THE ERADICATION OF AMBROSIA - A WEED WHICH PRODUCES THE ALLERGENIC POLLEN IN THE SOMBOR AREA

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PROJECT BACKGROUND

The reform of the health protection system and public health as its integral part should contribute to the development of the efficient public healh strategies at local level along with the recognition of local health problems and multisector and participatory approach to their solution. The education of local professionals in the field of public health and the development of strategies based on the needs of local community would make the implementation of local strategies through small community projects much easier (1). A multisector project team of 8 professionals has been formed in the area of West- Backa District. They are employed at the district Institute of Health Protection or the Health Center, or they are the representatives of local authorities, agricultural sector, social protection and local media working together with experts from other fields of social life. Having analyzed demographic, health and socio-economic indexes in the area of West-Backa District, the team have chosen a health problem of multidisciplinary nature whose solution demands the cooperation of all relevant local community structures. That problem is a weed, ambrosia, and the allergic effect of its pollen on people's health.

PRIORITY SETTING

Basic territory data

West-Backa District is located in Vojvodina, in the north-west of The Republic of Serbia and it includes four municipal areas – Sombor, Kula, Odzaci and Apatin with Sombor as an economic and cultural center of the area. The district spreads on the area of 2406 km^2 with average population density of 89 inhabitants per km^2. There are 37 settlements in total and 85,4% of agricultural land.

Population structure based on sex and age

According to the last census on the District territory in 2002, there are 214011 inhabitants of which 48,4% are men (103679) and 51,6% are women (110332) (2). Due to 17,2% of the old people participation in the total population number, the population of West-Backa District belongs to the category of very old. The average age of the District population is 40,7 and the aging index is 1,07. The average life expectancy of male infants in Vojvodina is 68,26 while the female ones' is 74,18.

Natural development of the population

The birth rate in the District is low and it has constantly been under 10/1000 inhabitants since 1995 while the general mortality rate has been increasing (3). Along with the changes of behavior and life style, the anticipated longer life expectancy and larger participation of the old in the total number of the population have also cause the increase of mortality rate. The low birth rate and the increase of general mortality rate are responsible for the decrease of the population growth rate which has been negative for many years (table 1).

Table1. Natural development of the population in The West-Backa District 2000-2004

Years	Number of inhabitans	Rate per 1000 inhabitants			Deceased infants per 1000 born alive ones
		Birth rate	Mortality rate	Natural population growth rate	
2000	210200	9,0	16,0	-7,0	13,8
2001	209100	9,2	14,7	-5,5	9,3
2002	213900	9,4	15,4	-6,0	14,0
2003	214771	8,9	15,6	-6,7	9,8
2004	209057	9,0	15,8	-6,8	6,9

The Source: RIS. The Statistical Almanac of Serbia for the corresponding years, Belgrade

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The infant mortality rate ranges within low values and the proportional mortality of children up to 5 years old is low and it makes less than 1%. Maternal mortality rate is stable. The last case of death caused by pregnancy, delivery and puerperal complications was registered in 1999.

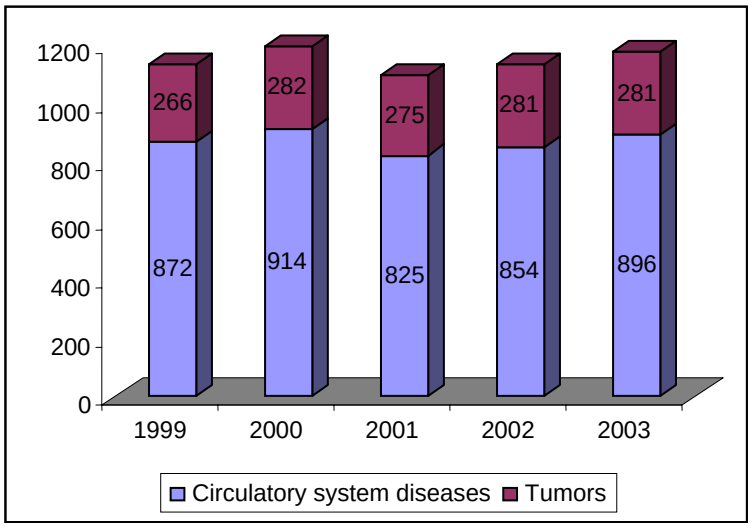
Socio-economic circumstances

Bad economic situation indexes and material prosperity decrease are shown through the varying of the public product per inhabitant and the employment decrease. The percentage of the employed in 2004 was 23,3% (4). According to the data in the possession of Sombor Municipality Planning and Statistics Department, consumer's basket value of the employed people was 200€ (only food and drink) in April 2005. The average net gain of 185€ was not sufficient to satisfy the minimal needs in food and drinks. Most of the money is spent on satisfying the basic needs which does not leave much space for anything else.

Up-to-date picture of the population health condition

The up-to-date morbidity and mortality picture of West-Backa District population includes chronic non-contagious diseases. The leading death causes are: circulatory system diseases in the first place; tumors in the second; symptoms, signs and pathological, clinical and laboratory findings in the third; injuries, poisoning and the consequences of the external factors influence in the fourth place while digestion system diseases are in the fifth place. The most significant of these leading death causes are circulatory system diseases and tumors. The specific mortality rate (100.000 inhabitants) of circulatory system diseases and tumors increased in the period 1999-2003 (graph 1).

Graph 1. Varying of the specific mortality rate (per 100.000 inhabitants) of circulatory system diseases and tumors 1999-2003



In the group of circulatory system diseases, the largest significance belongs to the subgroup of "other heart diseases" (cardiomyopathy, cardiac insufficiency, arrhythmia with the percentage of 41,3%, then brain circulatory system diseases (CVI) with 33,2% and ischaemic heart diseases (angina, myocardial infarction) with 13,8%. In the total number of the deceased, larger part that is 53,2%, goes to women while the percentage of men is 46,8%. Malignant tumors of trachea, bronchi and lungs prevail with 28,6% in the structure of the people who died of tumors. They are followed by malignant tumors of the colon and the rectum with

10,5% then breast and stomach tumors with 6,3%. The percentage of men who died of tumors is 56,4% and of women 43,5% (5)

The morbidity structure has not shown significant changes recently. According to the data from 2004, the largest part of the disease structure belongs to the respiratory system diseases (34,2%), after that there are circulatory system diseases (11%), then urinogenital system (10%), muscular-bone system and connective tissue diseases (8,3%) and in the end mental and behavior disorders (5,8%). Due to their large part in the death structure, chronic non-contagious diseases, especially circulatory system diseases, tumors and respiratory system diseases, have the leading positions on the health priority list. However, numerous health-promotive activities for chronic non-contagious disease prevention have already been done on both national and local level. Some of them are: National Campaign "You Are My Heart"; Project "Health Preventive Service Improvement"; World Heart Day, World Food Day; October, the month of the proper diet; Health Promotion Campaign etc. Taking into consideration the facts mentioned above, the Project Team Ravangrad from Sombor have agreed to treat within the project the up-to-date public health problem which has a multiple effect on the local community. That problem would be a weed, ambrosia, and its undesirable effects.

The characteristics of ambrosia problem

It has almost been a decade since we faced the increase of allergic diseases in the Sombor area and West-Backa District, where allergic conjunctivitis, rhinitis and asthma are the most significant allergic manifestations. A significant place in the etiology of these diseases belongs to plant and weed pollen and the commonest cause of allergic problems in the period July-September is ambrosia pollen. However, ambrosia, as an aggressive weed, is not just a menace for people's health. It also endangers significant farming cultures of this area such as soybean, sunflower, sugar beet and corn. Since its presence in this area is growing and the effects of this invasive weed on people's health and farming cultures are more and more expressive, ambrosia has become a **significant health**, **agricultural**, **ecological** and even an **economic problem**.

The spread of ambrosia pollen and its allergenic effect

Ambrosia (Latin name Ambrosia artemisiifolia) or ragweed is a very resistant weed species which grows everywhere (along the roadsides, railway tracks, canals, uncultivated land, graveyards and farmyards). It grows during the whole summer while the period of blooming and pollen releasing is from July to September. Every ripe plant can shed even up to several millions of pollen grains. Ambrosia was registered in Vojvodina in the late 1970s and its presence has been growing since then. **The result of the experiment which was carried out in the Sombor area showed that from 1976 to 1980 ambrosia was present in the weed flora with 2%. However, that number grew to 10% in the period 1991-1995 and eventually from 1996 to 2001 it reached 20%.**

Ambrosia pollen is a very strong allergen. Allergic reaction can occur with people of all ages disregarding sex and profession. The commonest clinical manifestations of allergies are nose blockages, itch, nose and eyes aching and intensive nose secretion accompanied by sneezing. The discomforts can even be worse including lower bronchial tube inflammation and asthma (6,7). Apart from health problems, people who suffer from these discomforts are often absent

from work and their work ability is diminished which is a significant economic aspect of the problem.

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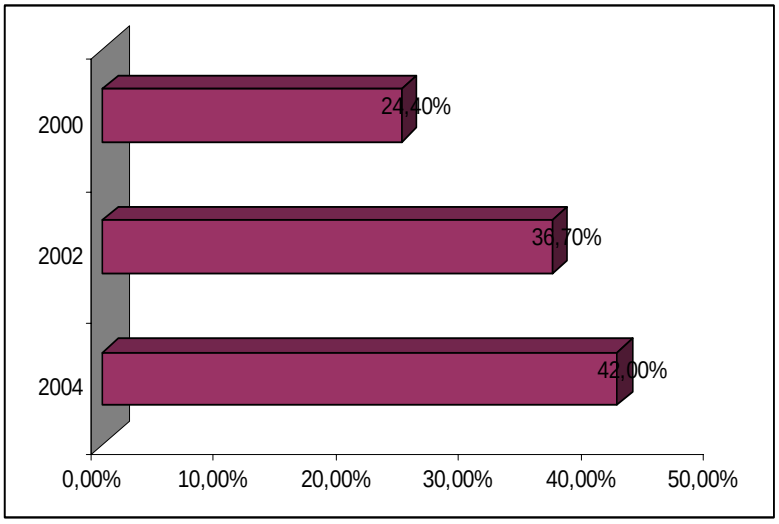
HEALTH PROBLEM STATEMENT

Statistical data show that 20-30% of people are inclined to allergies among which the commonest is the allergy to flower pollen. **According to the research carried out from 1994 to 1999, the number of people allergic to ambrosia pollen, only in the Sombor area has increased for about 30%**. The Policlinic for Allergies, the Thoracic Department of the General Hospital in Sombor made researches from 2000 to 2004 whose results also pointed out the growing number of people allergic to ambrosia pollen in the last few years (graph 2).

Graph 2. The participation of people overly sensitive to ambrosia pollen in the total number of people tested from 2000 to 2004.



Source: Statistical data of the Allergy Policlinic, The Thoracic Department, The General Hospital Sombor for corresponding years, Sombor

According to these results, the health problem is: **a large percentage of people overly sensitive to ambrosia pollen in the total number of tested people who had allergy symptoms (42,0%) disregarding sex, age and socio-economic characteristics; the percentage was the highest in the third quarter of the year (July-September) in the Sombor area, 2004**. Since the problem is **multidisciplinary** and demands a **participatory** approach, it has been defined as one of those which should find its place on the local priority list.

HEALTH PROBLEM ANALYSIS

The factors which have contributed to more frequent occurrence of allergic reactions caused by ambrosia pollen are the following (table 2):

1.The exposure of the population to ambrosia pollen allergenic effect

People expose themselves to ambrosia pollen mainly because of their ignorance of the problem and its effects and because of insufficient protective measures such as preventive treatment use and doctor's advice. Insufficient knowledge and the lack of information are caused by insufficient presence of the problem in the media. People should be taught how to recognize the plant, how to avoid contact with the allergen and its effect on health.

2.The spread of ambrosia as an aggressive weed species in the Sombor area

Although the spread of ambrosia is growing in this area there has not been done any organized action on its eradication so far, except for some sporadic actions in some parts of

the region. The most responsible for such situation are the local authorities because they have not recognized the problem as a very serious one in the first place and the other reason in their insufficient mutual cooperation.

However, there have been plenty of other factors which indirectly boosted the problem. It is above all a bad socio-economic situation (the lack of financial resources to carry out an action like this one), then the unsatisfactory legal regulation (the lack of fines), no adequate solutions, insufficient public service involvement and the fact that the public service does not cooperate with local people and local community to eradicate ambrosia.

OBJECTIVES

Our **outcome objective** is: to **decrease the percentage of those overly sensitive to ambrosia pollen in the total number of tested people who have allergy symptoms from 42% to 20% in the Sombor area in the period of 5 years.**

Having defined our final objective we have set the impact and process objectives (table 3).

THE INTERVENTION DECISION MATRIX

After we analyzed the health problem, determinants, direct and indirect factors which contribute to arising of the problem and when we estimated the intervention strategy effects on its solution taking into account the performance simplicity as the most adequate strategy, we have singled out:

1.Media campaign devoted to ambrosia problem

2.An organized action on ambrosia eradication in the community

Within **the media campaign**, information and education of the population by press, radio and TV would include the following activities: making radio and TV programs of educational and advisory character putting the emphasis on the way of recognizing the plant and the way of avoiding the contact with allergen; making radio and TV clips; ambrosia problem reports in the local weekly newspaper and public appeals to the citizens made by well-known eminent people with the purpose of motivating them to join the action.

The action of ambrosia eradication in the community would include: taking the local authorities into ambrosia problem solution and starting the action on its eradication; inducing the authorized public service to start the action on chemical and mechanical ambrosia eradication and motivating the citizens to take an active part in it. Within the last activity we would inform the citizens about the positive effects of their active participation in the action (reporting the locations, eradication of ambrosia in their own yards and the immediate surroundings, involving friends and neighbors in the action. We are also planning to organize volunteer teams (ecological associations, groups of citizens, soldiers, students etc.) in order to eradicate ambrosia in cooperation with public service teams.

THE INTERVENTION DESIGN

The target group of the **media campaign** is the whole population of the Sombor area and even further because of the media cover of the territory. The campaign would change the presence of ambrosia problem in the media by TV and radio broadcasting, video clips, local newspaper reports and all that within the range of radio and TV stations (table 4).

The **action of ambrosia eradication in the community** would especially be aimed at the target groups such as ecological associations, groups of citizens, Red Cross activists, soldiers at civilian military service, prisoners and students. They are all expected to give members – volunteers who would participate in the action. The organized action would change the

cooperation level of people and public service on ambrosia eradication in the Sombor area and along the regional and local roadsides. The action would develop according to the activity plan and the ambrosia spread map in the area (table 4).

WORK PLAN

The development of the work plan i.e. the definition of activities and goals within the Project include (tables 5 and 6):

The following activities and tasks are planned within the **intervention I (insufficient problem presence in the media):** meeting the representatives of the local media; defining the needs and reaching the agreement (activity 1); designing the activities within the media campaign (activity 2); meeting the person responsible for the activity schedule and to set to activity dates (activity 3). The beginning of the media campaign is planned for the period before ambrosia blooming and pollination in the second and the third week of May and the first week of June.

The intervention II (insufficient cooperation with the population on the ambrosia eradication) includes the activities and tasks such as: meeting the representatives of the local authorities and describing the problem; reaching consensus and deciding on carrying out the action continuously (activity 1); reaching consensus with the representatives of public service and citizens about the team formation and the activity range (activity 2); coordination of activities between the public service and volunteer teams for the purpose of their mutual participation in the action and appointing the team cooperation coordinator who would fix the activity schedule with the teams with regard to locations (activity 3). The organized action of ambrosia eradication would be done twice – the first time would be in the period 20th May - 5th June and the second time from 20th July to 5th August (correctional). Development of the work plan includes the definition of responsibilities, participants and the control of planned project activities.

MONITORING AND EVALUATION PLAN

Monitoring and evaluation plan will help us to monitor the set goals through performance indexes. The most significant performance indexes within the **intervention I** are: the increase of knowledge and information level (in %) about ambrosia problem as well as the increase of radio and TV programs, video clips and reports broadcasting in the local media. Our data sources will be the local media reports after the activities are done (in June) and poll results aimed at establishing the ambrosia problem knowledge level (before the campaign starts and in the end of the project year). A representative of public relation team and a coordinator would supervise planned activities. The complete report on performed activities within the media campaign would be done in the end of the project year and the expert services, the public and the local authorities would be informed about that.

The following performance indexes have been defined within the **intervention II**: surfaces where ambrosia has been eradicated compared to the ambrosia spread map in the area; the number of meetings where the authorized body representatives would discuss the problem solution; the range of performed activities range on chemical ambrosia eradication by spraying (in %) done by the public service compared to the planned range based on the ambrosia spread map; the number of volunteers involved in the action and the range of public service and volunteer teams mutual activities on mechanical ambrosia eradication by mowing (in %) compared to the ambrosia spread map. We will use the public service reports on the performed activities as our data source. The reports would be submitted twice – after the first treatment in June and after the correctional treatment in August. The authorized people of the public service and the representatives of the team for cooperation with the public service,

groups of citizens and associations which would give volunteers for the action would take part in control and monitoring of the planned activities.

The report on all performed activities within the organized action of ambrosia eradication in the local community would be done in the end of the project year and the expert services, the public and the local authorities would be informed about that.

BUDGET

Financial resources necessary for doing the **media campaign** include the engaged staff expenses, the media activities design (shooting of radio and TV programs and video clips; material expenses – slides, films) and the media time rent expenses. The largest part would go to the media activities design.

The expenses of performing the **action of ambrosia eradication in the community** would include staff and participant engagement, necessary equipment expenses (masks, gloves, sprays, mowers, pollen concentration measuring device) and the expenses of petrol and chemicals used for ambrosia eradication (gliphosat). The large portion of the budget money would be spent on the necessary equipment, especially on the device which measures the concentration of pollen in the air. The budget also includes other means – 5% of the total number (9).

The large ambrosia spread in this area and allergenic pollen effect during the period of blooming and pollination (July-September) which cause allergic health problems are well justified reasons for the purchase of the device which would measure the pollen grain concentration in the air. Continuous measuring and monitoring the concentration of pollen in the air carried out by the Institute of Health Protection would timely provide the population with information about the amount of pollen. People would be advised not to go out in the period of the largest concentration. The exposure to pollen would be less frequent and that would diminish the sensibility. There has been necessity for this device in our community for several years now but insufficient financial resources ant its high price prevented us from buying it.

CONCLUSION

The ambrosia spread and high frequency of allergic reactions caused by plant and weed pollen are important reasons for starting the action of ambrosia eradication in our region. By starting a broad action on ambrosia eradication in the local community and the media campaign, we would help the solution of ambrosia problem which is both health and agricultural problem. To make this action successful we must do it continuously until the presence of ambrosia is decreased to the level which would lead us to the accomplishment of our objective – less frequent allergic reactions to ambrosia pollen.

Literature:

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Table 2. **HEALTH PROBLEM ANALYSIS**

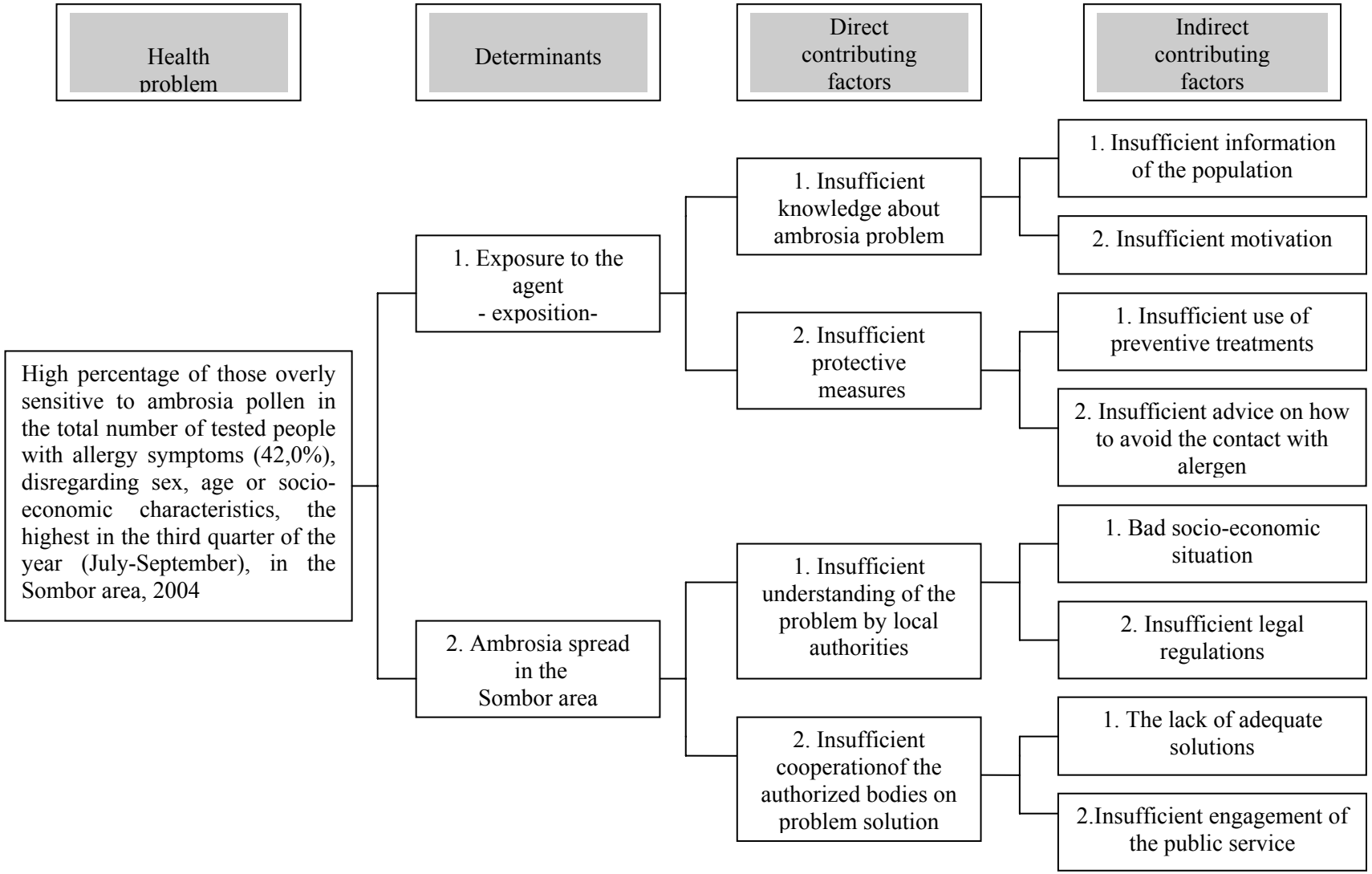

Table 3. **INTERVENTION STRATEGY AND OBJECTIVES**

Health problem: High percentage of those overvly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms (42,0%), dısregardıng sex, age or socıo-economıc characterıstıcs, the hıghest ın the thırd quarter of the year (July-September), in the Sombor area, 2004

Outcome objective: To decrease the percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms from 42,0% to 20,0% in the Sombor area in five years

INTERVENTION I

Determinant:
Exposure to the agent - exposition

Impact objective: To decrease the level of exposure to ambrosia pollen by increasing the knowledge about the problem and the ways of allergen contact avoidance in the Sombor area in 3 years

Direct contributing factor:
Insufficient knowledge about ambrosia problem

Impact or process objective: To increase the knowledge about ambrosia for 15% compared to the present level in the Sombor area within one year

Indirect contributing factor:
Insufficient information of the population

Process objective: To increase the level of information among population about ambrosia problem for 25% compared to the present condition in the Sombor area within 1 year

Indirect contributing factor:
Insufficient media cover of the problem

Process objective: To increase media involvement in the problem for 35% compared to its present involvement in the Sombor area from May to June within one year

INTERVENTION II

Determinant:
Ambrosia spread in the Sombor area

Impact objective: To decrease ambrosia spread for 60% compared to the spread map in the town and along regional and local roads within three years

Direct contributing factor:
Insufficient cooperation of authorized bodies on problem solution

Impact objective: To increase cooperation level of authorized bodies on the problem solution by decuding to carry out a continuous organized action for ambrosia eradication in the town and along regional and local roads within 1 year

Indirect contributing factor:
Insufficient public service engagement

Process objective: To decrease the public service engagement at chemical eradication of ambrosia by spraying for 20% compared to the spread map in the town and along regional and local roads twice in a year

Indirect contributing factor:
Insufficient cooperation with population on ambrosia eradication

Process objective: To decrease the level of population and public service mutual activities on mechanical ambrosia eradication by mowing for 20% compared to the spread map in the town and along regional and local roads twice in a year

Table 4. **INTERVENTION DESIGN TABLE**

Health problem: High percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms (42,0%) disregarding sex, age or socio-economic characteristics, the highest in the third quarter of the year (July-September) in the Sombor area, 2004

Intervention I					
Determinant: EXPOSURE TO THE AGENT - EXPOSITION					
Direct contributing factor: INSUFFICIENT KNOWLEDGE ABOUT AMBROSIA PROBLEM					
Indirect contributing factor: INSUFFICIENT INFORMATION OF THE POPULATION					
Intervention Strategy	**Who is the target for change?**	**What will change?**	**Type**	**Intervention location**	**Scope**
Media campaign Indirect contributing factor **Insufficient media cover of the problem**	The population of Sombor (indirect and further because of media cover)	Media cover level	TV programs; radio and video clips; newspaper reports; public appeals to the citizens to join the action	Local media	Radio and TV stations cover
Intervention II					
Determinant: AMBROSIA SPREAD IN THE SOMBOR AREA					
Direct contributing factor: INSUFFICIENT COOPERATION OF AUTHORIZED BODIES ON PROBLEM SOLUTION					
Indirect contributing factor: INSUFFICIENT PUBLIC SERVICE ENGAGEMENT					
Intervention strategy	**Who is the target for change?**	**What will change?**	**Type**	**Intervention lokation**	**Scope**
Organized action on ambrosia eradication in the community Indirect contributing factor **Insufficient cooperation with the inhabitants on ambrosia eradication**	Working population; ecological associations; groups of citizens, soldiers at civilian military service; students; prisoners	Cooperation level with population on ambrosia eradication	Organized action on ambrosia eradication in the community	The Town of Sombor and regional and local roadsides	According to the plan with regard to the spread map and citizens' reports

Table 5 **WORK BREAKDOWN STRUCTURE**

Intervention I **Impact objective**	To increase the knowledge about ambrosia problem for 15% compared to the present level in the Sombor area within 1 year

Level 1 **Process objective**	To increase the information level of the population about ambrosia problem for 25% compared to the present situation in the Sombor area within 1 year

Level 2 **Process objective**	To increase the media cover of the problem for 35% compared to its current presence in the media in the Sombor area from May to June within 1 year (once a week on local radio and TV stations making radio and TV programs of educational and advisory character putting an emphasis on education i.e. to teach people how to recognize the plant and how to avoid the contact with allergen; making radio and TV clips for daily broadcasting; local newspaper weekly reports on ambrosia problem and its effects; public appeals to citizens made by eminent public people to join the action; in the Sombor area, from May to June, 2 week a year)

Level 3
Activities

Activity 1	**Activity 2**	**Activity 3**
Reaching the agreement with the local media representatives	Development of the work plan	Activity schedule

Level 4
Tasks

Tasks	**Tasks**	**Tasks**
-To meet the representatives of the local media - To define the needs - To get the approval	-Activity design	-To meet the person responsible for the schedule -To agree on dates of the activities

Table 6 **WORK STRUCTURE SURVEY**

Intervention II To increase the level of cooperation of authorized bodies on ambrosia
Impact objective problem solution by making a decision to continuously carry out an organized action on ambrosia eradication in the town, along regional and local roadsides in the period of 3 years, within 1 year

Level 1 To increase the level of public service engagement on chemical ambrosia
Process objective eradication by spraying for 20% compared to the spread map in the Sombor area and along regional and local roads, twice within a year

Level 2 To increase the level of population and public service mutual activities on
Process objective mechanical ambrosia eradication by mowing for 20% compared to the spread map, in the Sombor area and along regional and local roads, twice within a year
(to form two volunteer teams which would perform mechanical Ambrosia eradication by mowing in cooperation with the public service teams in the Sombor area and along regional and local roads twice within a year – from 20th May to 5th June for the first time and from 20th July to 5th August for the second time)

Level 3 Activities

Activity 1	**Activity 2**	**Activity 3**
Getting permission of local authorities	Development of the work plan	Activity schedule

Level 4 Tasks

Tasks	**Tasks**	**Tasks**
-To meet the representatives of local authorities -To describe the problem -To reach the agreement about the way how to do the action	-To reach the agreement with the public service representatives about team formation and activity range -To reach the agreement with citizen representatives about the team formation and activity range -To coordinate activities	-To meet the coordinator responsible for volunteer team and the public service team cooperation -To set the action dates with regard of teams and location

Table 7. MONITORING AND EVALUATION PLAN (Intervention I)

Health problem: High percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms (42,0%) disregarding sex, age or socio-economic characteristics, the highest in the third quarter of the year (July-September), in the Sombor area,2004					
Objective: To decrease the percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms from 42% to 20%, in the Sombor area within 5 years					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms	The Allergy Department report	Yearly	The authorized person of the Thoracic Department, General Hospital, Sombor	Before the beginning of the Project and in the end of the Project year	The public The local authorities
Determinants:Exposure to the agent– exposition					
Objective: To decrease the exposure level to ambrosia pollen by increasing knowledge about ambrosia and the ways of avoiding contact with allergen, in the Sombor area within 3 years					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The range of performed activities on decreasing the exposure compared to the planned one	Project team reports	After the activities	Coordinator	In the end of the Project year	Expert services The public Local authorities
Direct contributing factors: Insufficient knowledge on ambrosia problem					
Objective: To increase the knowledge on ambrosia problem for 15% compared to the present level, in the Sombor area within 1 year					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The increase of knowledge level (in %) about ambrosia problem	Poll results (before and after)	After the activities	The person authorized for the poll and a coordinator	Before the beginning of the Project and in the end of the Project year	Expert services The public Local authorities
Indirect contributing factors (1): Insufficient information of the population					
Objective: To increase the information level of the population about ambrosia for 25% compared to the present situation, in the Sombor area within 1 year					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The increase of the information level (in %) about ambrosia problem	The poll results (before and after)	After the activities	The person authorized for the poll and a coordinator	Before the beginning and in the end of the Project year	Expert services The public Local authorities
Indirect contributing factors (1a): Insufficient media problem cover					
Objective: To increase the media cover level of the problem for 35% compared to its present participation in the media, in the Sombor area, from May to June within 1 year					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The number of radio and TV programs, clipsand reports broadcasted/ no. of planned	The local media reports	After the activities	The person authorized for the relationship with the media and a coordinator	In the end of the Project year	Expert services The public Local authorities

Table 8. MONITORING AND EVALUATION PLAN (Intervention II)

Health problem:High percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms (42,0%), disregarding sex, age or socio-economic characteristics, the highest in the third quarter of the year (July-September), in the Sombor area, 2004					
Objective: To decrease the percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms from 42% to 20%, in the Sombor area, within 5 years					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The percentage of those overly sensitive to ambrosia pollen in the total number of tested people with allergy symptoms	The Allergy Department report	Yearly	The authorized person of the Thoracic Department, General Hospital in Sombor	Before the beginning of the Project and in the end of the Project year	The public Local authorities
Determinants: The ambrosia spread in the Sombor area					
Objective: To decrease the ambrosia spread level for 60% compared to the spread map, in the Sombor area and along regional and local roads within 3 years					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The surfaces where ambrosia has been eradicated (in %) compared to the ambrosia spread in the region	The public service reports	After the activities (June and August)	The authorized person of the public service and the team representative authorized for the cooperation with the public service	In the end of the Project year	Expert services The public Local authorities
Direct contributing factors: Insufficient cooperation of authorized bodies on problem solution					
Objective: To increase the cooperation of authorized bodies on ambrosia problem solution by deciding to continuously carry out an organized action on ambrosia eradication in the town area and along regional and local roadsides in the period of 3 years within 1 year					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The number of held meetings/the number of the planned ones	The meeting reports and decisions	After the activities	The team representatives for cooperation with authorized bodies	In the end of the Project year	Expert services The public Local authorities
Indirect contributing factors (1): Insufficient public service engagement					
Objective: To increase the level of public service engagement on chemical ambrosia eradication by spraying for 20% compared to the spread map, in the town area and along regional and local roadsides, twice within 1 year					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The public service team activity range on ambrosia eradication by spraying (in %) compared to the ambrosia spread map	Public service reports	After the activities	The public service authorized person and the team representative authorized for the cooperation with the it	In the end of the Project year	Expert services The public Local authorities
Indirect contributing factors (1a): Insufficient cooperation with population on ambrosia eradication					
Objective: To increase the level of population and public service mutual activities on mechanical ambrosia eradication by mowin for 20% compared to the spread map, in the town area and along regional and local roadsides, twice a year					
Indicator	Source of Data	Frequency	Staff Person Responsible	Report due when?	Report to whom?
The number of volunteers involved in the action;the range of volunteer teams and public service mutual activities on mechanical ambrosia eradication by mowing (in %) compared to the spread map	The report of a coordinator for public service and volunteer teams cooperation	After the activities	The coordinator for the public service and volunteer teams cooperation and the team representative for the cooperation with the public service	In the end of the Project year	Expert services The public Local authorities

Table 9. **ESTIMATED PROGRAM COST**
YEAR 1

Budget items	**Activity 1.**	**Activity 2.**	**Activity 3.**	**Total cost**
Personnel	70 + 140 210	115 + 2700 2815	45 + 70 115	3140e
Equipment		825 ***5000**		5825e
Supplies		750 + 1200 1950		1950e
Facilities				
Contracts				
Travels				
Other		Other 5% 545		545e
Total				***11.460 e**

***if we include the expenses for the purchase of the device for pollen grain measuring (5000e)**