**Supplementary material**

1. Scales and items employed in order to measure assigned values, attitudes, place attachment and place where respondents had spent their youth
2. Justification of the operationalization of the intervention
3. Storyboard of the four movies and links to the movies
4. Questionnaires
5. **Scales and items employed in order to measure assigned values, attitudes, and place attachment and place where respondents have spent their youth**

Assigned values

* Intrinsic:
  + To me it is important to protect nature in arable agricultural land, for our children and for future generations.
  + To me it is important to protect rare species in the countryside.
  + On each field, strips should be kept free for wild plants and animals.
  + Farmers should protect nature on their fields as much as possible.
* Aesthetic:
  + I find it important to see more birds in the countryside.
  + Farmers have to sow flower-rich field strips in order to make the landscape more beautiful.
  + I really enjoy a beautiful and varied countryside.
  + To me it is important to hear buzzing bees and singing birds in the countryside.
* Instrumental:
  + Only useful insects that for instance pollinate or control pests have to be protected.
  + Farmers only have to protect nature if that enhances productivity.
  + I would regret it if farmers earn less money because fertile pieces of arable land are reserved for nature.

The following item was removed from the measurement of the instrumental values because it did not correlate enough with the other items: Farmers have to sow flower rich field margins for birds and animals that predate on pest species.

Items were measured on a 7-point scale (1 = completely disagree; 2 = disagree; 3 = disagree a little bit; 4 = neither disagree nor agree; 5 = agree a little bit; 6 = agree; 7 = completely agree).

NB: ‘the countryside’ is a translation of the Dutch term ‘platteland’ which refers to that part of the countryside that consists of farmed land.

Attitudes

* Own actions:
  + I am prepared to pay more for vegetables and fruit that has been produced in a nature-friendly way.
  + I buy organic dairy products.
  + I buy organic meat.
  + I buy products from nature-friendly farmers.
  + I stimulate friends and family to buy nature-friendly products.
* Policy:
  + I think stricter nature conservation requirements should be set for income support to farmers.
  + I think the government should implement stricter rules for nature conservation and environmental protection for farmers.
  + I am prepared to donate to organizations who protect nature in the countryside.
  + In my voting behavior it is important what political parties want to do for nature in agricultural landscapes.
  + I am prepared to sign a petition in order to protect nature in the countryside (e.g. on Facebook).

Place attachment

* Place identity
  + I feel very much connected to the countryside.
  + The countryside means a lot to me.
  + I identify myself much with the countryside.
* Place dependence
  + The countryside is the best place for leisure activities.
  + I prefer to recreate in the countryside.
  + For relaxation I prefer the countryside over nature reserve areas.

Items were measured on a 7-point scale (1 = completely disagree; 2 = disagree; 3 = disagree a little bit; 4 = neither disagree nor agree; 5 = agree a little bit; 6 = agree; 7 = completely agree).

Place where respondents had spent their youth

* 1=mainly in a large city of over 100,000 inhabitants.
* 2=mainly in a small town or village of 10,000 to 100,000 inhabitants.
* 3=mainly in the countryside with less than 10.000 inhabitants.

1. **Justification of the operationalization of the intervention**

In order to allow for a focused assessment of how information influences assigned values and attitudes (i.e. the intervention) we narrowed ‘agrobiodiversity’ down to a specific conservation measure, namely flower-rich field strips in arable farming. We had a number of reasons to select this measure:

* Relevance for all three assigned values. Depending on among other things the types of flowers in these strips, they can contribute to higher abundance and diversity of hoverflies, bumble bees, butter flies and other insects (Wratten et al., 2012; Rundlöf et al., 2014; Van Rijn and Wäckers, 2016; Lebeau et al. 2016). In this way they can provide a habitat for insects that have become rare (intrinsic values) but also provide ecosystem services such as pollination and pest control and, by forming buffer zones, also contribute to better water quality (Wratten et al., 2012; Randall et al., 2015) (instrumental value). Flower-rich field strips can also improve the aesthetic value of agricultural fields (flowers themselves and the insects and birds that they attract) (aesthetic value).
* Relevance for illustrating the decline in agrobiodiversity. Flower-rich field strips are explicitly intended to compensate for agrobiodiversity loss due to agricultural intensification and scale enlargement.
* Recognizability. Respondents to our survey should be somewhat familiar with the conservation measure. Throughout the country farmers have sown flower-rich field strips so we believe a main part of the Dutch population is somewhat familiar with this conservation measure.
* Direct coupling with attitudes. Since we are not only interested in how knowledge provision influences values assigned to agrobiodiversity but also on citizens’ attitudes, this was a fourth criterion. As explained in Section 2 attitude comprises both own behavior and attitudes towards public policy and private conservation initiatives. When asking citizens whether or not they are willing to buy food products from farmers who contribute to agrobiodiversity, flower-rich field strips are recognizable measures (see above). These strips are also frequently subsidized (through agri-environment schemes and other funding) and so we believe many citizens are able to form an opinion about that.

References (additional to those mentioned in the main text):

[Lebeau, J.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=56878596400&zone=), [Wesselingh, R.A.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=6603784522&zone=" \o "Show author details), [Van Dyck, H.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=6701725264&zone=) (2016), [Floral resource limitation severely reduces butterfly survival, condition and flight activity in simplified agricultural landscapes](https://www.scopus.com/record/display.uri?eid=2-s2.0-84955342590&origin=resultslist&sort=plf-f&src=s&st1=flower-rich+field+strips&st2=&sid=07fb8f635808c3aac00c020a4e595d07&sot=b&sdt=b&sl=39&s=TITLE-ABS-KEY%28flower-rich+field+strips%29&relpos=0&citeCnt=8&searchTerm=), [Oecologia](https://www.scopus.com/sourceid/12925?origin=resultslist), 180(2), pp. 421-427

[Randall, N.P.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=55595752400&zone=), [Donnison, L.M.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=57008187800&zone=" \o "Show author details), [Lewis, P.J.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=56249523300&zone=), [James, K.L.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=57007734700&zone=) (2015), [How effective are on-farm mitigation measures for delivering an improved water environment? A systematic map](https://www.scopus.com/record/display.uri?eid=2-s2.0-84950245939&origin=resultslist&sort=plf-f&src=s&st1=%22vegetated+buffer+strips%22+%22water+quality%22&st2=&sid=2984ac6b693b16135f156fc0796efbb5&sot=b&sdt=b&sl=56&s=TITLE-ABS-KEY%28%22vegetated+buffer+strips%22+%22water+quality%22%29&relpos=2&citeCnt=6&searchTerm=), [Environmental Evidence](https://www.scopus.com/sourceid/21100431158?origin=resultslist), 4 (1), 18.

[Rundlöf, M.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=23098078200&zone=), [Persson, A.S.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=16408507600&zone=), [Smith, H.G.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=56517354500&zone=), [Bommarco, R.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=6602185631&zone=" \o "Show author details) (2014), [Late-season mass-flowering red clover increases bumble bee queen and male densities](https://www.scopus.com/record/display.uri?eid=2-s2.0-84896536775&origin=resultslist&sort=plf-f&src=s&st1=flower-rich+field+strips&st2=&sid=01972b1d9ab2d4a9bb68dece7239eba0&sot=b&sdt=b&sl=39&s=TITLE-ABS-KEY%28flower-rich+field+strips%29&relpos=2&citeCnt=45&searchTerm=), [Biological Conservation](https://www.scopus.com/sourceid/17244?origin=resultslist), 172, pp. 138-145.

[Van Rijn, P.C.J.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=7003818932&zone=), [Wäckers, F.L.](https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=7103253806&zone=" \o "Show author details) (2016), [Nectar accessibility determines fitness, flower choice and abundance of hoverflies that provide natural pest control](https://www.scopus.com/record/display.uri?eid=2-s2.0-84957837339&origin=resultslist&sort=plf-f&src=s&st1=flower-rich+field+strips&st2=&sid=07fb8f635808c3aac00c020a4e595d07&sot=b&sdt=b&sl=39&s=TITLE-ABS-KEY%28flower-rich+field+strips%29&relpos=1&citeCnt=12&searchTerm=), Journal of Applied Ecology, 53 (3), pp. 925-933.

1. **Storyboard of the four movies and links to the movies**

Introduction (all three movies and for the control group):

The Dutch countryside has changed radically over the last decades. Due to scale enlargement and intensification, fields have become larger and larger and every piece of land has been made productive.

Landscape elements such as hedges and hedgerows have been removed and the water table has been optimized everywhere to facilitate farming. This has led to an enormous increase in productivity. It has also led to less and less space for nature.

Web link: <https://youtu.be/FRlakeNZ1T0>

Movie 1: intrinsic value

But it can be different. Here we are in a flower-rich field strip. Flowers are an important food source for insects such as bees, butterflies and hoverflies. In the stripped countryside almost no flowers are present anymore and therefore the food source of these species has been reduced substantially. More and more species are disappearing as a consequence.

Sowing flowers can help restoring bees and butterflies. This can help even threatened species such as the short-haired bumblebee.

Also birds profit from field strips. Magnificent species such as the Partridge and Montagu’s Harrier that have lived in the Netherlands for thousands of years have difficulties surviving. It is important to do what we can in order to protect them against extinction. We can, by means of these flower-rich field strips.

Web link: <https://youtu.be/u2pvHYQzLZg>

Movie 2: aesthetic value

But it can be different. Here we are in a field strip, that has been sown with a mix of flower seeds. This brings back some color in our monotonous landscape. These kinds of field strips also attract birds which we can enjoy.

In the past, my grand-parents often made cycle tours with me along dykes full of flowers, along grasslands and fields. Multi-colored fields, grasslands filled with Lapwings and Black-tailed Godwits and humming roadsides full of insects. Nowadays it is utterly boring. Everything green and quiet.

By sowing flower-rich field strips there is something to see again, to hear and smell things and allows us to fully enjoy the countryside again.

Web link: <https://youtu.be/9nvwtKRUWeA>

Movie 3: instrumental value

That is a problem because nature is vital to us. Here we are in a field strip, that has been sown with a mix of flower seeds. This field strip contributes to an increase in wild bees and hoverflies that are essential for the pollination of our crops. Nowadays that is particularly important because the honeybee is not doing well.

Moreover, these field strips provide free pest control because they promote the presence of insects that eat aphids – such as ichneumon flies, hoverflies and lacewings. As a result farmers need less pesticides.

Field strips also improve water and soil quality. Fewer nutrients from fertilizer leach to ditches and the soil contains more earth worms than regular agricultural land. In these ways, flower-rich field strips help the farmer.

Web link: <https://youtu.be/E_TALMmLscQ>

1. **Questionnaires**

The survey had two purposes: (1) assess the influence of targeted information provision about the intrinsic, aesthetic and instrumental values of agrobiodiversity on citizens’ appreciation of these values and (2) explain citizens’ appreciation of these values. The questionnaire consisted of questions that addressed both purposes. Below we show the parts of the questionnaire that were used for the first purpose, the results of which are presented in the paper.

The survey consisted of a pre-test and a post-test. In the pre-test we measured values and attitudes, place attachment, a question about where people had spent their youth gender was included as a commonly used control factor. In the post-test we measured values and attitudes again, but changed the order of the items in order to avoid irritation. We also added a control question about whether the participant had actually seen the whole movie.

Q1   
Dear reader,

The Dutch agricultural landscape has changed substantially in the last decades because of scale enlargement and agricultural intensification. On the one hand this has resulted in an enormous increase in food production. On the other hand the landscape has often become more monotonous and we observe a decline in all kinds of plant and other species.

Wageningen University wants to know how Dutch citizens experience the modern countryside in order to advice the government and farmers about future policy related to agriculture, landscape and nature. In order to find out we want to ask you to complete this short questionnaire. This will take 5-10 minutes.  
   
If you cooperate we will send you a shorter follow-up questionnaire in two weeks time, including a short movie. This will help us obtaining insight into possible changes in respondents’ experiences.

By clicking the “Next” button on the end of this page you agree that your answers will be anonimised and that they will only be used for this study. We will not share your data with others.

If you have any questions or comments while completing the questionnaire then please feel free to contact one of our researchers:

Hens Runhaar - [Hens.Runhaar@wur.nl](mailto:Hens.Runhaar@wur.nl)

We thank you in advance for your help!

**To what extent do the propositions below apply to you?**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proposition | Completely disagree | Disagree | Disagree a little bit | Neither disagree nor agree | Agree a little bit | Agree | Completely agree | Not relevant |
| I am prepared to pay more for vegetables and fruit that has been produced in a nature-friendly way. |  |  |  |  |  |  |  |  |
| I buy organic dairy products. |  |  |  |  |  |  |  |  |
| I buy organic meat. |  |  |  |  |  |  |  |  |
| I buy products from nature-friendly farmers. |  |  |  |  |  |  |  |  |
| I stimulate friends and family to buy nature-friendly products. |  |  |  |  |  |  |  |  |
| I think stricter nature conservation requirements should be set for income support to farmers. |  |  |  |  |  |  |  |  |
| I think the government should implement stricter rules for nature conservation and environmental protection for farmers. |  |  |  |  |  |  |  |  |
| I am prepared to donate to organizations who protect nature in the countryside. |  |  |  |  |  |  |  |  |
| In my voting behavior it is important what political parties want to do for nature in agricultural landscapes. |  |  |  |  |  |  |  |  |
| I am prepared to sign a petition in order to protect nature in the countryside (e.g. on Facebook). |  |  |  |  |  |  |  |  |

**To what extent do you agree with the following propositions about the Dutch countryside?**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proposition | Completely disagree | Disagree | Disagree a little bit | Neither disagree nor agree | Agree a little bit | Agree | Completely agree | Not relevant |
| I feel very much connected to the countryside. |  |  |  |  |  |  |  |  |
| The countryside is the best place for leisure activities.  The countryside means a lot to me. |  |  |  |  |  |  |  |  |
| For relaxation I prefer the countryside over nature reserve areas. |  |  |  |  |  |  |  |  |
| I identify myself much with the countryside. |  |  |  |  |  |  |  |  |
| I prefer to recreate in the countryside. |  |  |  |  |  |  |  |  |

**To what extent do you agree with the following propositions about nature on arable farmland?**  
Agriculture and the protection nature in agricultural landscapes are not always easy to combine. People therefore differ in opinion about farmland nature. Please read all propositions and indicate to what extent you agree with them.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proposition | Completely disagree | Disagree | Disagree a little bit | Neither disagree nor agree | Agree a little bit | Agree | Completely agree | Not relevant |
| I find it important to see more birds in the countryside. |  |  |  |  |  |  |  |  |
| Farmers only have to protect nature if that enhances productivity. |  |  |  |  |  |  |  |  |
| To me it is important to protect rare species in the countryside. |  |  |  |  |  |  |  |  |
| Farmers have to sow flower-rich field strips in order to make the landscape more beautiful. |  |  |  |  |  |  |  |  |
| Only useful insects that for instance pollinate or control pests have to be protected. |  |  |  |  |  |  |  |  |
| On each field, strips should be kept free for wild plants and animals. |  |  |  |  |  |  |  |  |
| To me it is important to hear buzzing bees and singing birds in the countryside. |  |  |  |  |  |  |  |  |
| I would regret it if farmers earn less money because fertile pieces of arable land are reserved for nature. |  |  |  |  |  |  |  |  |
| Farmers should protect nature on their fields as much as possible. |  |  |  |  |  |  |  |  |
| Farmers have to sow flower-rich field strips for birds and animals that predate on pest species. |  |  |  |  |  |  |  |  |
| To me it is important to protect nature in arable agricultural land, for our children and for future generations. |  |  |  |  |  |  |  |  |
| I really enjoy a beautiful and varied countryside. |  |  |  |  |  |  |  |  |

**Where did you grow up?**

* Mainly in a large city (over 100,000 inhabitants)
* Mainly in a small town or village (10,000 to 100,000 inhabitants)
* Mainly in the countryside or in a village with less than 10.000 inhabitants

**Are you a man or a woman?**

* Men
* Women

**What is your age in years?**   
   
*Please only provide the number*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In order to send you a short follow-up questionnaire with a movie we need your email address. Could you therefore give us your **email address** below?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Post-test – the follow-up questionnaire**

Dear reader,   
  
Thank you for your cooperation with our study. We would like to ask you to first watch the movie on the next page and subsequently complete a brief questionnaire.   
  
By clicking the “Next” button on the end of this page you agree that your answers will be anonimised and that they will only be used for this study. We will not share your data with others.

If you have any questions or comments while completing the questionnaire then please feel free to contact one of our researchers:

Hens Runhaar - Hens.Runhaar@wur.nl  
  
We thank you in advance for your help! 

**Please watch the following movie about agriculture, landscape and nature.**   
For this purpose please put on the volume of your pc, laptop or telephone. 

* I watched the movie
* I did not watch the movie
* The movie cannot be played

**To what extent do you agree with the following propositions about nature on arable farmland?**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proposition | Completely disagree | Disagree | Disagree a little bit | Neither disagree nor agree | Agree a little bit | Agree | Completely agree | Not relevant |
| To me it is important to hear buzzing bees and singing birds in the countryside. |  |  |  |  |  |  |  |  |
| Farmers have to sow flower-rich field strips in order to make the landscape more beautiful. |  |  |  |  |  |  |  |  |
| Farmers should protect nature on their fields as much as possible. |  |  |  |  |  |  |  |  |
| I would regret it if farmers earn less money because fertile pieces of arable land are reserved for nature. |  |  |  |  |  |  |  |  |
| I find it important to see more birds in the countryside. |  |  |  |  |  |  |  |  |
| Farmers have to sow flower-rich field strips for birds and animals that predate on pest species. |  |  |  |  |  |  |  |  |
| On each field, strips should be kept free for wild plants and animals. |  |  |  |  |  |  |  |  |
| Farmers only have to protect nature if that enhances productivity. |  |  |  |  |  |  |  |  |
| I really enjoy a beautiful and varied countryside. |  |  |  |  |  |  |  |  |
| To me it is important to protect nature in arable agricultural land, for our children and for future generations. |  |  |  |  |  |  |  |  |
| Only useful insects that for instance pollinate or control pests have to be protected. |  |  |  |  |  |  |  |  |
| To me it is important to protect rare species in the countryside. |  |  |  |  |  |  |  |  |

**To what extent do the propositions below apply to you?**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proposition | Completely disagree | Disagree | Disagree a little bit | Neither disagree nor agree | Agree a little bit | Agree | Completely agree | Not relevant |
| I think the government should implement stricter rules for nature conservation and environmental protection for farmers. |  |  |  |  |  |  |  |  |
| In my voting behavior it is important what political parties want to do for nature in agricultural landscapes. |  |  |  |  |  |  |  |  |
| I am prepared to pay more for vegetables and fruit that has been produced in a nature-friendly way. |  |  |  |  |  |  |  |  |
| I buy organic dairy products. |  |  |  |  |  |  |  |  |
| I buy organic meat. |  |  |  |  |  |  |  |  |
| I buy products from nature-friendly farmers. |  |  |  |  |  |  |  |  |
| I am prepared to donate to organizations who protect nature in the countryside. |  |  |  |  |  |  |  |  |
| I stimulate friends and family to buy nature-friendly products. |  |  |  |  |  |  |  |  |
| I think stricter nature conservation requirements should be set for income support to farmers. |  |  |  |  |  |  |  |  |
| I am prepared to sign a petition in order to protect nature in the countryside (e.g. on Facebook). |  |  |  |  |  |  |  |  |