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**DIVTOB:**  
Diversification for Tobacco Growing Regions  
in the Southern European Union

**Project No.: SSPE-022739**

**Duration: May 1, 2006 to January 31, 2008**

**Budget: ~ 400.000 €**

**Coordinator: Prof. Dr. Thomas Jungbluth**

UNIVERSITÄT HOHENHEIM



**Contact: [jungblut@uni-hohenheim.de](mailto:jungblut@uni-hohenheim.de)**

**Tel: +49-711-459-22835**





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# Partners of DIVTOB Project

**University of Hohenheim (coordinator)**

**University of Thessalia**

**Humboldt University**

**Aristotle University of Thessaloniki**

**University of Algarve**

**Instituto Sperimentale per il Tabacco**

**University of Natural Resources and Applied Life Science, Vienna**

**Asociación para el desarrollo del Valle de Alagón**

**Development Agency of Ellassona-Kissavos S.A.**

**Agencia de Empleo y Desarrollo Local de Losar de la Vera**

**Tabacco Cooperative of Toumpa**

**Tabacchicoltori Veneti**

**Associação de Produtores de Tabaco Tipo Burley**

**COUAGA . Vegas Granada Cooperativa de Tabaco**

**Germany**

**Greece**

**Germany**

**Greece**

**Portugal**

**Italy**

**Austria**

**Spain**

**Greece**

**Spain**

**Greece**

**Italy**

**Portugal**

**Spain**





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## The DIVTOB Mission

- For the Tobacco Farmers in Greece, Italy, Portugal and Spain to provide a basis that they can make their decisions for their future.
- To quantify in terms of hectares, working hours and income the magnitude of necessary diversification efforts in order to give a sustainable future to the Tobacco farmers.





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## Program of the DIVTOB Study

- **Part I: Analysis of the actual situation of the Tobacco Farmers in Greece, Italy, Portugal and Spain**
- **Part II: Selection of possible alternatives for Tobacco**
- **Part III: Conclusions**
- **Part IV: Proposals**





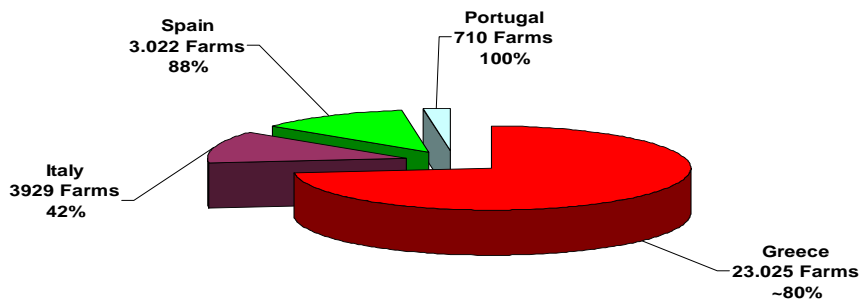
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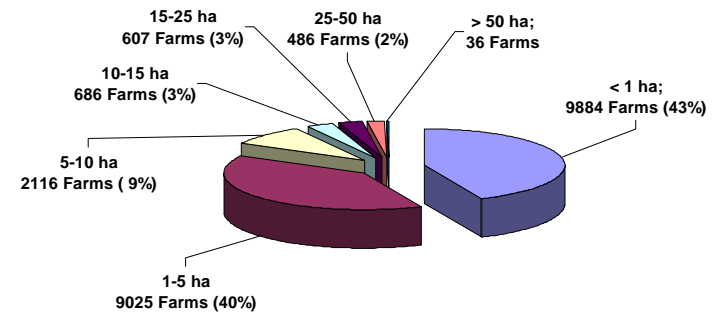
# Socio-economic situation of Tobacco Farmers in the DIVTOB sample

K1

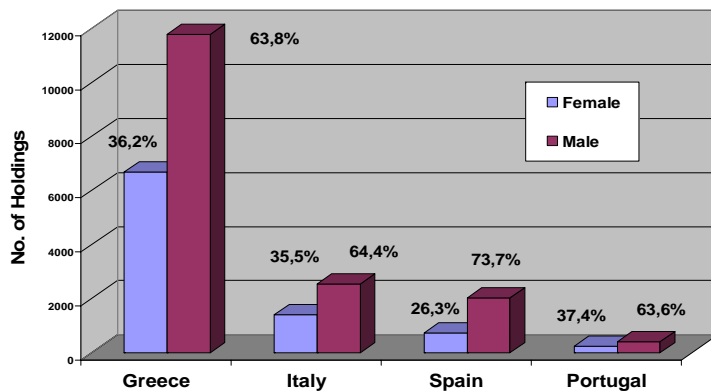
Participation in WP2 Questionnaires  
Data Basis: 30.511 Tobacco Farms



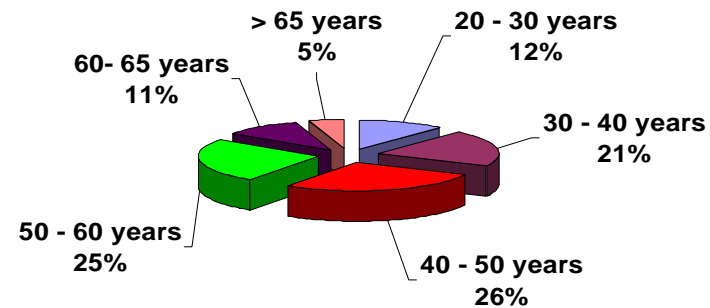
Distribution of Farm Size of Tobacco Holdings  
Data Basis: 22.840 Tobacco Farms



Gender Distribution of Tobacco Farmers  
Data Basis: 25.759 Tobacco Farms



Age Distribution of EU Tobacco Farmers  
Data Basis: 21.797 Tobacco Farmers







## Actual Income Situation for Tobacco Farmers

- **Alternatives must be sustainable for a longer time period, not until 2010/2013, we must look beyond!**
- **Economic Frame of the Tobacco farms < 15 ha:**
- **Examples depend on Tobacco Variety and Regions**

Type of Farm	Gross Margin
Farm of 15 ha with 3 ha of Tobacco	~ 44.000 €
Farm of 4 ha with 3 ha of Tobacco	~ 41.000 €
Farm of 4 ha with 1 ha of Tobacco	~ 11.500 €
Farm of 1 ha with 1 ha of Tobacco	~ 12.500 €



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## Conclusion for the actual situation

- 96% are family farms
- 95% of the farms have a size < 15 ha
- Typical Tobacco cultivation area for family farms is 0,5 ha to 3,0 ha
- Tobacco pays the family farms
- ~ 35% of the Tobacco farmer are women

### Major Challenge:

The socio-economic dimension of the Tobacco Reform on the affected family farms is very difficult to overcome and needs an innovative approach







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## What are the real Alternatives ?

- **(Additional) economic activities off farm ?**
- **Aromatic and Medical Plants ?**
- **Energy plants and Renewable Energy ?**
- **Rural Tourism ?**
- **Aquaculture ?**
- **Horticulture and Fruit Production ?**
- **New crops ?**
- **Or to continue to grow Tobacco in Regions with good market quality ?**



# Magnitude of Diversification I

Farm Type	FADN Results 2004 for Italy			Tobacco Farm Size Class	Number of Tobacco Farms according to Farm Type Size *				Total
	Average Size	Income (2004)	Farm Workforce**		Italy	Greece	Spain	Portugal	
<b>Horticulture</b>	3,5 ha	33.244 €	2,40 WU	0 – 5 ha	2.884	13.990	1.531	504	18.909
<b>Permanent tree crops</b>	7,3 ha	14.941 €	1,27 WU	5 – 10 ha	257	981	797	81	2.116
<b>Granivorous livestock</b>	14,9 ha	140.112 €	2,46 WU	10 – 15 ha	153	391	118	24	686
<b>Arable crops</b>	18,7 ha	11.003 €	1,04 WU	15 – 25 ha	105	343	138	21	607
<b>Herbivorous livestock</b>	31,1 ha	43.000 €	1,81 WU	> 25 ha	77	377	59	9	522
<b>Total</b>					3.476	16.082	2.643	639	22.840

Source: National Institute of Agricultural Economics: Italian Agriculture in figures 2007: FADN 2004.

\* DIVTOB Sample

\*\* = Standard Work Unit



# Pro/Cons for Alternatives

Diversification Aspects	Observations	Concerned Regions or Farm Type
Activities off Farm	Most of the Tobacco Regions have a high Long-Term Unemployment Rate within the active population	Examples: <ul style="list-style-type: none"> <li>• Makedonia up to 12%</li> <li>• Campania 9%</li> </ul> <small>(Source: DG-Agri)</small>
Energy Crops	<ul style="list-style-type: none"> <li>• High loss of farm income</li> <li>• Complete loss of employment</li> </ul>	<ul style="list-style-type: none"> <li>• Only Farms &gt; 100 ha</li> <li>• 5 Farms in the DIVTOB Sample</li> </ul>
Aromatic and Medical Plants	<ul style="list-style-type: none"> <li>• The market analysis by the DIVTOB Project shows no market potential in general</li> <li>• Only local importance</li> </ul>	<ul style="list-style-type: none"> <li>• Examples that might work:</li> <li>• Arthemsia in Campania</li> <li>• Thyme, Basil, Greek Mountain Tee in Ellassona</li> </ul>
Aquaculture	Probably too difficult to implement	<ul style="list-style-type: none"> <li>• High investment</li> <li>• Could maintain labour</li> <li>• Could increase farm income</li> </ul>
Rural Tourism	No alternative at all	In most regions already exploited



# Requirements for Alternatives

Diversification Aspects	Constraints	Effect on Income and Employment
Small Tobacco Farms < 5 ha	<ul style="list-style-type: none"> <li>• Need high added value crops</li> <li>• Production systems with high investment costs (Hydroponics, aquaculture)</li> <li>• Organic field vegetable production</li> </ul>	<ul style="list-style-type: none"> <li>• Will maintain or even improve farm income</li> <li>• Temporal employment may be maintained</li> </ul>
Permanent Tree Crops	Only as an additional activity	<ul style="list-style-type: none"> <li>• Loss in income</li> <li>• Loss on Temporal employment</li> </ul>
Granivorous livestock farming	<ul style="list-style-type: none"> <li>• Needs a sector analysis whether new producers will not provoke heavy market disorders</li> <li>• High investment costs</li> </ul>	<ul style="list-style-type: none"> <li>• Could result in a strong increase in farm income</li> <li>• Employment level strong reduced.</li> </ul>
Arable crops or Herbivorous livestock farming (where appropriate)	“Ultima ratio” for the Tobacco farms > 25 ha	<ul style="list-style-type: none"> <li>• Heavy loss in income</li> <li>• Temporal employment lost</li> </ul>
Tobacco farms > 25 ha	<ul style="list-style-type: none"> <li>• May implement all possible diversification alternatives</li> <li>• To avoid income losses high investments are necessary</li> </ul>	<ul style="list-style-type: none"> <li>• May maintain income due to strong investments in the farms</li> <li>• Effect on employment depends on implemented alternative</li> </ul>



# Estimated Costs for Alternatives

Scenario:  
10.000 Farmers  
each 3 ha Tobacco  
shall diversify

\* Green House  
200.000 € per workplace

Alternative 3 ha Tobacco substituted by:	Investment on Farm Level	Investment on Producer Organisation (PO) Level	Total initial Investment	Estimated Total Gross Margin
0,5 ha Green House Production	400.000 €* for 0,5 ha Green House (e.g. Hydroponics)	Manipulation and Packing 1 Mio. € for 250 ha	4 Billion € on Farm Level  40 Mio. € on PO level	450 Mio. €
Aquaculture One In door plant	325.000 € for 3 Farmers together	none	~ 1,1 Billion €	500 Mio. €
3 ha Field Vegetable Production	10.000 € for Farm Equipment	Manipulation and Packing 500.000 € for 500 ha	100 Mio. € on Farm level  10 Mio. € on PO level	345 Mio. € with e.g. Table Tomato production
3 ha Stevia	Tobacco Equipment can be used	1 Mio. € per 500 ha for production facility	30 Mio. € Investment on PO level  + 10 Mio. € for approvals	300 Mio. €



## Conclusions DIVTOB I

- **A lot of diversification alternatives have been identified by the DIVTOB project and other national projects paid by the Tobacco funds.**
- **Most of the identified alternatives may have a limited local importance, but not a big impact on a larger number of farms.**
- **For the small Tobacco farms (< 15 ha) only a limited number of diversification alternatives can maintain their farm income:**
  - a) **Vegetable (and fruits) production either organic or conventional**
  - b) **Hydroponic production (soil less production)**
  - c) **Aquaculture**
  - d) **New crops e.g. Pomegranate, Stevia**
- **No identified alternative can be implemented until 2010.**
- **To diversify the Tobacco farms until 2013 a high investment in new production chains are necessary.**



# Conclusions DIVTOB II

	2008	2009	2010	2011	2012	2013	2014	2015	2016			
<b>Organic Fruit and Vegetables</b>												
Proposals for Financing and Contracts	█											
Sector Analysis		█										
Development of Regional Plans upon the Sector Analysis			█	█								
Coverion Time to Organic Vegetable and Fruit Production					█	█	█	█				
Certification Procedures and Training of the Farmers						█	█	█				
Start up Phase						█	█	█				
Full Production								█	█			
<b>Conventional Vegetable Production</b>												
Proposals for Financing and Contracts	█											Minimum Time Requirement
Sector Analysis		█										Maximum Time Requirement
Development of Regional Plans upon the Sector Analysis			█	█								
Training of the Farmers					█	█						
Start up Phase						█	█	█				
Full Production								█	█			
<b>Aquaculture</b>												
Proposals for Financing and Contracts	█											
Regional Feasibility Studies		█	█									
Training of the Farmers				█	█							
Start up Phase					█	█	█	█				
Full Production								█	█			
<b>Stevia Rebaudiana with Novel Food Approval</b>												
Proposals for Financing and Contracts	█											
Execution for Test for Approval		█	█	█								
Training of the Farmers					█	█						
Start up Phase						█	█	█				
Full Production								█	█			



## Conclusions DIVTOB III

- Socio-economics: **Diversification is in most of the Tobacco Growing Regions a very delicate undertaking as mainly small family farms are affected. A lot of interviews done during the DIVTOB project showed that the Tobacco farmers are not really prepared for the Tobacco reform.**
- Most prominent alternatives: **But as a matter of fact, there is no alternative available which can be implemented until 2010. That is a major challenge which needs further research and innovation.**
- Impact on Labor: **All scenarios show that the labor demand decreases whatever the alternatives are with the exemption of green house production.**
- Impact on Rural Development: **The diversification alternatives shall push the rural development and shall give the chance for new jobs opportunities in the secondary and tertiary job sector. However, investments in research and innovations are necessary.**





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# Proposals for further studies

according to the Exploitation Plan of the DIVTOB project (page 50 – 57)

- **Proposal 1: *To improve the economic feasibility of Tobacco produced in the EU. Study on the mechanisation of Tobacco production***

Estimated costs of the study: 5 Mio. €

Proposed Project Execution: 2009 to 2011

- **Proposal 2: *Improved information for the Tobacco farmers on diversification alternatives, up-date of the regional situation and development of regional plans with following elements:***

- a) Improved information and individual farm economic evaluation tool
- b) Up-dating of Diversification efforts of the Tobacco cooperatives in the DIVTOB target countries
- c) Vegetable and Fruit Production and development of regional plans
- d) Evaluation of all projects financed under the Tobacco funds Commission regulation (EC) No. 2182/2002

Estimated costs of the study: 1 Mio. €

Proposed Project Execution: Summer 2008 to Spring 2010 (18 months)

- **Proposal 3: *FP7-Projects for SME or SME Associations: for Technology Transfer of most feasible diversification alternatives***





# Some aspects about Stevia I

## Features of Stevia:

- **Natural high intense low calorie sweetener (Food Additive EEC89/107)**
- **Aroma enhancing activities**
- **Novel Food (EC97/258)**
- **High anti-oxidative potential, improves also the anti-oxidative potential in fruits and vegetables (Plant Strengtheners: EEC91/414)**
- **Anti-inflammatory action in human body**
- **Anti-mutagenic**
- **Pre-biotic in animals (fish, pork, chicken): Feed Additive: EC1831/2003**
- **Said to reduce hypertension and improve insulin resistance in human body (depends probably on specification) ?**

## Agricultural Developments in EU:

- **FAIR5-3751: Mechanisation of the crop**
- **Tobacco Funds project in Greece 2006/2007 and new trials in 2008**
- **Trials in Veneto and Granada: 3,2 – 5 tons / ha of dried leaves**
- **Overall results: Stevia can be grown in EU Tobacco Cultivation Regions**
- **A project on Research for SME is required to prepare the implementation**



# Some aspects about Stevia II

## Market possibilities:

- In the EU about 18.000 tons of artificial sweetener is consumed per year (2005) which can be substituted by 36.000 ha of Stevia
- By using its aroma enhancing properties low sugar soft drinks (3,5%) can be produced as very tasty, full aroma alternatives to “Light-Products”
- 2% of the 55,5 Billion Liters EU-Soft Drink Market will require a production of 10.000 ha of Stevia
- China is the big player in the Stevia business
- Coca-Cola and Cargill have published 25 patents for all food categories and plan to ask for approval in the EU = consequences for European Food Industry ?

## Legal Status in EU:

- Stevia is approved in EU as aroma component in animal feed
- Stevia is not approved as Novel Food (EC97/258) or as Food Additive (EEC89/107) in EU
- No approval so far as Feed Additive (EC1831/2003) and Plant Strengthenener (EEC91/414)



## Production scheme, Mass flow and Value added for Stevia rebaudiana production chain

