formulate new policies for protecting Zuni folk varieties.

⁶ The Folk Varieties Project builds in part on the Zuni Traditional Crops Project carried out by Carol Brandt of the Zuni Archeology Program, with the help of Jerome Zunie, in 1991 (Brandt 1992). That project asked 50 Zuni farmers about seed of Zuni folk varieties they were still growing, and accepted donations of seed to begin a seedbank. It also increased interest in a community seedbank, and raised questions about the future of Zuni folk varieties and how to safeguard them.

⁷ We have recently made a request to the US Department of Agriculture's National Genetic Resources Program to do a search for Zuni folk varieties that may have been removed from Zuni in the past and are presently being stored elsewhere, for example in the National Seed Storage Lab in Fort Collins, Colorado. They have already located seeds of several varieties (Sperling 1993), but none that is not currently grown at Zuni.

Policy options will cover 1) the collection of seeds at Zuni by outsiders, 2) the distribution of seed from the Zuni seedbank, 3) the use of Zuni folk variety seeds already removed from Zuni, and any that may be taken in the future, in regard to genetic manipulation, patenting, or commercial sales, and 4) the use of Zuni folk variety names, and other Zuni cultural symbols, in connection with the marketing of Zuni seeds or food products. We will also work with the Farmer Community Seedbank Board to help them prepare to take over control of the Community Seedbank by the end of the project.

We will discuss these options at open community meetings and in Project educational materials, and provide input to Tribal Council decision making on Zuni policy.

Zuni Attitudes Toward Intellectual Property Right and Folk Varieties

In addition to informal discussions with Zuni community members, questions about intellectual property rights in Zuni folk varieties are also included in four formal surveys. We present preliminary results from two of these below.

(1) The Peach Orchard Survey

We are interviewing Zuni families that have rights to land in peach orchards. These orchards became a major food sources for Zuni after the introduction of peaches, but are now mostly dead. We are responding to the great interest in the community to reestablish these orchards using Zuni peach varieties. Donald Eriacho is in charge of the interviewing, and so far we have completed 29 interviews. Two of the questions on the survey ask about the value of Zuni peach folk varieties and control over them.

The first question asks "Is it important to make sure that old Zuni peach varieties are not lost? Why?" Out of 25 answers, 24 were "yes," and 1 "don't know." Of the 17 who explained their answer, 10 said only that it was important to save Zuni peaches "for our children," 3 said Zuni peaches are part of Zuni culture, and the other four mentioned that Zuni peaches are more nutritious, easier to slice and dry than modern varieties, will help their children to make money, and are easier to care for now with modern technology.

The second question is "Should non-Zunis be given seeds of Zuni Peaches? Why?" Out of 24 answers, 17 said "no," 5 said "yes," and 1 said "don't know." Of the 19 who explained their answer, 9 said simply that Zuni peaches were only for Zunis, 4 added that outsiders would sell Zuni peaches for money or that Zuni peaches should not be commercialized. Other explanations of "no" answers included that the

seeds were from the ancestors and that Zunis have given away too much already. One person qualified their "no" answer by stating that maybe it would be all right to give Zuni peaches to outsiders later if more information on how they would be used became available. Three people explained their "yes" answers by saying that Zunis could help outsiders out, that an arrangement could be worked out, and only if Zunis can control the peach seeds. In discussions during several of the interviews the image of Zuni farmers removing the pits before handing over the peaches to outsiders made us all laugh, but highlighted the practical problems of controlling seeds when selling or giving away fresh peaches, or dried chilies, corn or beans.

(2) The Intellectual Property Rights Scenario Survey

One of the main ways in which the Zuni Folk Varieties Project is documenting Zuni opinions about issues involving intellectual property rights is by asking people's opinions about four fictitious scenarios. Each scenario is followed by four responses by fictitious farmers, and we ask interviewees to choose the best response and comment on it, or give their own response if different.

We used this type of tool because intellectual property rights is an obscure and confusing term that is unfamiliar to many people both in and outside the Zuni community, although most are aware of the basic principle of intellectual property rights. These scenarios represent ways in which Zuni intellectual property rights in their folk varieties may be threatened, and they assist Zuni people in considering these specific issues and responding to them.

So far we have done the first survey with members of the Zuni Tribal Council, the Zuni Cultural Resources Advisory Team, and the Zuni Irrigation Association. We tell them that individual responses are confidential, but that the Folk Varieties Project will report the answers in the Project Newsletter (*Zuni Farming*) and other publications such as this, and on a community radio broadcast. A summary of the responses will also be included in the Folk Varieties Project final report that will be used to help the community and Tribal Council in discussing policy options.

While the scenarios, reproduced below, are fictitious, all of them describe things that have already happened or could easily happen at Zuni, and some have already happened in other Native American communities. For each scenario we ask: "Which farmer do you think had the best response?", "Why?", and "Is there another response not described above that you think is better? If so, what is it?"

1. Bill Barker is a seed collector with Kaleidoscope Seeds in California, a company that specializes in selling "old-time" seed varieties. His company is looking for new corn varieties to sell to their customers. Bill visits Zuni in October to collect seeds of

traditional blue and white corn. He drives around the fields and stops to talk with farmers while they are harvesting corn.

The first farmer, *Ted*, sells Bill five pounds of shelled Zuni white corn and five pounds of shelled Zuni blue corn that Kaleidoscope Seeds will plant on their California farm to get enough seed to sell. They will not need to return to Zuni for more seed.

The second farmer, *Elma*, sells Bill one fifty pound bag of shelled Zuni white corn and one fifty pound bag of shelled Zuni blue corn that Kaleidoscope Seeds will package into five ounce packets to sell directly to its customers. Elma also made Bill sign an agreement that any Zuni blue or white corn seed that Kaleidoscope sells will be purchased from Elma, not increased by Kaleidoscope on its California farm.

The third farmer, *Will*, refuses to give or sell any Zuni corn seeds to Bill, saying they are the gift of the Creator and should not be taken away from Zuni.

The fourth farmer, *Evan*, takes Bill to the Tribal Council, and together they agree on a contract between the Zuni Tribe and Kaleidoscope Seeds that guarantees that any Zuni corn seeds sold by Kaleidoscope will be purchased directly from Tribal members and none of these seeds will be increased by the company.

2. Ed Jones, a scientist with Better Seeds International, a large seed company, visits Zuni in October to collect seeds of traditional blue and white corn. His company is looking for corn varieties that are resistant to drought, so that they can use them in breeding programs to develop commercial corn varieties that Better Seeds would then sell. Ed drives around the fields and stops to talk with farmers while they are harvesting corn.

The first farmer, *Dan*, gives Ed Jones seed only after he makes Ed sign a contract stating that if Better Seeds International ever makes any money from the seeds he has given, that they will pay Dan a fair share.

The second farmer, *Ethel* sells him 10 ears of white and 10 ears of blue for a total of \$20.

The third farmer, *Mary*, takes Ed to the Tribal Council, and together they agree on a contract between the Zuni Tribe and Better Seeds International that pays the individual farmer for the seeds, and gives the Tribe a share of any profits made by the Company based on use of the Zuni seeds.

The fourth farmer, *Jerry*, refuses to give Ed Jones any seed, saying that they are a gift of the Creator, and should not be given to non-Zunis.

3. Four Zuni farmers have been enlarging the area they plant to Zuni blue corn over the last several years. They now have more than enough to satisfy the needs of their families and extended families.

The first farmer, *Grace*, says that she would rather earn a little extra money by farming than washing dishes at the Pizza Shop every Friday, and she thinks they should sell blue corn in the village, but only to other Zuni people.

The second farmer, *Alfred*, agrees with Grace but says that there are a lot of outsiders and tourists who would be willing to pay for traditional Zuni blue corn, and that they should market it to these people also.

The third farmer, *Winston*, thinks they should stop expanding their blue corn production, since they have enough to meet family and extended family needs, and it's not right to sell traditional Zuni crops.

The fourth farmer, *April*, agrees with Alfred about marketing to both Zunis and non-Zunis except she thinks that only ground cornmeal should be sold to non-Zunis so that no traditional Zuni corn seed would be sold.

4. A group of four farmers has started a farmers' market at Zuni specializing in traditional Zuni crops like blue and white corn, chilies, string beans and squash. They have been very successful, selling to both Zuni and non-Zuni customers and some of them are selling some of these products off the reservation. A group of Anglo farmers in a nearby town has noticed the success of the Zunis, and they have begun growing Zuni crops and have started packaging blue corn meal and selling it as "Zuni Blue Corn Meal."

The first Zuni farmer, *Carol*, thought that their group should apply for a trademark on the name "Zuni" for use with farm produce. Then they would be the only one that could legally use the name.

The second Zuni farmer, *Bernice*, said that they should just ignore the Anglo farmers, and continue what they are doing.

The third Zuni farmer, *Victor*, agreed with Carol, but thought that they should work with the Tribe to get a trademark for use by any Tribal member.

The fourth Zuni farmer, *Neil*, said that they should tell the Anglo farmers to stop growing Zuni crops and selling them with the Zuni name, but if that didn't have an effect it wasn't worth doing anything else.

Among the three groups interviewed it was not uncommon to find an ideal position that Zuni folk varieties are only for Zuni people and should not be given, sold to, or used by outsiders. However, many people, including those who hold this position, believe that it is either too late or unrealistic to enforce this ideal, and that therefore Zuni folk

varieties could be given or sold to or used by outsiders, within limits. We summarize the Tribal Council and Nutria Irrigation Unit responses in Table 1, and then present the comments of the Advisory Team. When discussing the first question many respondents in both groups pointed out the Zuni belief that "the crops grown are the gift or blessing of the Creator", and that "things should be kept in the Zuni tradition" (Will's response). Even so, the majority of people in each group selected the response (Evan) of a group contract through the Tribal Council or "some other body".

Table 1
Responses to the Intellectual Property Right Survey

Question	Nutria Irrigation Unit Member		Zuni Tribal Council Members	
#1	3rd farmer (Will)	= 6	3rd farmer (Will)	= 2
	4th farmer (Evan)	= 8	4th farmer (Evan)	= 3
#2	1st farmer (Dan)	= 3	1st farmer (Dan)	= 1
	3rd farmer (Mary)	= 2	3rd farmer (Mary)	= 3
	4th farmer (Jerry)	= 6	4th farmer (Jerry)	= 1
#3	2nd farmer (Alfred)	= 1.5*	2nd farmer (Alfred)	= 3
	3rd farmer (Winston)	= 2	4th farmer (April)	= 2
	4th farmer (April)	= 7.5*		
#4	1st farmer (Carol)	= 4	3rd farmer (Victor)	= 5
	3rd farmer (Victor)	= 4		
	4th farmer (Neil)	= 3		

* respondent gave two answers to this question, each one recorded as 0.5 votes.

Also in the second question many Nutria Irrigation Unit members supported the view of Jerry, as one wrote "our seeds are our children, I do not believe in selling any seeds to Zunis or non-Zunis". But respondents from both groups also selected answers that represented contracts between individual farmers and the company (Dan), and contracts between the Tribe and the company (Mary). Distinctions between these two approaches may not have always been clear. In addition, Tribal Council members in particular were concerned that the Council be involved in the approach and yet demonstrate that they recognize individual farmers' efforts. "The contract should be written the individual and the company but the Tribal Council should help write the contract. ...It might not be fair for just one person to hold the contract. There should be a one time payment to the individual and then long-term profits coming to the Tribe."

For the third question the idea of marketing Zuni corn while still controlling its fate by selling only corn meal to outsiders (April) was favored by many Nutria Irrigation Unit and some Tribal Council members. On the other hand, respondents from both groups also selected the approach of selling to outsiders without any special provisions for control (Alfred). A councilperson pointed out that "Not many young people would respond the way April did, but older men who are active in Zuni religion would recognize the difference between April and Alfred's responses." Another one said " Selling food to outsiders is different (than selling seeds); this is OK."

The distribution of answers to the fourth question may reflect a lack of clarity in the survey that made it difficult to see the difference between the first (Carol) and third (Victor) farmers' approaches: acquiring a trademark for a group of farmers vs. acquiring it for use by all tribal members. Others in this group selected a less formal and less powerful approach (Neil).

The Zuni Cultural Resources Advisory Team formulated the following response in a series of discussions on the survey with the Zuni Folk Varieties Program. The Advisory Team is a group of seven male Zuni religious leaders, recognized by the Zuni community. The Team, through the Cultural Preservation Officer who is their liaison, is active in developing recommendations for the care of Zuni resources in ways consistent with and supportive of Zuni cultural beliefs.

The Advisory Team felt it was important to make it clear that theirs is not a policy-making role, but rather to develop recommendations as a group that reflect Zuni cultural values concerning the resources being discussed. They feel that developing policy concerning these issues should be the responsibility of another community-based entity such as the Zuni Community Seedbank Board of Directors.

On the broad topic of rights to Zuni traditional crop seeds and the Zuni name for agricultural products the Advisory Team believes that:

Zuni seeds should not be sold or given to outsiders for profit, resale, breeding, or trade marking because of their significance to the Zuni people. This statement applies to all long-time food crop varieties of the Zuni people including corn, beans, squash, melons, gourds, chilies, and peaches.

They stated that these seeds should not be used as a commodity for profit, and pointed out an event in Zuni oral narrative and history where their corn disappeared, and this was followed by a warning that the next time the Zuni people would not have a second chance. In addition, the Team added that once you let something as important as these seeds go you don't know how they will be used, because once they are out of your control, there are no guarantees.

It is important to point out that the Advisory Team made it clear that while their statement reflects an ideal that they believe in, it will not always reflect the changing world that the Zuni people live in and what is actually occurring in the Zuni community. Therefore when answering the following questions they always emphasized the above position and then discussed ideas that they felt best supported this position, but also responded in a realistic way to each of these scenarios, reflecting actual choices people must make.

Survey question #1. Advisory Team members indicated that in this situation there should be an agreement, but they felt that such an agreement should be between the company and a community-based entity whose work focuses on this topic, such as the Zuni Community Seedbank and its Board of Directors.

The Advisory Team realizes that sales of Zuni crops probably has and will occur, and they see their role as providing recommendations to the Zuni Community Seedbank Board of Directors. The Zuni Community Seedbank Board of Directors would have the responsibility of mediating the impact of these sales through policies to demand protection and compensation for the Zuni people. The Advisory Team feels it is extremely important that the Zuni Community Seedbank Board of Directors understand issues of cultural appropriateness concerning the use of these crops, and that the Zuni Community Seedbank maintain community support.

Survey question #2. This question was about the use of Zuni folk varieties as raw material for breeding new varieties, instead of using them directly as was the case in question #1. The Advisory Team does not support the idea or practice of "crossbreeding", that is mixing two varieties to make a new variety. They feel that this is inappropriate for Zuni farming and would result in a loss of the distinct varieties that are important to the Zuni people. They stated that they know the special qualities of Zuni corn are desirable, but this kind of crossing is only done for making money, and the Zuni people never get any of that money.

The Advisory Team believes there should be recognition and compensation not only for breeding using Zuni crop varieties that is occurring now and in the future, but also for what has already happened in the past. They feel that this is a policy question that the Team would be willing to make recommendations on, but that is the responsibility of the Zuni Community Seedbank Board of Directors.

Survey question #3. The Advisory Team pointed out that there is a need within the Zuni community for increased quantities of traditional Zuni farm products such as blue corn. How to make them more available and whether or not they should be available to outsiders were considered policy issues that should be addressed by an entity such as the Zuni Community Seedbank and its Board of Directors.

If sales were considered as one way of increasing the availability of these products, Team members felt it was important to know if

farmers would be selling their corn and other goods themselves, that is directly to customers vs. to a retailer. If the farmers are not selling directly then it would be very easy for them to lose control of how their corn or other farm products would be sold or used.

The Advisory Team felt that making a decision about the availability of Zuni seeds and farm products to outsiders is difficult because different outsiders have very different histories and intentions. For example, the Team pointed out that there is a long history of sharing these goods with the other Pueblos, especially the Hopi. On the other hand, there are many examples of Anglos who have used Native American seeds, foods, or tribal names for their own profit. Perhaps this means that the policy would need to depend on who the outsiders are, how they intend to use the farm products, and if they actually use them in the way that they claim.

One suggestion that the Advisory Team had was that the Zuni Community Seedbank could act as a marketing board for Zuni farm products both within and outside the community. The Zuni Community Seedbank could purchase surplus corn or other Zuni farm products from farmers for a fair price, the corn could then be resold in the community with a minimal price increase. The Zuni Community Seedbank would not do this for profit but as a community service. The Advisory Team stated that they would be willing to provide recommendations to the Zuni Community Seedbank Board of Directors concerning these policies. By doing this, and actively seeking community input, the policies could best reflect Zuni concerns and interest.

The Advisory Team believed that such an arrangement could offer the following advantages: community members would have a source for Zuni farm products that they know are Zuni and of good quality, farmers would know they have a way to market their surpluses, and both those buying from and selling to the Zuni Community Seedbank would have the assurance that these transactions would be done in a way that was supportive of Zuni cultural and religious values. Options could be considered such as selling whole seed only within the community and fresh produce such as sweet corn or processed foods such as cornmeal or parched corn to non-Zunis to insure that no viable seed would be sold to them.

Survey question #4. This question focused the discussion on the issue of trademarking. The Advisory Team favors protection of the Zuni name for use by tribal members only. Protecting cultural resources such as Zuni crops, foods and the Zuni name for use by tribal members was seen by the Team as a sovereignty issue that should be addressed. They felt that how this protection was achieved is a policy issue and the responsibility of an entity directly concerned with the topic such as the Zuni Community Seedbank Board of Directors.

Conclusion

Complex and heated debates have enveloped questions of natural resources, such as rights to certain quantities and quality of water and air, that we all thought of as freely available to all. The same is happening with folk varieties.

Developing policy options for dealing with intellectual property rights in folk varieties is a very complicated task. Zuni farmers, like most farmers, have traditionally shared seeds freely with each other and with their neighbors. The increasing private control and manipulation of seeds by companies for profit has changed this situation and many indigenous peoples like the Zuni are becoming reluctant to share their folk varieties freely. Lack of formal policies concerning these issues does *not* mean that these communities are unaware or unconcerned about them. Indigenous groups must learn more about the issues and their options, so that they can at least decide whether they want to do anything or not. Otherwise, those with the most influence in the government, the courts, and the market place will dominate the scene for their own interests.

An important part of the Zuni Folk Varieties Project is exploring alternatives that can protect the rights of indigenous communities and their farmers in their folk varieties. None of the four alternative approaches that we outlined above is an easy and satisfactory strategy. A common basic approach by indigenous communities globally seems to be emerging and is a necessary foundation to assuring recognition of basic human rights within which folk varieties can be protected. Many groups, including the Zuni, are in fact taking greater control over the use of their culture and creating new precedents. Each community, however, will probably develop its own specific strategies, some of which may be brand new. This will depend to some extent on the power relationships within the community, and between community and outside groups.

During the rest of the Zuni Folk Varieties Project we will continue to work with the Tribal Council, Cultural Resources Advisory Team, and other community members to develop agreement on how Zunis wish to protect their intellectual property rights in their folk varieties. We will consult with lawyers and other outside experts on specific ways in which Zuni can get this protection. For example, protocols (rules) for outsiders collecting Zuni seeds, contracts with outsiders using Zuni seeds, and trademarking of the use of the Zuni name in selling Zuni seeds, produce and food products. This work will be continued by the Zuni Community Seedbank Board and the Zuni Sustainable Agricultural Project with the goal of establishing Zuni Tribal policy to protect Zuni folk varieties.

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