



Project 2007CB16IPO008-2013-3-008 "Joint promotion of agriculture waste composting - AGROCOMP", co-financed by EU through IPA cross-border programme Bulgaria – Turkey CCI No 2007CB16IPO008

Contract No 2007CB16IPO008-2013-3-008-2a

"Providing consultancies for surveys, assessments, analysis",

Pinarhisar Municipality

Phase 3: Final assessment of the composting impact on the pollution level in Pinarhisar Municipality



December, 2014



The present project is implemented by "Europe and We" Association, Bulgaria in partnership with the Pinarhisar Chamber of Agriculture, Turkey and is co-financed by the EU through the program for IPA Bulgaria - Turkey Cross-border Programme 2007 - 2013 CCI number 2007CB16IPO008



INTRODUCTION

This report is the final phase of the project "Joint promotion of agriculture waste composting" in Pinarhisar Municipality, Republic of Turkey and presents the final assessment of the impact of the composting process on the pollution level in the target region. For the purposes of the report was conducted a survey among farmers and other stakeholders at local level and the results of the work of the Monitoring Group, operating within a Pinarhisar Municipality, Republic of Turkey were analyzed. The study aims to assess the effectiveness of the composting process, benefits of composting on local pollution level, expected long-term impact on the nature and environment. In particular it aims to contribute to general assessment of the effectiveness and success of the project "Joint promotion of agriculture waste composting - AGROCOMP".

The project "Joint promotion of agriculture waste composting is funded by the European Union through the Bulgaria - Turkey IPA CB Programme CCI number 2007CB16IPO008 and is implemented by Pinarhisar Chamber of Agriculture, town Pinarhisar in partnership of "Europe and We" Association, town Pomorie (Leading project partner).

Parallel study is conducted in the Bulgarian target region (Pomorie Municipality), as basing on the results a common cross-border assessment of the impact of the project and the demonstration composting process will be developed. To obtain measurable and analyzable responses the questionnaire forms developed for the two target regions are similar, agreed with the Contracting authority, taking into account the specificities of the region.



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METHODOLOGY

This study was conducted by the consulting team of the "Bulgaria in Europe" Association hired by the Contracting Authority –Pinarhisar Chamber of Agriculture. The methodology proposed for implementation of the activity is consistent with the requirements of the Contracting Authority and the Terms of Reference of the contract. The questionnaire form developed follows the requirements of the Terms of Reference and is agreed with the Contracting authority before being distributed and completed by representatives of the target groups of Pinarhisar Municipality.

The aim of the analysis is to assess the impact of the composting process, the benefits of composting on local level and the impact on pollution and the expected long term effect on nature and the environment.

In particular, this report aims to help the development of a common, general assessment of the impact and success of project "Joint promotion of agriculture waste composting - AGROCOMP". Basing on this report and the report from the parallel questionnaire in the Bulgarian target region, will be developed a cross-border assessment of the impact of the composting process on the pollution level in Pomorie and Pinarhisar Municipality, which will support the overall assessment of the impact of the project implementation.

Territorial scope: Pinarhisar Municipality, Kirklareli province, Republic of Turkey

Period of implementation: December 2014.

Target groups: farmers in whose farms demonstration composting platforms are installed, farmers, members of the Monitoring Group, formed under the project, representatives of local and regional authorities, RIEW, NGOs, businesses representatives, public.

Methodology:

- Development of an outgoing questionnaire for assessment the effect of composting;
- Discussion and approval of the questionnaire by the Contracting authority and its partner;
- Establishing contacts with the recipients, filling in the questionnaire – at least 40 filled in questionnaires for Pinarhisar Municipality;



- Summary, processing and analysis of the information collected;
- Review, summary, analysis and assessment of the work of the Monitoring Group in Pinarhisar Municipality (field work and monitoring of the composting process and work meetings of the Monitoring Group for discussing the progress in composting);
- Development of final assessment of the impact of composting process on pollution level in Pinarhisar Municipality, provided in English and Turkish.

Total number of questionnaire forms completed: 50.

Monitoring and analysis of the progress in the composting process in total: 3.

ANALYSYS AND ASSESSMENT OF THE INFORMATION FROM THE QUESTIONNAIRE

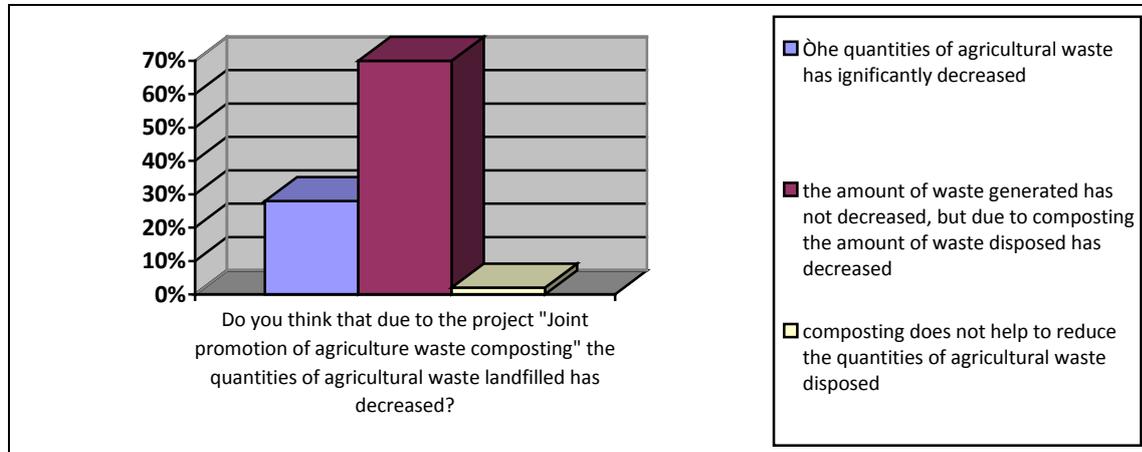
The questionnaire form was developed with consideration of the specific target region, in cooperation with the Contracting Authority and the project partner. The structure and contents of the form are discussed with representatives of the Pinarhisar Chamber of Agriculture, only after the approval of the final version of the questionnaire it was distributed and completed. 50 questionnaire forms were completed by representatives of the target groups identified, the information collected is summarized, processed and analyzed. The results obtained provide the following general and specific information:

1. Do you think that due to the project "Joint promotion of agriculture waste composting" the quantities of agricultural waste disposed has decreased?

Significant percentage of the respondents - 28% consider that as a result of the project the quantities of agricultural waste has ignificantly decreased. 70% of the respondents think that the amount of waste generated has not decreased, but due to composting the amount of disposed waste decreased. The responses received are logical, since in practice farmers continue to operate as normal, which does not suggest decrease of waste generated by agricultural activity. Their quantity in medium term is likely to remain unchanged. By contrast, however, there is a change in the amount of waste disposed – almost all of the respondents say that they have decreased. Only one of the respondents gave a negative



answer, stating that composting does not help to reduce the quantities of agricultural waste disposed. The answers to this question clearly show that the positive effect of project "Joint promotion of agriculture waste composting" is undeniable (Graph 1).



Graph 1

Conclusions:

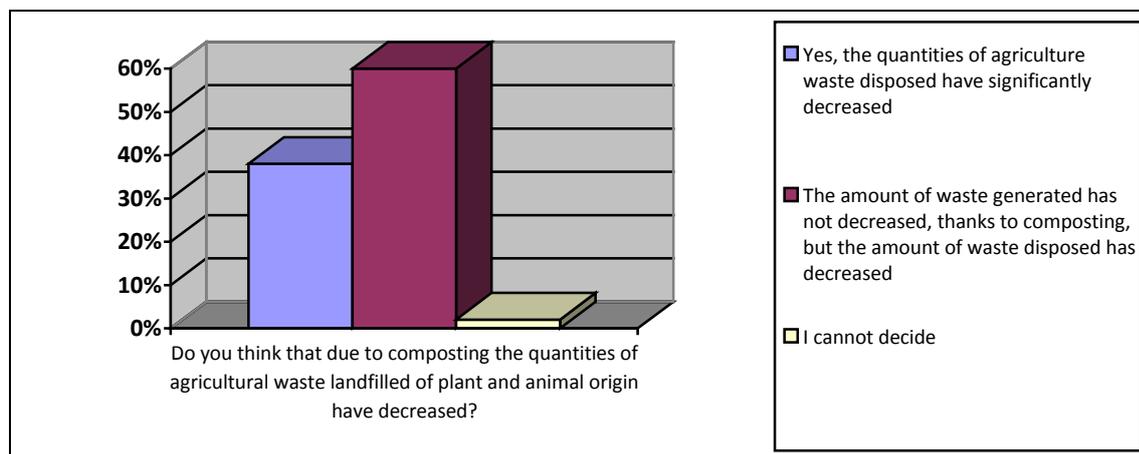
1. *The positive effect of project "Joint promotion of agriculture waste composting" is undeniable- 98% of the respondents consider that due to the project, the quantities of agricultural waste disposed has ignificantly decreased.*

2. Do you think that due to composting the quantities of agricultural waste disposed of plant and animal origin have decreased?

This question largely overlaps with the previous one, with a slight difference - the previous question assesses the overall impact of the project on the amount agricultural waste disposed, i.e. the impact of all activities carried out under the project is assessed - both practical and theoretical, information, presentation and more. However, this question evaluates the effect only from a practical point of view - only biodegradable waste composting. In this regard, again indicative are the responses: 38% of the respondents consider that the quantities of agriculture waste disposed have significantly decreased; 60% think that although the amount of waste generated has not decreased, thanks to composting, the amount of disposed waste decreased. Here we can summarize that the answers are logical, as the activity of farmers does not imply reducing waste generated by agriculture activity. As a result of the actions of farmers for environmentally utilization of



biodegradable waste, however, there is a change in the amount of waste disposed - nearly all of the respondents think that they have decreased. Only 1 of the respondents hesitates and cannot decide, there are no negative answers to the question. The responses received demonstrate the appreciation for composting as a technique for environmentally way of dealing with agriculture waste and its effect on the environment (Graph 2).



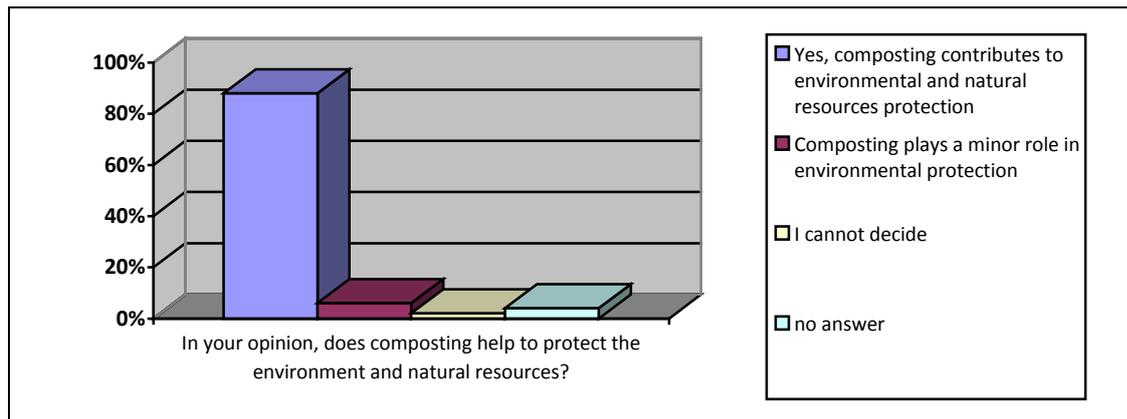
Graph 2

Conclusions:

1. 98% of the respondents believe that biodegradable waste composting has a strong positive effect on the amount of agriculture waste disposed.

3. In your opinion, does composting help to protect the environment and natural resources?

The majority of the respondents - 88% believe that composting contributes to environmental and natural resources protection. 6% of the respondents think that composting plays a minor role in environmental protection, 2% cannot decide, and 4% of the respondents did not answer. The high percentage of trust shown to composting as environmentally friendly technique for waste utilization demonstrates a clear and responsible position of the majority of the respondents to the issues of environmental protection and rational use of natural resources (Graph 3).



Graph 3

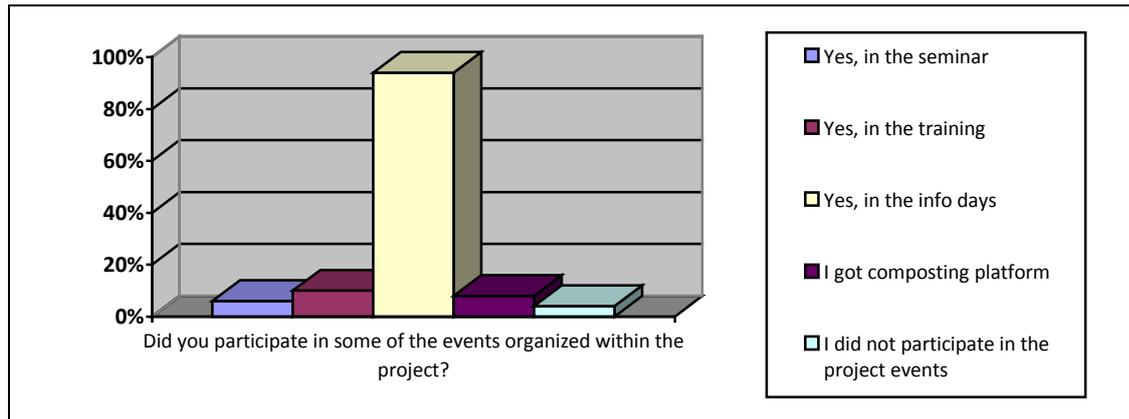
Conclusions:

1. *The majority of the participants in the questionnaire believe that biodegradable waste composting contributes to environmental and natural resources protection;*
2. *The majority of the respondents demonstrate a clear and responsible position of the majority of the respondents to the issues of environmental protection and rational use of natural resources.*

4. Did you participate in some of the events organized within the project?

The responses to this question contained qualitative data about the source/s of specialized information on composting. The biggest percentage of the respondents - 94% said that they have been involved in the information days under the project. 8% said they have received a demonstration composting platform, 10% were involved in the training, and 6% - in the seminar organized. Only 4% were not included in any of the events organized under the project "Joint promotion of agriculture waste composting". From the answers to the question, we can conclude that the high level of awareness about composting and the trust in it is due largely to the public activities implemented under the project AGROCOMP (Graph 4).





Graph 4

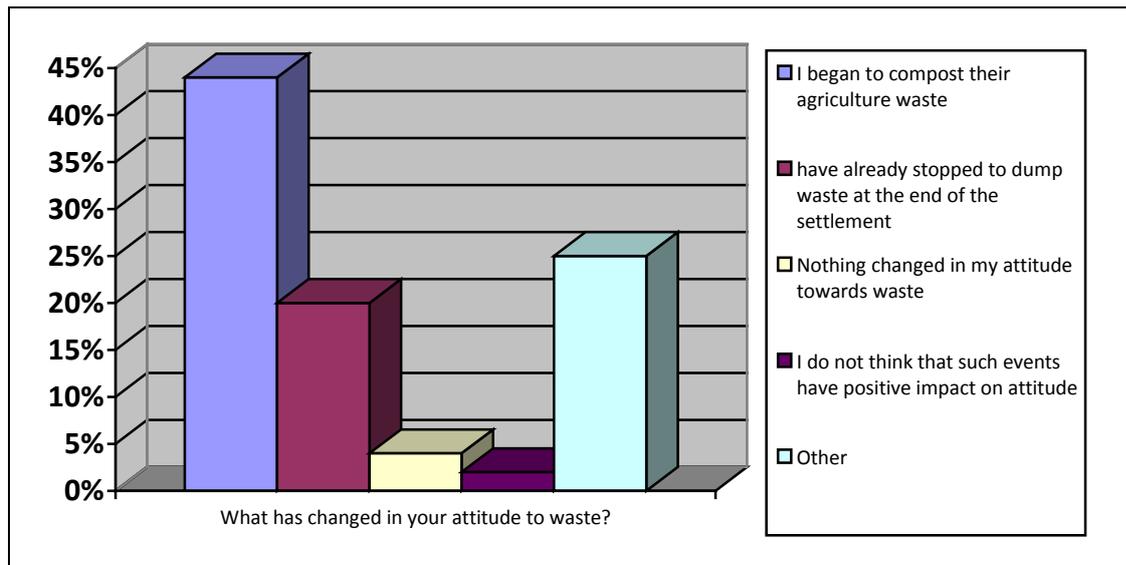
Conclusions:

1. *The high level of awareness about composting and the trust in it is due largely to the public activities implemented under the project AGROCOMP.*
2. *The greatest role in raising the awareness about agriculture waste composting had the information days.*

5. What has changed in your attitude to waste?

Almost half of the respondents - 44% say they have begun to compost their agriculture waste, which is a great achievement. The fact that such a large percentage of the respondents have already started composting explains the positive assessment of the amount of disposed waste and the apparent trend of the decrease waste. 20% of the respondents said they have already stopped to dump waste at the end of the settlement, which is also a serious advantage in favor of the informative project activities realized. About 25% of the respondents said that the project was a pilot initiative for them, good practice that should be disseminated, multiplied and adopted by more farmers. Only 4% of the respondents said that their attitude towards waste has not changed. The high number of responses with a positive assessment of the project and composting as a whole, shows that the cross-border initiative aimed at promoting environmentally utilization of agricultural waste is approved and has a direct effect on the pollution level in the region (Graph 5).





Graph 5

Conclusions:

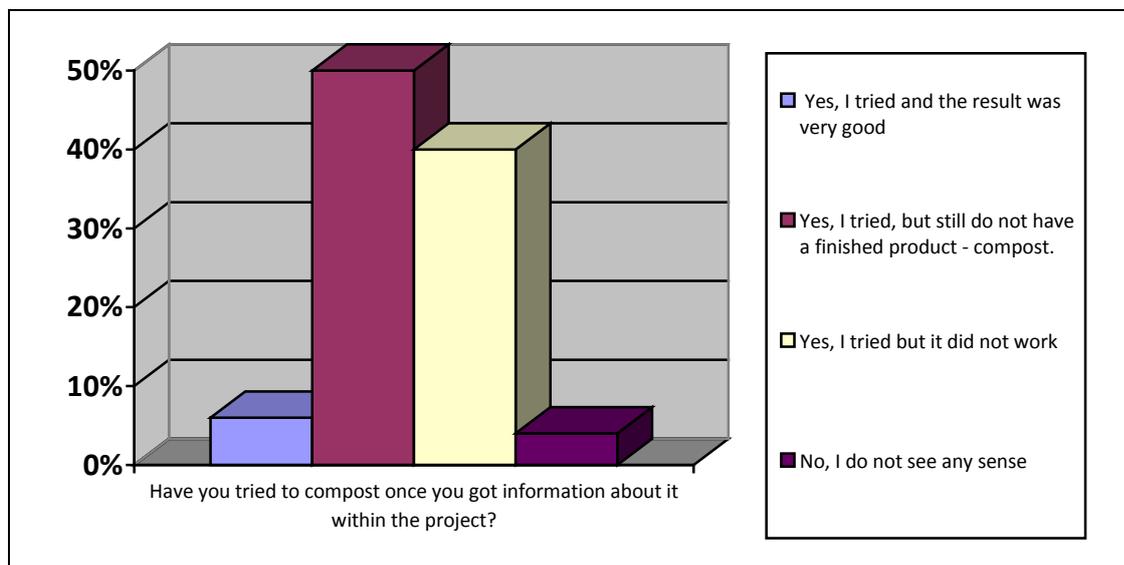
1. *Almost half of the respondents said they have begun to compost their agriculture waste.*
2. *The cross-border initiative aimed at promoting environmentally utilization of agricultural waste is approved.*

6. Have you tried to compost once you got information about it within the project?

Only 6% of the respondents answered positively and categorically that they have tried and the result was very good. Half of the respondents (50%) said that they have tried, but still do not have a finished product - compost. Another 40% say they have tried, but unsuccessfully. In fact, almost all respondents have tried to compost their biodegradable waste, as only those who were more stubborn and strictly followed the rules for EU composting succeeded. Those who may have missed something during the composting cycle, encountered a delay, detention of the decay process, which will slow down the whole process of obtaining high-quality compost mass. Those who said they have failed to compost, are also likely to be rewarded for their efforts, just the maturation of compost will be delayed in time. Only 4% of the respondents do not see the sense in composting and therefore have not made any efforts. The responses analysis indicates a high degree of awareness and desire for composting, a few simple rules for composting guarantee the quick effect and obtaining



good quality compost. Little effort made to quality composting is rewarded generously and the effect is quick and obvious for farmers (Graph 6).



Graph 6

Conclusions:

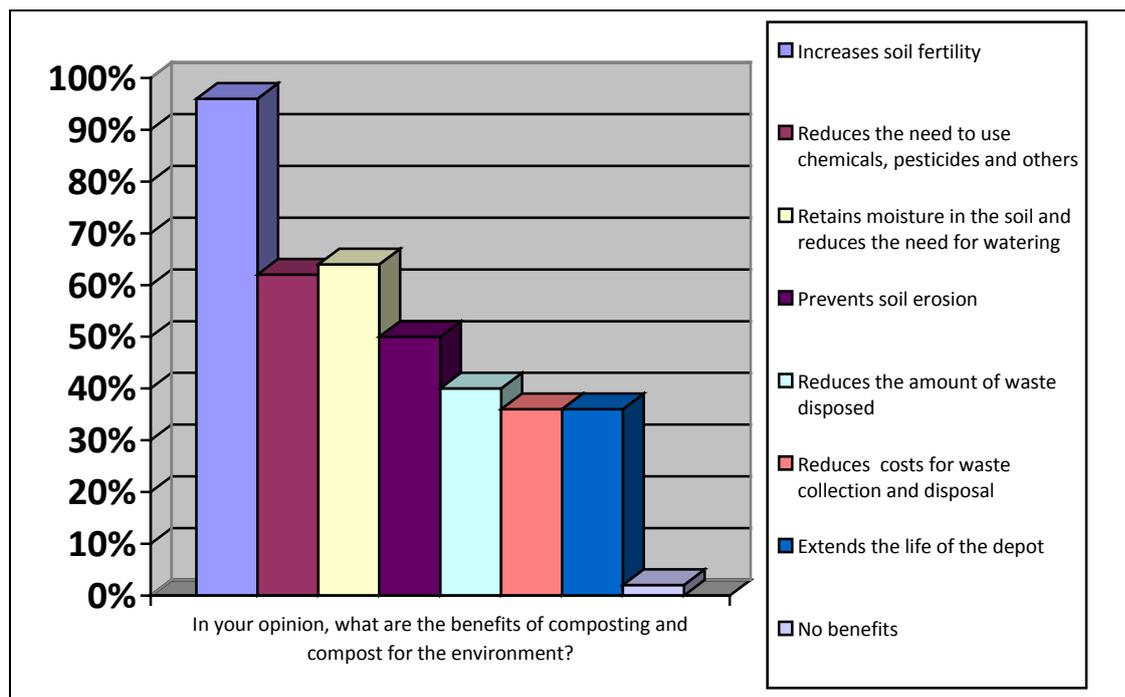
- 1. The majority of the respondents have tried to compost their biodegradable waste, as only those who were more stubborn and strictly followed the rules for composting succeeded.*
- 2. Respondents demonstrate a high degree of awareness and desire for composting.*

7. In your opinion, what are the benefits of composting and compost for the environment?

The total number of answers to this question exceeds 100% because most respondents see multilateral benefits of composting and compost - both personally and for the environment in the region. The majority (96%) of them said that the compost increases soil fertility. Considering that the main target group in the study is namely farmers, this response is logical and expected. 64% of the respondents believe that compost retains moisture in the soil and reduces the need for watering. 62% believe that the need to use chemicals, pesticides and others is reduced. 50% think that the compost prevents soil erosion. All the above answers are directly related to agriculture activities and their successful practice; the respondents correctly identified them as benefits with greatest effect on them. It is



noteworthy the high percentage of responses, containing direct environmental benefits - reducing the amount of waste disposed (40%), reducing the costs for waste collection and disposal (36%) and extending the life of the depot (36%). These responses demonstrate a high degree of ecological thinking and behavior and awareness of the need for them in the context of sustainable development principles. Only one respondent believes that there are no benefits from composting (Graph 7).



Graph 7

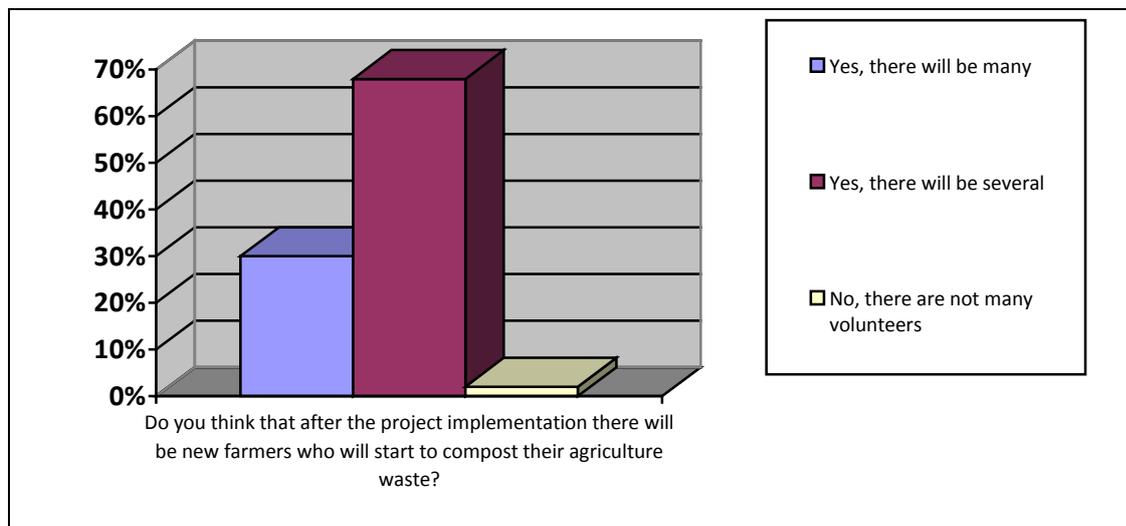
Conclusions:

1. *The majority of respondents see multilateral benefits of composting and compost - both personally and for the environment in the region.*
2. *The respondents demonstrate a high degree of ecological thinking and behavior and awareness of the sustainable development principles.*

8. Do you think that after the project implementation there will be new farmers who will start to compost their agriculture waste?

The answers to this question show the potentials for sustainability and multiplying effect of the project. 30% of the respondents are optimistic and believe that after the end of the

project there will be many farmers who will apply the good practice and will start to compost their agriculture waste. 68% of respondents were also positive, but believe that composting will not be widely spread practice. Only one respondent is pessimistic and believes that there will be no followers who will start composting after the end of project activities. The results obtained contribute directly to sustainability and distribution of the positive effect and good practices from the project, they demonstrate confidence in composting as a form of biodegradable waste treatment and high efficiency of this technique (Graph 8).



Graph 8

Conclusions:

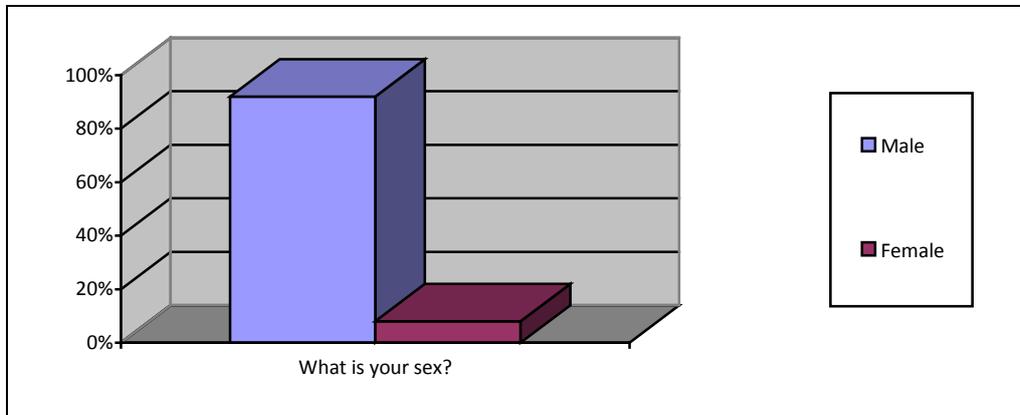
1. *The majority of the respondents believe that the method for agriculture waste utilization promoted within the project - composting, is good practice and will continue to be applied after the project completion.*
2. *There is a direct contribution to sustainability and distribution of the positive effects and good practices from the project.*

The next questions and answers provide **statistical information** on sex, age, education and occupation of the participants in the survey:



9. What is your sex?

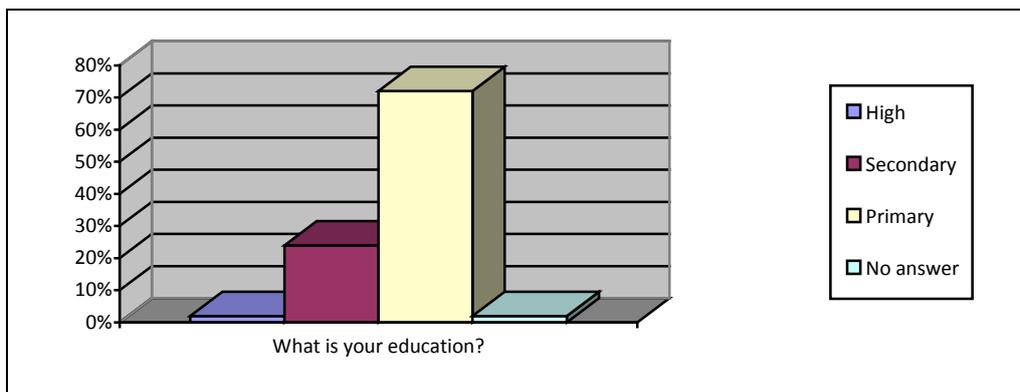
92% of the respondents are men and 8% - women, which is probably logical in view of the nature of the study and the fact that most farmers in the target region are men (Graph 9).



Graph 9

10. What is your education?

72% of the respondents have primary education, 24% - secondary education and 1 is a university graduate. The responses analysis shows that most of the individuals who are involved in agriculture activities in the target region are with primary education. (Graph 10).



Graph 10

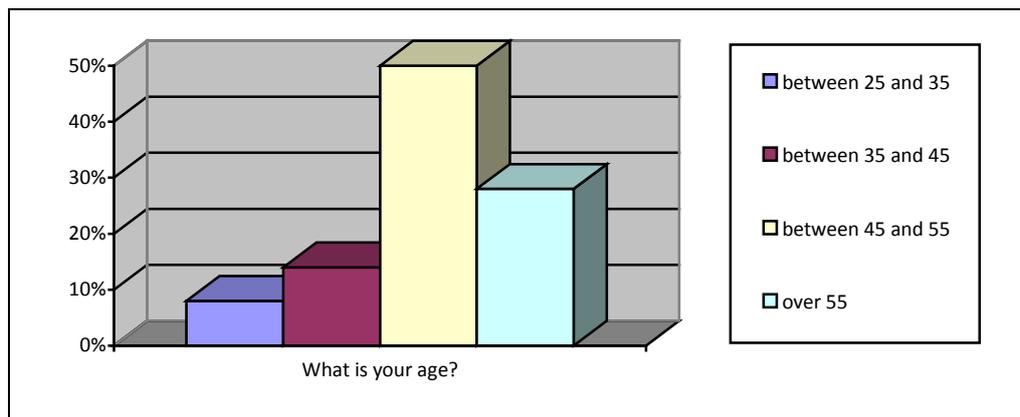
Conclusions:

1. The majority of the respondents have primary and secondary education.



11. What is your age?

50% of respondents are between 45 and 55 years. 28% are over 55 years old, 14% - aged between 35 and 45 years, 8% - between 25 and 35 years. There are no respondents under 25 years old. Given that 92% of respondents are farmers, we can conclude that mainly people over the age of 45 are involved in agriculture activities are and those under 25 are not interested. Nevertheless, a relatively high is the percentage of young people - up to 35 years, involved in agriculture - 22% (Graph 11).



Graph 11

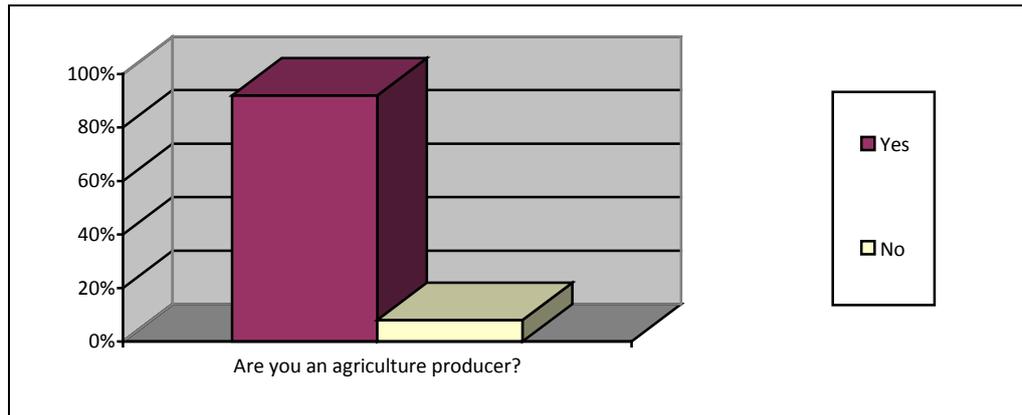
Conclusions:

1. The majority of the participants involved in agriculture, are older than 35 years.

12. Are you an agriculture producer?

92% of the respondents are agriculture producers, and the remaining 8% - are not. In view of the above answers, facts, the target groups and analysis as a whole, we can consider that even those respondents who are not producers are involved in some way in agricultural and/or environmental activities. The analysis of the information collected by the questionnaire shows a high degree of motivation among farmers and representatives of the target groups and readiness to compost and show responsible attitude towards the generation, treatment and utilization of biodegradable waste. (Graph 12).





Graph 12

Conclusions:

- 1. The majority of the participants in the questionnaire are agriculture producers;*
- 2. There is a high degree of motivation among farmers and representatives of the target groups and readiness to compost and show responsible attitude towards the generation, treatment and utilization of biodegradable waste.*





REVIEW, ANALYSIS AND ASSESSMENT OF THE WORK OF THE MONITORING GROUP IN PINARHISAR MUNICIPALITY

The Monitoring Group of the composting process in Pinarhisar Municipality was established on 30.05.2014 during a Round table under project «Joint promotion of agriculture waste composting - AGROCOMP». Then were discussed and approved the following members of the Monitoring Group of the composting process in Pinarhisar Municipality:

Members:

1. Beysim Ozgur - Agriculture expert, District Office of Agriculture Kırklareli
2. Muharrem Bilge – Agriculture expert, Municipal Office of Agriculture, Pinarhisar
3. Rahim Onler – Project coordinator under AGROCOMP
4. Cumhuri Erey – farmer
5. Yasar Ariaoglu – farmer

Alternative members:

1. Lisan Cakir – farmer
2. Enver Ozkartal – farmer

5 demonstration composting platforms are built and installed in preliminary selected 5 farms. The project plans a regular follow-up and monitoring of the composting process in the selected farms. Monitoring should be performed by the nominated members of the Monitoring Group in Pinarhisar Municipality.

Until now the Monitoring Group held a total of 3 monitoring visits of the farms, where demonstration composting platforms are installed. Every visit and monitoring of the progress composting is subject of discussion by the members of the Monitoring Group. After each visit, the Group held meetings to discuss the progress achieved and possible problems and difficulties.

The first meeting of the Monitoring Group was held on 25.08.2014. During the meeting, the coordinator of project "Joint promotion of agriculture waste composting of - AGROCOMP" and a member of the Monitoring Group Mr. Rahim Onler summarizes for the other



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PARTNERSHIP

participants the 5 farms visits where demonstration composting platforms are installed. The participants in the meeting discuss the summarized information and what they saw during the visits of the platforms. All think that the five farmers selected have responsibly adopted the idea of composting as a way of environmentally friendly dealing with waste generated by agriculture. They caught the main purpose and principles of composting, reported the things learned during specialized training for composting and work with demonstration platforms, and apply the knowledge acquired into practice in their daily work. All members of the Monitoring Group believe that the progress made in composting is very good, and the compost that will be obtained in future will be of high quality and can be used to improve soil fertility.



The second meeting of the Monitoring Group was held on 19.09.2014. During the meeting, the coordinator of project "Joint promotion of agriculture waste composting of - AGROCOMP" and a member of the Monitoring Group Mr. Rahim Onler summarizes for the other participants the 5 farms visits where demonstration composting platforms are installed. The participants in the meeting discuss the summarized information and what they saw during the visits of the platforms. All think that the five farmers use the platforms by purpose and take care of them as good farmers. All have responsibly adopted the idea of composting as a way of environmentally friendly dealing with waste generated by agriculture and see a real product of waste, something, they can use to improve the effectiveness of their work. The members of the Monitoring Group think that due to the composting the quantities of agriculture waste decreased and there is responsibly dealing with them, helping the environment protection. The progress made in composting is very



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good, and the compost that will be obtained in future will be of high quality and can be used to improve soil fertility.



The third meeting of the Monitoring Group was held on 01.10.2014. During the meeting, the coordinator of project "Joint promotion of agriculture waste composting of - AGROCOMP" and a member of the Monitoring Group Mr. Rahim Onler summarizes for the other participants the 5 farms visits where demonstration composting platforms are installed. The participants in the meeting discuss the summarized information and what they saw during the visits of the platforms. All think that the five farmers use the platforms by purpose and take care of them as good farmers. All five farmers have made significant progress in the process of composting, as the compost mass is at advanced stage of decomposition/decay/maturation. All farmers expressed satisfaction with the opportunity to utilize waste from agriculture activities and at the same time are pleased to contribute to environmental protection. The members of the Monitoring Group believe that due to composting the quantities of agriculture waste decreased, the costs for waste collection and disposal were reduced, and as a result in a direct and indirect way, there is counteraction to climate change globally. The progress made in composting is very good, very soon the compost will be ready to be used by farmers in the autumn treatment and soil preparation for the new agriculture season.





FINAL ASSESSMENT OF THE IMPACT OF THE COMPOSTING PROCESS ON THE POLLUTION LEVEL IN PINARHISAR MUNICIPALITY

The main conclusions from the questionnaire and monitoring of the demonstration composting process can be summarized as follows:

1. 50 respondents participated in the questionnaire- farmers and other stakeholders, representatives of the target groups of Pinarhisar Municipality.
2. The purpose of this study was to evaluate the effect of the composting process, the benefits of composting to the extent of local pollution and the expected effect on the environment in long term, and to evaluate the overall effectiveness and success of the project "Joint promotion of agriculture waste composting".
3. The positive effect of project "Joint promotion of agriculture waste composting" is undeniable - 98% of the respondents consider that due to the project, the quantities of agricultural waste disposed has significantly decreased.
4. Almost all respondents believe that biodegradable waste composting has a strong positive effect on the amount of agriculture waste disposed.
5. The majority of the participants in the questionnaire believe that biodegradable waste composting contributes to environmental and natural resources protection;



6. The majority of the respondents demonstrate a clear and responsible position of the majority of the respondents to the issues of environmental protection and rational use of natural resources.
7. The majority of the respondents have tried to compost their biodegradable waste, as only those who were more stubborn and strictly followed the rules for composting succeeded.
8. Respondents demonstrate a high degree of awareness and desire for composting.
9. The majority of respondents see multilateral benefits of composting and compost - both personally and for the environment in the region.
10. The respondents demonstrate a high degree of ecological thinking and behavior and awareness of the sustainable development principles.
11. The majority of the respondents believe that the method for agriculture waste utilization promoted within the project - composting, is good practice and will continue to be applied after the project completion.
12. There is a direct contribution to sustainability and distribution of the positive effects and good practices from the project.
13. The high level of awareness about composting and the trust in it is due largely to the public activities implemented under the project AGROCOMP.
14. The greatest role in raising the awareness about agriculture waste composting had the information days.
15. The majority of respondents were farmers, men with primary and secondary education, aged over 35 years.
16. There is a high degree of motivation among farmers and representatives of the target groups and readiness to compost and show responsible attitude towards the generation, treatment and utilization of biodegradable waste.
17. The farmers in whose farms demonstration composting platforms are installed use them by purpose and take care of them as good farmers.
18. In the farms monitored, where demonstration composting platforms are installed, composting proceeds normally, the progress achieved is very good, and the final





compost product can be used by farmers in the autumn processing and soil preparation.

19. All farmers express satisfaction with the opportunity to utilize waste from agriculture activities and at the same time are pleased to contribute to environmental protection.
20. As result from composting the quantities of agriculture waste decreased, the costs for waste collection and disposal were reduced, and as a result in a direct and indirect way, there is counteraction to climate change globally.

Those findings give us a definite reason to conclude that the process of composting promoted and organized within project "Joint promotion of agriculture waste composting" is successful, undeniable and has long-term effect. There are direct and tangible benefits to farmers and the environment in the region. The majority of respondents categorically stated that as a result of the project implementation and composting agriculture waste disposed in the region has decreased, which is a direct contribution to reducing the level of pollution in Pinarhisar Municipality. The majority of respondents demonstrate a clear and environmentally responsible position on environmental protection and rational use of natural resources. They realize not only the personal benefits of composting but the general effect this process has on the state of the environment in the region. Participants demonstrate a high degree of ecological thinking and behavior and awareness of the sustainable development principles. There is a high degree of motivation among farmers and representatives of the target groups and readiness for composting and responsible attitude towards the generation, treatment and recovery of biodegradable waste, which is a direct contribution to the implementation of policies on environmental protection and reasonable use of natural resources. As result from composting the quantities of agriculture waste decreased, the costs for waste collection and disposal were reduced, and as a result in a direct and indirect way, there is counteraction to climate change globally.





CONCLUSION

The positive effect of composting of agricultural waste with plant and animal origin is indisputable and versatile. The facts and their analysis are indicative of the change achieved in thinking and behavior of the target groups. The effect of the project implementation is not only individual - by reducing the costs of agriculture activity and increasing productivity, but also global! The biggest benefit of joint promotion of composting is the change in thinking and behavior of recipients, the recognized need to live in harmony with nature, protect natural resources and develop, leaving behind minimal ecological imprint!

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