CITIZENS' PREFERENCES FOR POLICIES TO CONSERVE AGRICULTURAL GENETIC RESOURCES

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Abstract

To evaluate conservation policies of agricultural genetic resources (AgGR), information on the use and non-use values of plant varieties and animal breeds, as well as on the preferences for *in situ* and *ex situ* conservation are needed. Here we present the results of a choice experiment of AgGR conservation programs in Finland. The findings indicate that citizens' have high interest in the conservation of native breeds and varieties, but also that there is heterogeneity in preferences between citizens. Five groups can be identified: one implying lexicographic preferences, two with reasoned choices, one indicating ambivalence and one with status quo preferences.

Key words: native breeds, native varieties, choice experiment, preference heterogeneity

1. Introduction

The intensification of agriculture has led to remarkable changes in the utilization of agricultural genetic resources and many previously common cultivated plant varieties as well as all animal breeds that are of interest in terms of food and agricultural production have become rare or even endangered (FAO, 2007, 2010; Drucker, Gomez and Anderson, 2001). In Finland, several native breeds, such as the Eastern and Northern Finncattle, the Kainuu Grey Sheep and the Åland Sheep are endangered according to the FAO classification (FAO, 2007) and majority of the old Finnish crop varieties and the Finnish landrace pig are already extinct.

Decisions on the focus and extent of genetic resource conservation should consider both the costs and benefits of conservation. The full benefits of conserving agricultural genetic resources are not revealed by markets, as they are either not traded in the markets or the price of agricultural products do not completely capture their value (Oldfield, 1989; Brown, 1990; Drucker, Gomez and Anderson, 2001). Although the importance of economic analyses has been recognized, the literature on the monetary value of genetic resources in agriculture is relatively limited (see e.g. Evenson, Gollin and Santaniello, 1998; Rege and Gibson, 2003; Ahtiainen and Pouta, 2011).

Conservation policies of agricultural genetic resources in Finland as in many other European countries are currently based on international agreements such as the Convention on Biological Diversity (1992) and the Global Plan of Action for Animal Genetic Resources (FAO, 2007). National genetic resource programs were initiated for plants in 2003 and for farm animals in 2005 to strengthen the conservation of genetic resources in Finland. Although there has been some progress in the implementation of the programs, they have also suffered from shortage of funds and lack of political interest in the conservation.

To evaluate the conservation policy, there is a need for benefit estimates that encompass both the use and non-use values associated with genetic resources. Stated preference methods, such as the discrete choice experiment (CE) method are capable of estimating both use and non-use values. Choice experiment is a survey-based method, where respondents are asked to choose between two or more discrete alternatives that are described with attributes. The CE method has been found suitable for valuing genetic resources due to its flexibility and ability to value the different traits breeds or varieties may have. The CE method can also be used to evaluate the means of conservation *in situ* (live animals and plants) and *ex situ* (as seeds, cryopreserved embryos and other genetic material) and both plant genetic resources (PGR) and animal genetic resources (AnGR). Previous choice experiments have focused on valuing breeds or varieties and their attributes, especially related to their use of in agriculture (Birol, Smale and Gyovai, 2006; Ouma, Abdulai and Drucker, 2007). The choice experiments targeting to consumer or citizen values of AgGR are rare. The previous valuation studies of

biodiversity have found heterogeneity of consumer preferences even so that part of citizen has lexicographic preferences toward conservation (Hanley, Spash and Walker, 1995; Sælensminde, 2006). Although heterogeneity of preferences toward AgGR among farmers has been studied (e.g. Roessler et al., 2008; Omondi et al., 2008; Ouma, Abdulai and Drucker, 2007), there are no empirical studies of heterogeneity of citizen preferences in the case of AgGR or empirical results of lexicographic preferences.

In this study we present the results of a choice experiment valuing the benefits of genetic resource conservation programs in Finland. We test the effect of *in situ* and *ex situ* conservation on citizen choices between programs. We also analyse whether the plant varieties and animal breeds are perceived equally valuable by citizen. As the conservation of agricultural genetic resources (AgGR) cannot be expected to be equally valuable to all citizens, we analyse the existence of citizen segments that value the conservation of genetic resources differently.

We can assume that AgGR are rather unfamiliar for some of the respondents of the valuation survey. However, in valuation surveys respondents are assumed to make "informed" choices when responding to value elicitation questions (e.g. Blomquist and Whitehead, 1998). To obtain informed choices to produce valid estimates of willingness to pay (WTP) surveys need to provide neutral and sufficient information about the environmental good while avoiding information overload. Providing more information about the quality (characteristics and services) of the environmental good can increase stated WTP, have no effect, or in some cases decrease WTP (Blomquist and Whitehead, 1998). There is a substantial literature on the effects of information and respondent effort in contingent valuation studies (see e.g. Berrens et al., 2004; Blomquist and Whitehead, 1998; Cameron and Englin, 1997), and also some choice experiment studies have examined the issue, mainly focusing on respondent effort (Hu, Adamovicz and Veerman, 2009; Vista, Rosenberger and Collins, 2009). Hu, Adamovicz and Veerman (2009) used data from a choice experiment of genetically modified food to model simultaneously voluntary information access and product choices. They found that information was accessed rather infrequently, and those who held critical views on GM food accessed information more often. There were interlinkages between information access and choices, but they were complex and varied between individuals. Vista, Rosenberger and Collins (2009) examined the effect of time spent on attribute information, choice questions or completing the survey, finding no significant effects on parameter estimates.

Here we are particularly interested in observing how the use of information differs between heterogeneous consumer segments. Therefore, we offered the respondents an opportunity to obtain further information on genetic resources. In our case, the internet-based survey allowed us to measure whether the respondents accessed the additional information, how much time they used to read it and how long it took to respond to the survey. Offering the opportunity for voluntary access to information instead of using different information treatments to split-samples has the advantage of not assuming that respondents read information that is provided (Hu, Adamovicz and Veerman, 2009). Furthermore, we tested the effects of response uncertainty and information as sources of preference heterogeneity.

2. Material and Methods

Data collection

The survey data was collected using an internet survey during the summer 2011. The Internet panel of a private survey company, Taloustutkimus, comprises 30 000 respondents who have been recruited to the panel using random sampling to represent the population

(Taloustutkimus, 2013). After the pilot survey of 138 people, a random sample of 6200 respondents was selected, and 1860 people completed the survey, resulting in a response rate of 30%. Based on the socio-demographic variables, the data represented the population rather well.

Survey design

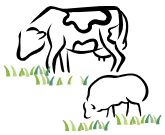
Before presenting the choice tasks, the survey introduced Finnish native animal breeds and plant varieties by explaining what landraces are and giving examples. After asking respondents about the familiarity of PGR and AnGR, all respondents were offered a short piece of information about the conservation of these breeds and varieties. After that respondents were given the opportunity to obtain further information by clicking two hyperlinks, one for PGR and other for AnGR. Providing voluntary access to additional information makes it possible to identify those respondents who accessed the information, and also the time spent on the information page was recorded. Similar to our approach, Hu, Adamovicz and Veerman (2009) provided voluntary access to additional information in a choice experiment setting. The information included motivation for conservation, descriptions of the in situ and ex situ conservation methods and facts about sustainable use of genetic resources. The time used for staying on these information pages was recorded. After several questions about perceptions of genetic resources, the survey proceeded to the choice experiment.

The choice experiment was framed by telling respondents that conservation of native plant varieties and animal breeds was not yet comprehensive in Finland. The survey presented a program that would conserve majority of the varieties and breeds on farms and in gene banks. The operation of gene banks would be extended to missing plants and varieties. The conservation on farms would be enhanced by developing the support for farmers from conservation activities. Furthermore, those who are using native varieties in gardens were told to be supported monetarily and by providing information.

The respondents were explained that the conservation program would be financed with an increased income tax between years 2012 and 2021. Depending on the extent of the program the expenses to taxpayers would vary, but all taxpayers would participate in financing the program. The attributes of the programs were explained to respondents with a table (Table 1).

Next, the respondents were presented conservation programs that were compared to the current situation, which was the status quo alternative in the choice experiment. Each program was described with five attributes and their levels and the cost attribute (tax) (Table 2). Each respondent faced six different choice sets.

Table 1. Attributes of conservation programs.

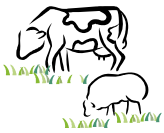
Conservation measures		Description	Current state
Native food plant varieties in gene banks		Native food plants are stored in the gene bank, either as seeds or plant parts.	Gene bank contains seeds from about 300 landrace varieties. Plants that are added vegetatively (e.g, berry and apple varieties) are missing.
Farms growing native food plants		Farmers and hobby gardeners cultivate native food plants on farms or in gardens.	7 farms grow seeds of native food plants with agri-environmental support. Other activities than growing seeds are not supported.
Native ornamental plant varieties mapped and in gene banks		Scientists identify and register native ornamental plants. Varieties are preserved in the gene bank, either as seeds or plant parts.	Only a small part of the native ornamental plants are known. The official gene bank storage is not provided.
Native breeds in gene banks		Landrace breeds are kept in the gene bank as gametes and embryos.	Gene bank contains Western, Eastern and Northern Finncattle as well as Finn-, Åland and the Kainuu sheep. Native chicken, goat and horse are missing from the gene bank.
Native breeds on farms		Native breeds are kept on farms in their natural environment. The breed is considered to be endangered if the number of females is less than 1000.	The farms secure goat, horse, chicken, Finnish sheep and Western Finncattle. Eastern and Northern Finncattle as well as Åland and Kainuu sheep are endangered.

We employed an efficient experimental design to allocate the attribute levels to the choice situations in the choice experiment survey. Efficient designs aim to generate parameter estimates with as low as possible standard errors, and thus produce the maximum information from each choice situation (see e.g. Rose and Bliemer, 2009). We employed a Bayesian D-efficient design using Ngene (v. 1.0.2), taking 500 Halton draws for the prior parameter distributions. Priors were based on the results of a pilot study. Bayesian priors were employed on chicken and the number of cattle breeds on the farm, and fixed priors on all other attributes. We generated 180 choice tasks, blocking them into 30 subsets, which resulted in six choice situations presented for each respondent. The final design had a D-error of 0.002.

Statistical models

The random utility based choices have originally been econometrically modeled with a conditional logit model (also called multinomial logit model) (McFadden, 1974). Also in this study, the conditional logit model is used as a baseline to obtain a general impression of the importance of attributes to respondents. The conditional logit, however, assumes a similar preference structure for all citizens, which implies that all respondents have similar tastes for the attributes. In this study, we are particularly interested in defining heterogeneous citizen segments having a similar preference structure within the segment. One approach that allows this heterogeneity is the latent class model (Boxall and Adamowicz, 2002), which has been frequently used in modeling choice experiments of environmental conservation programs (e.g. Grammatikopoulou et al., 2012; Garrod et al., 2012).

Table 2. Example of a choice set.

		Current state	Conservation program A	Conservation program B
Native food plant varieties in gene banks		approximately 300	400	400
Farms growing native food plants		7 farms	2000 farms	1000 farms
Native ornamental plant varieties mapped and in gene banks		some	majority	about half
Native breeds in gene banks		3 cattle breeds 3 sheep breeds	3 cattle breeds 3 sheep breeds chicken goat horse	3 cattle breeds 3 sheep breeds goat
Native breeds on farms		goat, horse, chicken, Finnsheep, Western Finncattle	horse, 3 cattle breeds 3 sheep breeds	goat, horse, chicken, 3 cattle breeds 3 sheep breeds
Cost for taxpayers €/year during 2012-2021	€	0 € / year	80 € / year	200 €/year
I support the alternative		( )	( )	( )

Heterogeneity is statistically included in the latent class model by simultaneously dividing individuals into behavioral groups or latent segments and estimating a choice model in these classes. In each latent class, preferences are assumed to be homogeneous, but preferences and hence utility functions are assumed to vary between the segments.

The estimation is carried out by assuming first one class, then two classes, three classes and so on. In each step the explanatory power of the model is assessed to decide on the optimal number of classes. For this purpose we used BIC and AIC information criteria, which are log-likelihood scores with correction factors for the number of observations and the number of parameters. The latent class model also provides information necessary to calculate the willingness to pay for a good with various attribute combinations for citizen segments.

In order to profile the heterogeneous citizen segments, the resulting class membership of individuals was regressed using a logistic regression model for each class. The independent variables for class memberships were respondents' socioeconomic characteristics, perceived values and responsibilities, use of provided information, response uncertainty and how long it took to respond to the survey.

3. Results

Table 3 presents the conditional logit model results for the choice of the conservation program. As expected, the cost of the program affected negatively the probability of choosing the conservation program. Regarding the genetic resource attributes, the number of food plants in the gene bank was not statistically significant. All other attributes had significant

coefficients. The higher number of farms growing native plant varieties increased the choice probability. The higher the amount of ornamental plants to be mapped and conserved in gene banks, the more probable it was that the respondent chose the program. Conserving currently missing native breeds of Finnish goat, horse and chicken in the gene bank all affected the support of the program positively. The effect was highest for horse, followed by chicken and goat. The guaranteed existence of cattle breeds on farms had a positive and significant effect on choice. As expected, the effect was higher if the number of cattle breeds was three instead of two. This was also the case with sheep breeds. There, however, the two conserved breeds did not have a positive effect on choice compared with the status quo of one conserved breed. The alternative specific constants (ASC) that capture the deviation from the status quo option and contain the variation in preferences not explained by the variables were somewhat unexpected. When compared to ASC 1 the higher coefficients for ASC 2 and 3 indicated that there was tendency for the respondents to choose the conservation program that could not be explained with the attributes. The difference between ASC 2 and 3 indicated, however, that the conservation program that was presented first received more support. This was surprising as programs were not presented in a specific order in the survey.

Table 3. Model results from conditional logit (CL) model.

Attributes	Coefficient	Wald p-value
ASC 1 (SQ)	-0.263***	0.000
ASC 2	0.291***	
ASC 3	-0.028	
Cost	-0.005***	0.000
300 plants in bank (SQ)	0.002	1.000
400 plants in bank	-0.002	
500 plants in bank	0.000	
7 plants on farms (SQ)	-0.199***	0.000
500 plants on farms	0.075***	
1000 plants on farms	0.124***	
Ornamental plants in bank (SQ)	-0.057**	0.008
Ornamental plants in bank L2	-0.004	
Ornamental plants in bank L3	0.061***	
Goat (SQ)	-0.039***	0.005
Goat in bank	0.039***	
Horse (SQ)	-0.075***	0.000
Horse in bank	0.075***	
Chicken (SQ)	-0.047***	0.001
Chicken in bank	0.047***	
1 cattle breeds on farms (SQ)	-0.114***	0.000
2 cattle breeds on farms	0.025	
3 cattle breeds on farms	0.089***	
Sheep breeds on farms (SQ)	0.020	0.027
2 sheep breeds on farms	-0.052***	
3 sheep breeds on farms	0.032	
No. of respondents	1608	
No. of observations	9484	
Correct predictions %	48	
R^2	0.04	

Note: z-test : *** 99% significance level. ** 95% significance level. * 90% significance level

SQ = attribute level in the status quo alternative

The homogeneity of the preferences was tested in estimation of latent class models. Based on the AIC and BIC information criteria, the estimation process showed that a model of five citizen clusters was optimal. Table 4 presents the model results with the cluster names, and the logit model for the membership of each cluster is presented in Table 5.

The latent class model showed that although preferences for some attributes, such as conserving goat and chicken breeds in gene banks and cattle breeds on farms, did not differ significantly between clusters, there was significant variation in preferences for most attributes between clusters. The first class named as "conservationists" covered 27% of the respondents. They did not take the personal cost of the conservation program into account in their decision process as the coefficient of the bid variable was not significant. Instead, almost all the conservation attributes had significant and positive signs. Contrary to other clusters, most plant-related attributes were significant for conservationists. Table 5 shows also that this cluster perceived higher use and existence values from genetic resource conservation than other respondents, and also higher than average uncertainty of their responses to the choice tasks. The uncertainty may be associated with ignoring the cost variable. This class contained more men than women and they considered the conservation not to be farmers' responsibility.

Table 4. Latent class models for conservation program choice.

	Class 1	Class 2	Class 3	Class 4	Class 5	Overall	
Pseudo R^2	0.131	0.288	0.019	0.015	0.472	0.559	
Class Size	0.27	0.26	0.17	0.17	0.13		
Class names	Conserva-tionists	Bid sensitive animal conservers	Random-ists	Status quo preferers	Bid sensitives	Wald p-value	Wald (=) p-value
ATTRIBUTES	Coefficients and significance levels						
ASC 1 (SQ)	-0.990***	-2.937***	-0.841***	1.668***	-0.554**	0.000	0.000
ASC 2	0.332***	1.499***	1.757***	-0.414**	0.478***		
ASC 3	0.658***	1.438***	-0.916***	-1.254***	0.076		
Cost	0.000	-0.018***	-0.003*	-0.001	-0.041***	0.000	0.000
300 plants in bank (SQ)	-0.162***	0.138**	0.018	0.412**	-0.322***	0.003	0.001
400 plants in bank	0.025	-0.007	0.078	-0.166	0.225*		
500 plants in bank	0.137**	-0.131*	-0.096	-0.245	0.097		
7 plants on farms (SQ)	-0.621***	-0.120*	-0.261**	-0.006	-0.169	0.000	0.000
500 plants on farms	0.125**	0.208***	0.237*	0.003	0.104		
1000 plants on farms	0.496***	-0.088	0.024	0.003	0.065		
Ornamental plants in bank (SQ)	-0.462***	0.015	0.116	-0.004	-0.332**	0.000	0.000
Ornamental plants in bank L2	0.158***	0.002	0.023	-0.053	0.16		
Ornamental plants in bank L3	0.304***	-0.017	-0.139	0.057	0.172		
Goat (SQ)	-0.063***	-0.063***	-0.063***	-0.063***	-0.063***	0.001	C.i.
Goat in bank	0.063***	0.063***	0.063***	0.063***	0.063***		
Horse (SQ)	-0.152***	-0.128***	-0.075	0.447***	-0.256***	0.000	0.000
Horse in bank	0.152***	0.128***	0.075	-0.447***	0.256***		
Chicken (SQ)	-0.062***	-0.062***	-0.062***	-0.062***	-0.062***	0.001	C.i.
Chicken in bank	0.062***	0.062***	0.062***	0.062***	0.062***		
1 cattle breeds on farms (SQ)	-0.144***	-0.144***	-0.144***	-0.144***	-0.144***	0.000	C.i.
2 cattle breeds on farms	0.034	0.034	0.034	0.034	0.034		
3 cattle breeds on farms	0.110***	0.110***	0.110***	0.110***	0.110***		
1 Sheep breeds on farms (SQ)	-0.213***	0.046	-0.036	0.581***	-0.245**	0.000	0.001
2 Sheep breeds on farms	0.056	-0.04	-0.156	-0.282	0.116		
3 Sheep breeds on farms	0.157***	-0.007	0.192	-0.300	0.128		
No. of respondents	1608						
No. of observations	9484						
Correct predictions %	85						

Note: z-test : *** 99% significance level. ** 95% significance level. * 90% significance level

SQ = attribute level in the status quo alternative

C.i. = class independent

The second cluster, covering one fourth of the respondents, was named as "bid sensitive animal conservers". This group had a higher tendency to choose the improvement programs compared to the status quo. The coefficient of the bid was significant and second smallest of

all clusters. In this cluster, the emphasis of preferences was on the conservation of animal breeds. The conservation of plant varieties in gene banks was even negatively valued. These respondents perceived more often than average that citizens and consumers should be responsible for the conservation of genetic resources. They also had positive agri-environmental attitudes. The respondents in this cluster had also used more than average time to familiarize with the information available in the survey of plant genetic resources and they were a bit younger than the average.

Table 5. Logistic regression models profiling consumer classes.

Characteristics	Mean	St. dev.	Class 1	Class 2	Class 3	Class 4	Class 5
			coefficients and significance levels				
Constant			-2.76***	-43.31***	48.77***	39.90**	-29.46**
Female[1]	0.49	0.5	-0.46***				
Year of birth[2]	1960	15		0.02***	-0.02***	-0.02**	0.02*
High income[1]	0.45	0.49			-0.39**		
High education[1]	0.29	0.46				-0.72***	
East Finnish[1]	0.11	0.32			0.40*		
Childhood in city[1]	0.41	0.49				-0.68**	
Uncertainty[2]	6,85	2.23	0.12***		-0.09**		-0.08**
Agri-environmental attitude[2]	3.26	0.44	0.37*	0.43**			
Relative importance of ag-gen[2]	0.94	0.16		-1.482***	1.412**	-1.82**	
Existence values[2]	0.00	1.00	0.32***			-0.50***	
Use values[2]	0.00	1.00	0.38***			-0.39***	
Citizen responsibility[2]	0.00	1.00		0.29***	0.21**	-1.06***	-0.43***
Consumer responsibility[2]	0.00	1.00		0.17**		-0.31**	-0.38***
Farmer responsibility[2]	0.00	1.00	-0.16**			0.27**	
Familiarity of products[2]	2.03	0.42					-0.48**
Info use (animals) > 0.5 min [1]	0.33	0.47				-0.39*	
Info use (plants) > 0.5 min [1]	0.35	0.48		0.54***	-0.47***		
Hasty response[1]	0.05	0.22			0.70*		-1.08**
N			1088	1201	1098	1077	1199
Nagelkerke R^2			0.103	0.083	0.071	0.397	0.104
Chi square			81.99	71.44	46.48	252.37	68.25
p-value			0.000	0.000	0.000	0.000	0.000
Correctly classified (cut 0.5)			69.6	71.6	83.9	90.4	86.8

Note: Significant at a *** 99% level, ** 95% level, *90% level. [1] Dummy variable. [2] Numeric variable. [3] Categorical variable.

A confusing aspect in the third cluster was the big difference between the alternative specific constants for the two conservation programs. This group, with 17% of respondents, had a considerably higher tendency to choose conservation program A than B or the status quo, although there was no reason for that in the experimental design. The bid variable followed expectations, but for the other attributes only plants on farms and the class independent variables were significant. The logistic regression revealed that members of this cluster were older and had lower income and they underlined citizens' responsibility in

conservation. Geographically, this cluster was emphasized in Eastern Finland. This group was relatively certain of their preferences even though they used information and responded, on average, faster than other respondents. As there were unexplained tendencies in their responses, they were named as “randomists”.

The fourth class, with 17% of respondents, clearly preferred the status quo option, as the alternative specific constants for the program options were negative. The coefficient of the bid variable was not significant. Among these “status quo preferers” the choice was consistent with their negative attitudes. as the relative importance of AgGR was low as well as the perceived existence and use values. Citizen and consumers were more seldom seen as those responsible for conservation, instead, it was perceived as farmers’ responsibility. This class was characterized by older age, lower education level and growing up on a farm.

The fifth class of respondents (13%) named as “bid sensitives” had the lowest coefficient for the cost variable of all groups. Still, the alternative specific constants revealed that they were interested in conservation. Almost all conservation attributes had significant coefficients. Among them, particularly the *ex situ* conservation of Finnhorse affected their choices positively. In this class, the conservation of genetic resources was not seen as citizens’ or consumers’ responsibility. The logit model for this group showed that they used more than average time for responding and they felt certain of their choices. They were younger than average and were less familiar with products of traditional breeds and varieties.

Willingness to pay (WTP) for different attributes was calculated based on the conditional logit model and the latent class model for those classes for which the cost coefficient was significant (Table 6). WTPs based on the conditional logit model indicated that plants on farms, cattle breed and horse were valued most. In general, there was substantial variation in WTPs between the classes. In class 3, WTPs were higher due to the small importance of the cost attribute.

Table 6. Annual willingness to pay (in 2009 €) for attributes.

	Conditional logit model	Latent class model, Class 2	Latent class model, Class 3	Latent class model, Class 5
Plants in bank (400)	-	-	-	13
Plants in bank (500)	-	-15	-	-
Plants on farms (500)	60	19	7	-
Plants on farms (1000)	70	-	-	-
Ornamental plants (majority) inventoried and in bank	14	-	-	-
Goat in bank	17	7	105	3
Horse in bank	33	15	-	12
Chicken in bank	20	7	104	3
3 cattle breeds on farms	44	14	211	6
2 sheep breeds on farms	-15	-	-	-

- indicates the estimate is missing due to the insignificance of the coefficient.

4. Discussion and conclusions

These preliminary results of a choice experiment concerning AgGR policy show citizens’ interest in the conservation of native breeds and varieties in agriculture. However, there was considerable variation in the preferences among citizen groups. From the five identified groups, two groups covering over half of the respondents had a high interest in the conservation of native breeds and varieties. Respondents in one of the segments clearly preferred the current state of conservation to additional conservation efforts. One group had a

favourable attitude towards conservation if the expenses were on a low level, and respondents in one segment were wavering in their preferences. The respondent groups were identified based on preferences for conservation, and they differed also with respect to the use of additional information, response speed and uncertainty of the stated willingness to pay.

The largest group of respondents (27%) expressed lexicographic choices as the interest in conservation was high regardless of the expenses. Lexicographic choices can occur as a result of simplification if the respondent finds the choice task too difficult to handle or as a result of actual lexicographic preferences (Sælensminde, 2006). In our case it is difficult to determine whether respondents exhibited lexicographic preferences because they wanted to simplify the choice tasks or because the differences in attribute levels were large. Respondents in the group were more uncertain about their preferences, which supports the first reason. However, the second reason is also possible, as there were positive perceptions about the existence and use values of genetic resources.

Due to the preference structures willingness to pay estimates were obtained only for three respondent groups and part of the attributes. In those groups where the cost variable was significant and thus meaningful WTP estimates could be estimated, the marginal WTPs were considerably lower than the WTPs of the whole sample.

The web-survey was utilized to obtain information of the time used to fill in the survey and use of additional information. These variables, combined with uncertainty, could partly explain membership of latent classes. However, similar to Hu, Adamovicz and Veerman (2009) or Vista, Rosenberger and Collins (2009) there were not clear tendencies that the use of information would be associated with lower or higher willingness to pay. Deeper analyses are, however, needed to clarify the interactions between uncertainty, information acquisition and time used for responding.

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