

Motivating citizens to participate in home composting program in Municipality of Agios Dimitrios

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Keywords: compost, food waste, organic matter.

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Abstract

Municipality of Agios Dimitrios has organized a household organic waste composting program by distributing compost bins to households in the municipality.

During the first phase of the program 173 bins were distributed while in the second phase an additional 151 bins were added. All the above mentioned bins were used in yards, with 48 bins given for apartments in order to be used on balconies. Furthermore, composting bins were given to 10 public schools for their environmental education initiatives.

Municipality of Agios Dimitrios, within the home composting program which has been implemented since 2012, has developed several informational campaigns both for the general population and for schools. More specifically, it issued a leaflet distributed to those who receive a home composting bin and / or participate in the relevant educational events. Workshops have been held in the Municipality for information and troubleshooting for home composting. At the same time a support team has been developed that offers instructions for troubleshooting while providing practical and personalized advice. Seminars have also been held in schools for practical demonstration of home composting and more specifically in 11 primary schools, two kindergartens and two high schools.

The personnel of Agios Dimitrios have conducted research by distributing questionnaires to all the people that took part in the first and second phase of the program. The results from the questionnaires revealed useful conclusions about the composting process.

Now, we are in the third phase of the composting program, distributing additional bins to households at their request. There have been applications for bins, which could not be covered by the previous phases and expect to be covered in this phase of the program. All the informative - educational material for composting has been distributed to all who have received the bin or have attended the relevant informational events that were organized by the Municipality. In addition, all the educational material can be found in electronic form on the Municipality's website.

Description of the municipality

The municipality of Agios Dimitrios is a suburb of South Attica, bordering the east with the Municipality of Ilioupoli, west with the Municipality New Smyrna, north with the Municipality of Daphne - Hymettus and south, with the municipalities of Alimos and Paleo Faliro. It has an area of 536.4 hectares (5.364 acres), a permanent population of 70 970 inhabitants, based on the 2011 census, while the actual population of the city is estimated to exceed 85,000 and density of the resident population 14340.27 inhabitants per square kilometer.

By 1947, the Agios Dimitrios was a single Community as Daphne and since then became a separate community as Agios Dimitrios. The name comes from the old church, which was in the old village Brahami. In 1964 became Municipality by decree, since the population census of 1961 was about 21.365 inhabitants by 4.621, which was in 1951.

The municipality owns a mansion, where municipal services are located, and the municipal theater. There is also a large municipal stadium, 3 indoor basketball courts, as well as various tennis, basketball, volleyball, tennis and playgrounds in different neighborhoods, while in Rafina area are privately owned camp center.

In activities through the Municipal Services and Culture Organizations, Sports, Environment, Education and Welfare, including: Municipal Conservatory Municipal Chorus, Dance, Theatre groups, Philharmonic, Lending Library, Municipal clinics, Blood Bank, Social Grocery, Senior Citizens Clubs, nurseries, etc. At the same time, established and organized annually the Cultural Events of Autumn and Panagouleia.

Today the municipality has 7 day nurseries, 18 kindergartens and a special nursery, 19 primary schools, 1 Special Elementary School, 6 secondary schools, 1 Evening High School, one Technical Training Unit (TEE)

and 1 Special Vocational High School, 3 General High Schools, 2 Professional High Schools, 1 Evening High School, one Special Professional Education and Training (EEEEK) and an IEK.

The commercial activity that develops mainly along major roads, includes almost all objects. Operate also many sports, cultural clubs and club tradesmen.

Transportation in Agios Dimitrios consists of 23 Transit and local bus lines, two municipal transport lines, but mainly with the three Metro stations which (Daphne, Ag. Dimitrios and Ilioupoli), located within the municipality boundaries.

Solid Waste Management

The annual quantity of municipal solid waste in the municipality of packaging waste Agios Dimitrios is 30.960 tn (estimation based on the year 2013 data, excluding Bulky-Branches-Local market), which corresponds to 1,20kg / capita / day (resident population 70 970 inhabitants, based on the census of 2011), when the assessment of the National and Regional Management Plan according to the year 2001 was 1,14 kg / capita / day.

Municipality of Agios Dimitrios implement recycling programs for different waste streams, in cooperation with authorized collective alternative waste management systems. Specifically, the municipality cooperates with systems for

- packaging waste,
- waste electrical and electronic equipment
- waste batteries,
- end-life vehicles,
- waste oils and lubricants
- used tires.

The current municipality of municipal solid waste management system of St. Demetrius focuses on three areas:

1. Increasing the deflection currents reusable materials from landfills through recycling materials (paper, metals, plastics, glass, wood) and the effective separate collection of all the streams of alternative management.
2. The introduction of the separate collection of bio-waste, with the first step to green waste and the largest producer waste (eg dining rooms, sanitary facilities).
3. Strengthening of home composting (community composting).

Given the composition of municipal waste in Attica, the percentage of fermentable waste amounts to 43.6%. As mentioned above, the annual amount of waste in the municipality of Agios Dimitrios (gray and blue bin, green waste, etc.) amounts to 30.960 tn, when the fermentable waste is estimated at about 13.500 tn / year. That is why the Municipality of Agios Dimitrios has organized composting household organic waste program and handing bins to households.

Municipality of Agios Dimitrios, especially in the context of home composting program that has been implemented since 2012, has developed several information campaigns both for the general population and in schools. More specifically:

- brochure has been distributed to those who receive home composting bin and / or participate in the relevant information events. (Figure 1)
- Has developed site for recycling and composting with hardware and instructions for citizens on the municipality's website (<http://www.dad.gr/index.php/anakyklosi>).
- workshops have been held in the municipality for information and troubleshooting for home composting.
- Worked open civil hotline for receiving instructions and troubleshooting when using home composting bin.
- Developed support team, which contacted by telephone at least three times in one year to those who took home composting bin and, where desirable, made a site visit to address problems and provide practical and personalized advice.
- There have been seminars in schools with a practical demonstration of home composting and specifically in 11 primary schools, two kindergartens and two secondary schools.
- Promoted composting in the Municipal Vegetable Garden, where they have placed so far eight bins of 280 liters, covering tailings processing needs, while promoting the idea of composting to anyone using or visiting the Municipal Vegetable Garden.



Fig.1 Brochure for home composting

Purpose of the composting program

In order to reduce pressures on the environment and to improve the soil in our garden without harming ... our pocket. In particular, applying the compost, a family can reduce the amount of organic waste that produces up to 35%, while incorporating the compost in the soil of the garden, we improve the setting of the latter, the enriching organic matter and increase its ability to hold humidity. Furthermore, in some cases, we can reduce the need of inorganic fertilizers.

Methodology

1. Workshops for the participants

In 2014 handed over compost bins to the beneficiaries of the second phase. The program Home Composting Agios Dimitrios Municipality has launched pilot for a year (first phase with 173 participants).

The bins of the second phase were of two kinds: Garden and balcony. The program involved a total of 151 beneficiaries. The distribution took place at the Municipal Vegetable Garden, in the presence of the Deputy Mayor for Environmental Protection and Quality of Life Aikaterini Asimakopoulou.

Before distribution was preceded by an informative event, which invited all beneficiaries, both the first and the second phase. The event took place at the Municipal Theatre, in collaboration with the Harokopio University. The themes of the event were "Home Composting: from theory to practice" with speaker Ms. Christina Chronis, agriculturist Environmentalist M.Sc. and "Food in the trash: an environmental and ethical scandal", with speaker Mrs. Katia Lazaridi, associate professor at the Harokopio University.

It is important to mention that there was a program support team of Home Composting from Harokopio University, which developed on behalf of our municipality project on "Updating & Optimizing Solid Waste Management".

2. Workshops at schools

In the first part of the workshop, the children were informed through theater games for composting, for earthworms for organic waste which can "participate" or not in the composting process.

The "Geo" earthworm, composting responsible, learned the children how they can recycle their organic waste to make excellent quality fertilizer for the plants!

The second part was practical application of what they learned about composting, with installation of the composting bin, throwing garbage entering the composting, adding earthworms and start the composting process at school.

Teachers and children warmly welcomed the organizing team and involved in all stages of the workshop with enthusiasm and happy mood. The children through dramatic play and experiential activities understood the importance of the composting process.

3. Questionnaires

First phase

The first phase of home composting produced communication results by a team of Harokopio University with 154 participants in the program. The communication was made by telephone, with the aim of recording the response of participants in home composting program and the technical and scientific support in their problems / questions you might presented.

The team of Harokopio University contacted 130 of a total of 154 participants. The reasons why there was no communication with 24 of them, were: not enough personal time for conversation, discomfort, or mostly not answered after multiple calls.

Results

According to the analysis of the results, it is observed that about 80% of the participants (Figure 2) incorporated the home composting in their daily life and produce compost, which is then used in the garden, without facing a particularly serious problem.

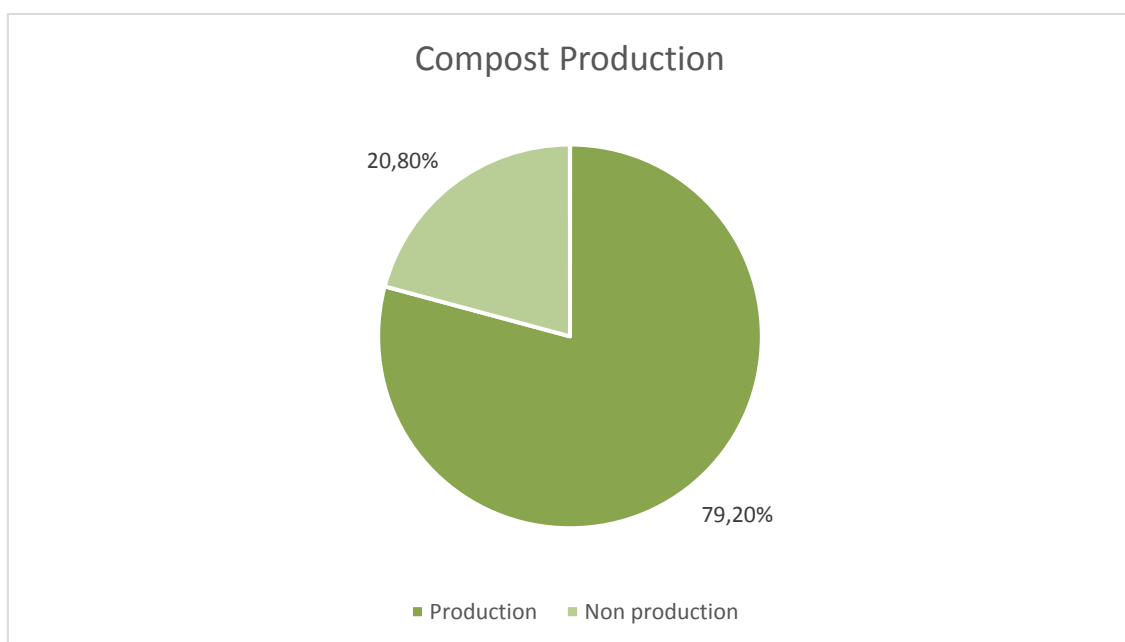


Fig. 2 Percentage of participants who have taken the household composting and incorporated it into their lifestyle.

Only around 20% of the participants produced no compost. This is due to the fact that many were late to start the process, while others never started, either give up along the way.

The main reason that prompted them to leave the home composting was - according to what is stated - lack of time. Problems encountered in 38% (Figure 3) of the participants, but didn't cowed from continuing household composting.

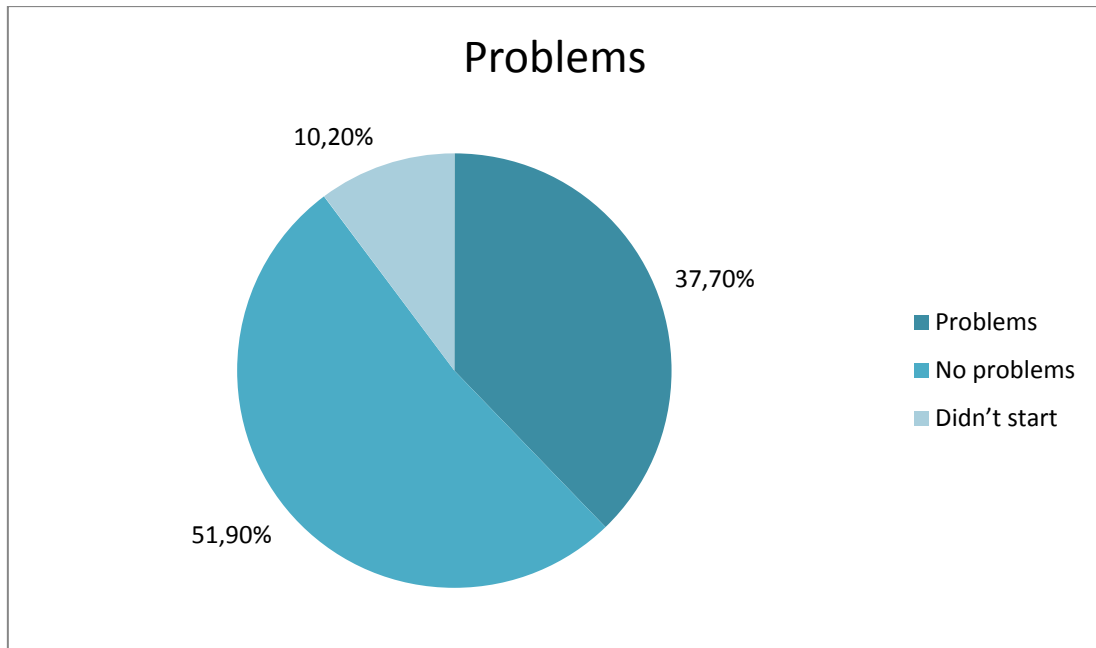


Fig. 3 Problems during composting

Difficulties

The questions raised by the participants in the first phase of the program, were associated with the evolution of the process of home composting. Questions on assembling the drum or the original recommendation was not made. This is probably explained by the fact that the program had begun a few months before the telephone contact and the participants had attended the lectures that took place earlier.

Typical were the problems that confronted the participants during the course of composting (Figure 4), as odor of the mixture, appearance of flies but in many cases and crawling insects. In the list of problems were added the appearance of white worms in buckets, difficulty in the use of composting bins (as the bins that were distributed in the first phase were not leaving the base to remove the compost), slow maturation and problems with the variation of the humidity. Finally, there were individual mentioned problems, such as potato seed germination in points apply compost, bin theft, appearance of too many cockroaches, addition of large quantities of citrus so great reduction of pH, addition of earthworm.

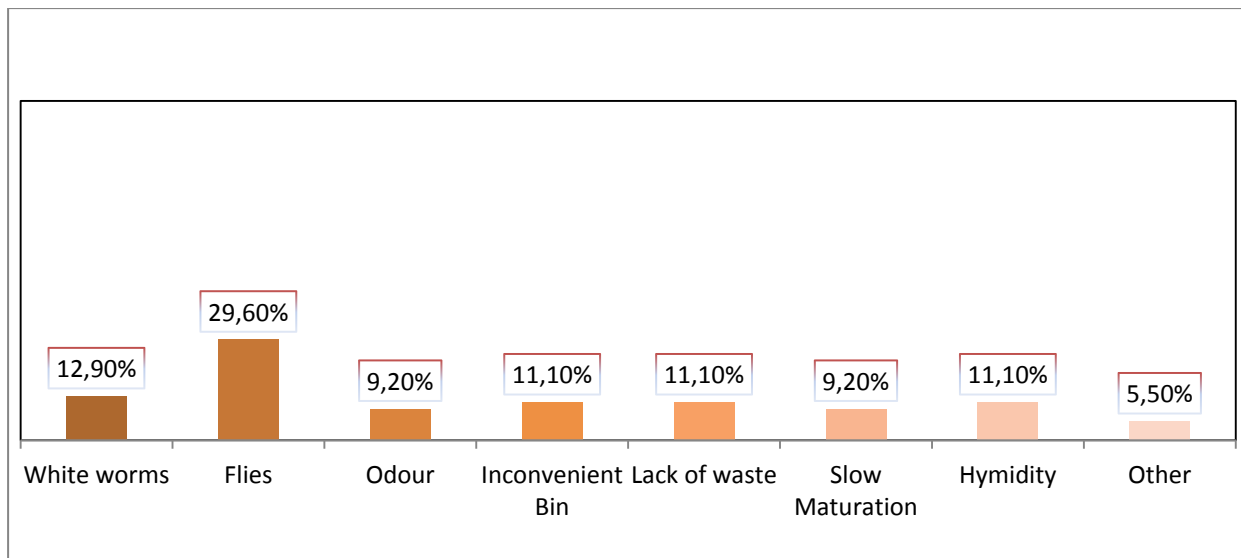


Fig. 4 Basic problems during composting

In conclusion we must emphasize that the response of the citizens was quite encouraging, and their course in the program. To a large extent this is due to the complete information and troubleshooting provided by

the municipality, according to participants' statements. The scientific team responded to all questions received and urged those who have interrupted the process to restart.

Second phase

During the first phase of the program 173 bins were distributed while in the second phase an additional 151 bins were added. All the above mentioned bins were used in yards, with 48 bins given for apartments in order to be used on balconies. Furthermore, composting bins were given to 10 public schools for their environmental education initiatives.

The office of the Deputy Mayor for the Environment and Quality of Life Protection distributed questionnaires at the end of the second phase of the program, while communicating with the first phase participants.

In this research participated 350 bin users. It revealed that most users (87%) incorporated composting into their lifestyle (Figure 5).

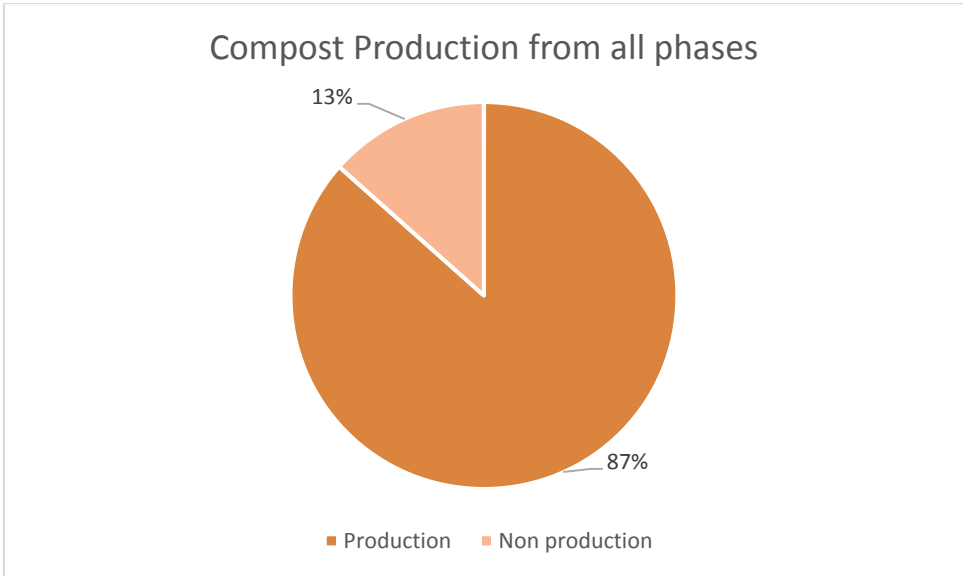


Fig. 5 Percentage of participants who have taken the household composting and incorporated it into their lifestyle.

Conclusions

Now we are on the third phase of the composting program and results concerning the process are clearly positive. Although when we started the program citizens knew little about composting, they were particularly interested and attended the workshops in order to continue the process. This can be seen through the constant feedback through the questionnaires presented in this paper. The third phase is already underway and includes in the near future workshop, which will involve participants of all three phases, in order to answer new questions that have arisen.