The institution

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Address: Falenty, 05-090 Raszyn near Warsaw, Poland, www.imuz.edu.pl,
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Represented by:
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Is interested in the participation in a project that will be prepared and submitted in the following topic:

Number and title of the area (from Work Programme):
Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environment

Number and title of the open topic (from Work Programme):
KBBE-2008-1-2-01: Development of appropriate indicators of the relationship between organic/low-input farming and biodiversity

Is interested in the participation in a project that will be prepared and submitted in the following topic:

Short description of the organisation: The Institute for Land Reclamation and Grassland Farming carries out research and application works in the field of environmental sciences and agronomy, in particular: preservation of natural values of rural environment, water management issues in rural areas, irrigation and agromelioration of agricultural lands, flood and droughts problems, sanitary issues in rural areas, management of pastures and meadows, multifunctional and sustainable development of rural areas (at the level of village, commune, region, river basin), preservation and proper utilization of the natural resources and values of regions (bio- and landscape diversity, protection of water, soils and air), development of technical and natural infrastructure for water supply and sewage management in rural areas. IMUZ employs 234 persons (10 professors, 14 assistant professors, 37 doctors) employed in 7 research-scientific departments at Falenty and in 5 regional specialized divisions throughout the country, 2 experiment farms and 2 research stations. They are specialized in the following professional and scientific areas: agrometeorology, water management, environmental protection, water-engineering, land-engineering (country roads, flood protection), land melioration, reclamation, agromelioration, rural water supply, sewerage and sewage plants, waste management, meadow science, science of commodities, surface washings, soil science and biology, chemistry, geography and geology.

Proposed contribution to the project:
Low-input system of farming favors to maintenance of rich flora of grasslands. Their natural value is inversely correlated with productive activity. The intensity of production leads to declines in quality and quantities of plant species. It is necessary to evaluate the level of farming intensity conternal with the threshold quantity and quality of grasslands species. The number of plants species (vanishing species, protected and belonging to precious herbs) will be the indicators of plant-diversity and plant communities estimation. The aim of study will be evaluation of plant-diversity of permanent grasslands in low-input system of farming. For evaluation of mentioned processes will be used indicatory methods, elaborated by Shannon, Oświt, Filipek. The genesis of permanent grasslands in Poland is based on soil type, moisture conditions and location in land. These factors in connection with type of utilisation define the formation of divers plant cover, in regard to natural and productive value. In low-input system of farming two methods of farming: according to principles of organic farming and extensive low-input farming will be analysed. The main attention will be paid to ways of fertilization, prato-technical measures, grassland utilisation (cut, pasture), the conservation of meadow sward and fodder quality. Establishing an ongoing assessment of the condition and health of soil resources is vital maintaining the sustainability of agriculture and its productivity. The farming system, especially organic agriculture affected not only soil health but also biodiversity of soil organisms. Diversity of soil organisms may be used as good biological indicator of soil productivity. In a project the effect of farming system on agroecosystems will be studied using microorganisms and selected soil fauna participating in organic matter degradation will be studied. Ten different farms including organic farms were selected as a experimental objects. Soil samples from 0 -20 cm level 3 times during vegetation season will be collected. For the purpose of present studies the typical soils under various crops and organic and conventional management will be chosen. The following groups of soil organisms will be investigated: total number of heterotrophic bacteria, number of actinomycetes, number of fungi, number of rhizospheric bacteria, number of aerobic and anaerobic cellulolytic bacteria. Additionally the activity of soil cellulose and soil respiration will be also measured.

Chosen references (publications, others):

Other information (if relevant):
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### Proposed contribution to the project:

The objective of the studies will be development and an application of the indicators for qualitative and quantitative assessments of linkages between organic/low-input farming systems and sustainable use of genetic resources in the Polish Carpathians. The indicators will link conservation problems of selected components of organic/low input farming with floristic biodiversity occurring in the mountain and foothill conditions. They will be based on the analyses of the field and experimental research and literature synthesis on variety of the nature aspects of organic farming. Simultaneously, the consideration will be given to the linkage between stakeholders in both organic/low input farming, and the grass field ecosystems, as well as forest in separated mountain basin.

The following set indicators will be taken into consideration: vegetation cover, climate impact as well as an elevation a.s.l., exposition, biodiversity in the habitat aspect, after Shannon Wiener method. Furthermore, the set indicators will be studied which include: ratio between organic and conventional produce, trends of percentage of agricultural land devoted to forage, the number of cuts (mowing), stocking rates (LU), total input of nutrients (organic and mineral fertiliser) less crop consumption, nitrate and pesticide pollutions, density of linear elements and covered land at a farm level. The above indicators will facilitate the characterisation of organic/low-input farming systems. Their verification will taking place under field conditions in pilot farms which will be selected for a research programme implementation. In the work, apart from the newly established experimental field trials, different results will be used which originated from own studies conducted in the Carpathian, particularly from the Jaworki station IMUZ (600 m a.s.l.- 49°N 20°E) often in long measurements series. The results will be prepared in hierarchies in the form of convenient indicators, which will allow on parameterisation of nature-farming specific of mountain regions. The above will constitute the base for complex approach to the idea including conservation, biodiversity as well sustainable eco-economical development of the indicated region.

### Chosen references (publications, others):


Other information (if relevant): Participation in the projects: FAO TCP/NER/6711 (Low-input grassland prod. Systems) -EC EVK2-CT-1999-2006, BIOFORUM, SAFO, SAFO, QLK5-CT-2002-02541
Is interested in the participation in a project that will be prepared and submitted in the following topic:

| Number and title of the area (from Work Programme) | Area 2.1.3 Optimised animal health, production and welfare across agriculture, fisheries and aquaculture |
| Number and title of the open topic (from Work Programme): | KBBE-2008-1-2-03: Assessment and mitigation of the impact of aquaculture on wild populations Call: FP7-KBBE-2008-2B |

Short description of the organisation: The Institute for Land Reclamation and Grassland Farming carries out research and application works in the field of environmental sciences and agronomy, in particular: preservation of natural values of rural environment, water management issues in rural areas, irrigation and agromelioration of agricultural lands, flood and droughts problems, sanitary issues in rural areas, management of pastures and meadows, multifunctional and sustainable development of rural areas (at the level of village, commune, region, river basin), preservation and proper utilization of the natural resources and values of regions (bio- and landscape diversity, protection of water, soils and air), development of technical and natural infrastructure for water supply and sewage management in rural areas. IMUZ employs 234 persons (10 professors, 14 assistant professors, 37 doctors) employed in 7 research-scientific departments at Falenty and in 5 regional specialized divisions throughout the country, 2 experiment farms and 2 research stations. They are specialized in the following professional and scientific areas: agrometeorology, water management, environmental protection, water-engineering, land-engineering (country roads, flood protection), land melioration, reclamation, agromelioration, rural water supply, sewerage and sewage plants, waste management, meadow science, science of commodities, surface washings, soil science and biology, chemistry, geography and geology.

Proposed contribution to the project: The aim of project is to evaluate the occurrence and distribution of enterobacteria in selected fish ponds located near Warsaw. For determination of number of enterobacteria in investigated water samples the plate and tube dilution methods will be used. The pure strains of bacteria will be also isolated and characterized by Api tests. The possibility of application of fluorescent hybridization in situ method (FISH) for assessment of distribution of enterobacteria in fish ponds water will be also studied.

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**Proposed contribution to the project:** The aim of present proposal is to study the effect of Effective Microorganisms (EM) preparation on sanitary quality of fish pond water. EM preparations contain several groups of microorganisms which improve the chemical and biological properties of soil. Recently the EM preparation are also applied in aquaculture for increase quality and quantity of shrimps and fish yield. The project is planned to locate in fish ponds of Institute of Land Reclamation and Grassland Farming in Falenty, Poland. The water in ponds will be sprayed with EM preparation and in 1 month intervals the following analysis will be done: total number of psychrophilic and mesophilic bacteria, index coli, number of faecal bacteria. Additionally water temperature, pH, oxygen concentration, redox potential, conductivity, alkalinity, turbidity, nitrate, nitrite, ammonium, phosphates, CO2, BOD and heavy metal concentration as a physicochemical quality indicators of water samples will be also measured. As a control water samples collected from untreated places will be used.

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| **Number and title of the area (from Work Programme)** | **Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environments.**  
**Area 2.1.2. Increased sustainability of all production systems (agriculture, forestry, fisheries and aquaculture); plant health and crop protection** |
| **Number and title of the open topic (from Work Programme):** | **KBBE-2008-1-2-07: Forest energy – Short rotation forestry as a sustainable and eco-efficient land use management system for fossil fuels substitution within CDM-projects** |

| **Short description of the organisation:** | The Institute for Land Reclamation and Grassland Farming carries out research and application works in the field of environmental sciences and agronomy, in particular: preservation of natural values of rural environment, water management issues in rural areas, irrigation and agromelioration of agricultural lands, flood and droughts problems, sanitary issues in rural areas, management of pastures and meadows, multifunctional and sustainable development of rural areas (at the level of village, commune, region, river basin), preservation and proper utilization of the natural resources and values of regions (bio- and landscape diversity, protection of water, soils and air), development of technical and natural infrastructure for water supply and sewage management in rural areas.  
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| **Proposed contribution to the project:** |
| The proposed contribution in the field of the energetic utilization of wooden biomass involves different aspects of water management in areas with short rotation forestry.  
Our possible contribution will involve: determination of areas suitable for short rotation forestry (e.g. energetic willow), irrigation and drainage requirements, required soil water content and required ground water table depth, forming water conditions, evaluation of required water and soil conditions, determination of water use and water demands of chosen wooden plantations, evaluation of impact of short rotation forestry on water resources in the catchment, assessment of different utilization techniques for the dendromass energetic use. |


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Number and title of the area (from Work Programme): Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environment

Number and title of the open topic (from Work Programme): KBBE-2008-1-2-08: Novel approaches for reducing nitrogen losses

Short description of the organisation: The Institute for Land Reclamation and Grassland Farming carries out research and application works in the field of environmental sciences and agronomy, in particular: preservation of natural values of rural environment, water management issues in rural areas, irrigation and agromelioration of agricultural lands, flood and droughts problems, sanitary issues in rural areas, management of pastures and meadows, multifunctional and sustainable development of rural areas (at the level of village, commune, region, river basin), preservation and proper utilization of the natural resources and values of regions (bio- and landscape diversity, protection of water, soils and air), development of technical and natural infrastructure for water supply and sewage management in rural areas. IMUZ employs 234 persons (10 professors, 14 assistant professors, 37 doctors) employed in 7 research-scientific departments at Falenty and in 5 regional specialized divisions throughout the country, 2 experiment farms and 2 research stations. They are specialized in the following professional and scientific areas: agrometeorology, water management, environmental protection, water-engineering, land-engineering (country roads, flood protection), land melioration, reclamation, agromelioration, rural water supply, sewerage and sewage plants, waste management, meadow science, science of commodities, surface washings, soil science and biology, chemistry, geography and geology.

Proposed contribution to the project: Participation in research on limitation of nitrogen surplus generated by farm, especially by dairy farms, for the purpose protections water and atmosphere quality. Particularly this participation can refer:
- evaluation flows of nitrogen and its efficiency in the process farming production in sequence soil→plant→animal→soil;
- identification of sources and reasons losses of nitrogen in different farming systems;
- efficiency of measures and farming practices to reduce nitrogen losses to water;
- modellings flow of nitrogen in the farm.

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Proposed contribution to the project:
Hydrological and hydrogeological basis of assessment and predictions of surface and groundwater resources changes and their quality; the human activities effects on losses of nitrogen.
Numerical modelling of stream flow, movement of groundwater flow and contaminants transport; regional models the saturated and unsaturated zones.
The study of transport of nitrogen in different hydrogeological conditions.
The role of wetlands as a protection of nitrogen losses in agricultural area.

Chosen references (publications, others):
10. Mioduszewski W., Radezuk L., Quast J. Diffuse entries in rivers of the Odra Basin. DVWK Materialien nr 9, Bonn 1999: 120.

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**Proposed contribution to the project:**

In the river catchments of Płonia (the area particularly sensitive) will be checked methods of protection a surface water and groundwater: –green fields- aftercrop, biochemical barriers (ecotons) and “river treatments” –which reduce biogens compound in surface water. A management of nitrogen is based on the nitrogen balance of field and an agricultural farm on scale. Identification of ways of losses compounds of nitrogen losses by an outflow from surface and ground, a gas losses (for example measurement emission an Ammonia and a Dinitrogen Oxide) depending on soil and hydrological conditions on a small scale of agricultural catchments. Agrotechnology treatments (full cultivation with plowing, cultivation without plowing) and changes in displacement a nitrogen compounds in water, soil and air.

**Chosen references (publications, others):**

**Durkowski T., Burczyk P., Królak B., „Stężenie składników chemicznych w wodach gruntowych i roztworze glebowym w małej zlewni rolniczej”, Woda-Srodkowisko-Obszary Wiejskie, 2007, T. 7, z. 1 (19), IMUZ Falenty, s. 5-15**

**Durkowski T., „Zanieczyszczenia małych rzek rolniczych substancjami nawozowymi”, Praca zbiorowa pod red. A. Kostrzewskiego i J. Szpikowskiego pt. „Funkcjonalowanie geoekosystemów zlewni rzecznych”, Uniwersytet AM w Poznaniu, 2007, s.263-274.**

**Durkowski T., Królak B. „Wpływ warunków meteorologicznych i hydrologicznych na odpływ substancji biogennych z małej zlewni rolniczej” Państwowa Inspekcja Ochrony Środowiska, Biblioteka Monitoringu Środowiska, W: Zintegrowany monitoring środowiska przyrodniczego. 2006, s. 316-326.**

**Durkowski T., Burczyk P., Królak B., „Ocena odpływu składników nawałowych ze zlewni rolniczych jeziora Miedwie w okresie restrukturyzacji rolniczej”, Woda-Srodkowisko-Obszary Wiejskie, 2007, T. 6, z. 2 (18), IMUZ Falenty, s. 51-63**

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Proposed contribution to the project:

The aim of the project is to explore (physics-chemical, biological) present condition of choose a body of water and estimation of changes its fertility. The quality of water is results a mutual influence of several factors which stay in close connections with ecosystems, for example: hydrological and hydrochemical relation, temperature of water, organically pollution, respiratory and biosynthesis processes, composition of aquatic flora and fauna. The biological indicators of species are: Pisces with family Salmonidae, Coregonidae, and Cyprinidae, and crayfish: Astacidae, Cambaridae, will be checked for health condition, sex, mass of body, and measurements length of body (total, corporalis, caudalis, length of carapace, width of carapace and claws). The aim of surveys will be to assess the quality of water in numbers of fecal coli connections with ecosystems, for example: hydrological and hydrochemical relation, temperature of water, organically pollution, respiratory and biosynthesis processes, composition of aquatic flora and fauna. The biological indicators of species are: Pisces with family Salmonidae, Coregonidae, and Cyprinidae, and crayfish: Astacidae, Cambaridae, will be checked for health condition, sex, mass of body, and measurements length of body (total, corporalis, caudalis, length of carapace, width of carapace and claws). The aim of surveys will be to assess the quality of water in numbers of fecal coli type group bacteria. Moreover the water will be physics-chemical analysed such as: pH water, contents oxygen, hardness, a present of cations of calcium, nitrogen, phosphorus, pollution, respiratory and biosynthesis processes, composition of aquatic flora and fauna. The biological indicators of species are: Pisces with family Salmonidae, Coregonidae, and Cyprinidae, and crayfish: Astacidae, Cambaridae, will be checked for health condition, sex, mass of body, and measurements length of body (total, corporalis, caudalis, length of carapace, width of carapace and claws). The aim of surveys will be to assess the quality of water in numbers of fecal coli type group bacteria. Moreover the water will be physics-chemical analysed such as: pH water, contents oxygen, hardness, a present of cations of calcium, nitrogen, phosphorus.

Chosen references (publications, others):


Other information (if relevant):

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The institution

Name: Institute for Land Reclamation and Grassland Farming
Address: Falenty, 05-090 Raslyn near Warsaw, Poland, www.imuz.edu.pl, e-mail: imuz@imuz.edu.pl

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Is interested in the participation in a project that will be prepared and submitted in the following topic:

Number and title of the area (from Work Programme): Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environment

Number and title of the open topic (from Work Programme): KBBE-2008-1-4-04: Common Agricultural Policy – the spatial dimension in EU rural development programmes

Short description of the organisation: The Institute for Land Reclamation and Grassland Farming carries out research and application works in the field of environmental sciences and agronomy, in particular: preservation of natural values of rural environment, water management issues in rural areas, irrigation and agromelioration of agricultural lands, flood and droughts problems, sanitary issues in rural areas, management of pastures and meadows, multifunctional and sustainable development of rural areas (at the level of village, commune, region, river basin), preservation and proper utilization of the natural resources and values of regions (biomass, landscape, protection of water, soils and air), development of technical and natural infrastructure for water supply and sewage management in rural areas.

IMUZ employs 234 persons (10 professors, 14 assistant professors, 37 doctors) employed in 7 research-scientific departments at Falenty and in 5 regional specialized divisions throughout the country, 2 experiment farms and 2 research stations. They are specialized in the following professional and scientific areas: agrometeorology, water management, environmental protection, water-engineering, land-engineering (country roads, flood protection), land melioration, reclamation, agromelioration, rural water supply, sewage management, waste management, meadow science, science of commodities, surface washings, soil science and biology, chemistry, geography and geology.

Proposed contribution to the project:
Our contribution to the project would be investigation on the influence of the Polish accession to UE on the development of country areas.

The particular research would concern:
- changes (growth) in population incomes in rural areas, with special attention paid to regional disparities,
- demographic changes, among others internal and foreign migrations,
- changes in farms agrarian structure,
- changes in structure of lands usage and structure of sowings on arable grounds,
- changes in plants productivity in relation to the quantity of used fertilizers and pesticides,
- development of agricultural infrastructure aimed at improvement of lands productivity (drainage or irrigation systems),
- development of the roads infrastructure, environment protection infrastructure (sludge refineries) and water supply.

The aim of researches would be to prove regional difference in rural areas development on the background of the level of UE subsidies gaining and expenditure. The next step would be to propose possible modification in the rules of subsidies granting for the rural areas of the lowest development level. The research would cover the whole country and would be based on the statistical method of investigation.

Chosen references (publications, others):
1. Lipiński J. 2006. Differentiation of economic potential and social problems in subregions of Poland. Woda-Środowisko-Obszary Wiejskie, t. 6, z. 1(16) s. 251-265
6. Lipiński J. 2005. Cereal yielding and commerciality of agriculture production against the values of rural areas in regions. Woda-Środowisko-Obszary Wiejskie, t. 4, z. 2b(12) s. 57-67
8. Lipiński J., Szczygielski L., 2005. Finance support from Structural Fund of revitalization Czernica river the chance of tourism and economic activity of Sława community and town. Wiadomości Melioracyjne i Łąkarskie. nr 2
10. Lipiński J. 2004. The condition of rural area infrastructure development on the day of the Polish accession to UE. Wiadomości Melioracyjne i Łąkarskie. nr 2

Other information (if relevant):