

Savonlinna, 29-30 of August 2005

## Revegetation activities in the Mediterranean areas

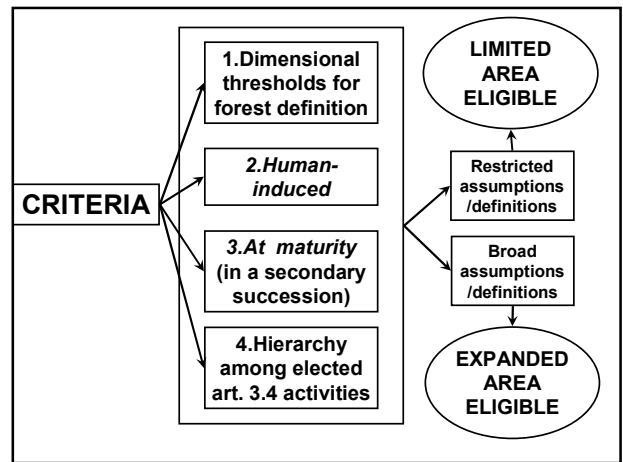
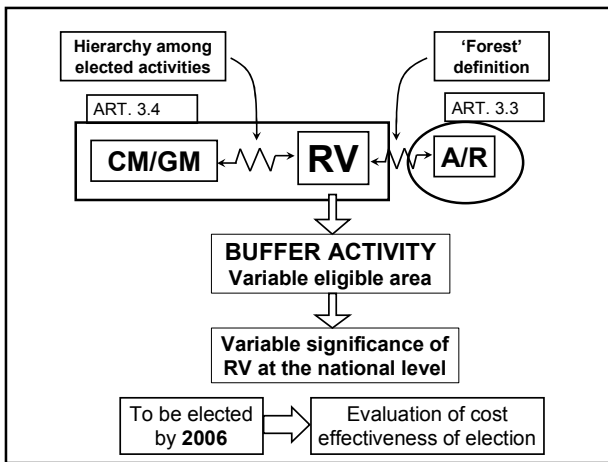
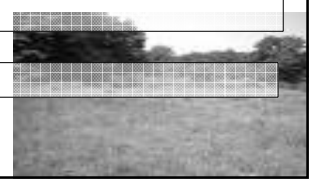
Giuliana Zanchi\* Davide Pettenella\*  
 Lorenzo Ciccarese\*\*, Maria Antonietta Del Moro \*\*\*  
 (\*) DITESAF – University of Padua  
 (\*\*) APAT – Rome  
 (\*\*\*) University of Rome

### Outline

**A. INTRODUCTION**  
 CRITERIA THAT INFLUENCE AREA ELIGIBLE FOR REVEGETATION (RV)

**B. SIGNIFICANCE OF RV in the MED. AREA:**  
 - Corine Land Cover analysis  
 - Comparison to a study area  
 - C-accumulation rates

**C. CONCLUSIONS**



**MEDITERRANEAN AREA**  
 → SIGNIFICANCE TO ACHIEVE THE KP COMMITMENTS  
 (UNDER BROAD ASSUMPTIONS/DEFINITIONS)

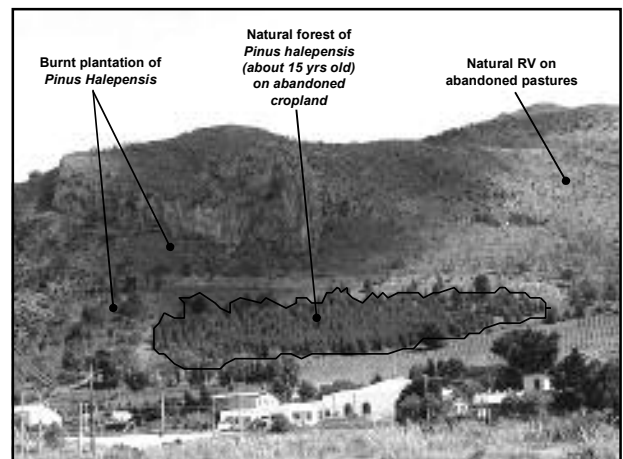
Forest expansion (1965-1994, FAO):  
 - EU : 10,1 Mha  
 - Med area: 7,2 Mha (70%)

Years	EU (Mha)	EU Mediterranean area (Mha)
1965	103.2	36.5
1970	106.9	39.5
1975	109.6	41.1
1980	110.9	42
1985	111.4	42.3
1990	112.7	43.1
1994	113.3	43.7
2000	113.9	44.3
2005	114.9	44.8
2008	115.2	45
2010	115.4	45.1
2012	115.6	45.3
1965-2012	12.4	8.8
1990-2012	2.9	2.2
2008-2012	0.4	0.3

ABANDONMENT of AGRICULTURAL AREAS

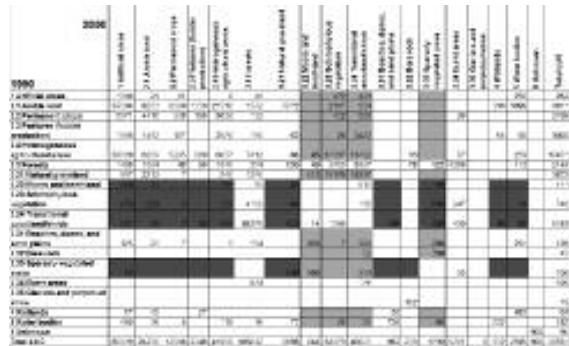
FOREST EXPANSION      SHRUBLAND EXPANSION (MAQUIS) → RV

Lack of data



### Corine Land Cover (Italy)

NO LAND COVER CLASS REPRESENTS RV  
 → TRACKING of LAND-USE CHANGES



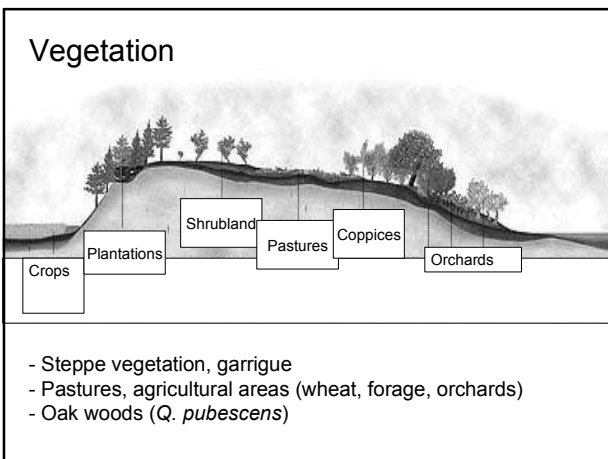
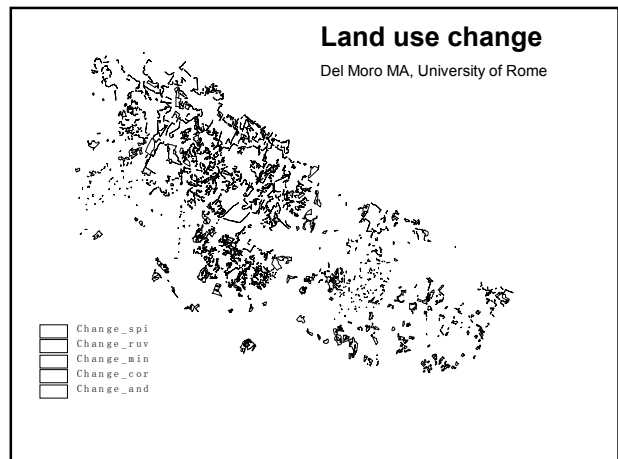
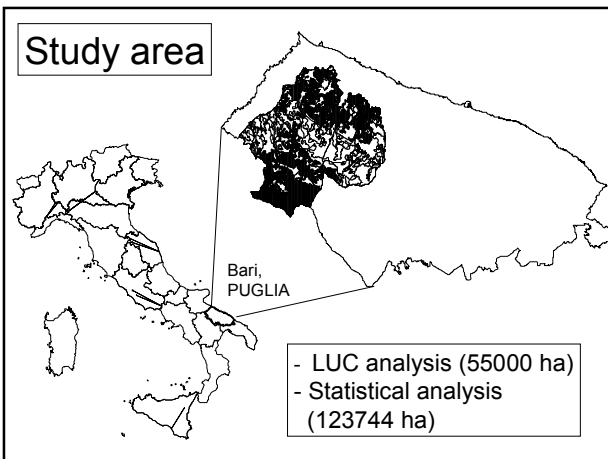
LUC	Surface (ha)
RV	88415
DV	4675
Net-RV	83740

→ 8374 ha/year

LUC	Surface (ha)
AR	103814
DF	16871
Net-AR	120685

→ 12068.5 ha/year

→ Abandonment leads to the development of forests mainly in alpine regions; RV processes affect the Mediterranean area

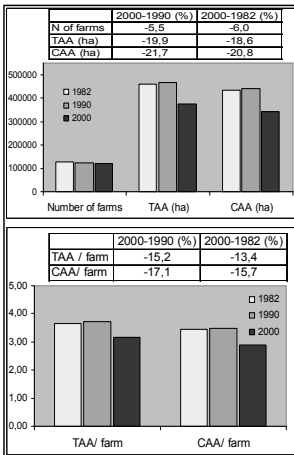


	111 Continuous urban fabric	112 Discontinuous urban fabric	121 Industrial or commercial units	131 Mineral extraction sites	141 Green urban areas	211 Non-irrigated arable land	221 Vineyards	231 Olive groves	242 Complex cultivation patterns	311 Broad-leaved forest	312 Coniferous forest	321 Natural grassland	322 Moors and heathland	324 Transitional woodland/shrub	332 Bare rock	and area at 1997
111 Continuous urban fabric	4.46															4.46
112 Discontinuous urban fabric	14.98															14.98
121 Industrial or commercial units																0.01
131 Mineral extraction sites			38.22	0.01												38.23
141 Green urban areas				0.18												0.18
211 Non-irrigated arable land	0.22	0.02		1536.80				0.88	0.01			2.09				1539.92
221 Vineyards				0.12	0.82		0.26									1.19
231 Olive groves				1.02	1.82	0.11	112.92	0.01				1.21	0.11			117.17
242 Complex cultivation patterns				7.35			0.01	363.40				2.31				373.07
311 Broad-leaved forest									77.08	0.01						77.09
312 Coniferous forest											188.73					188.73
321 Natural grassland	0.32	0.01	4.81	102.54			1.41	0.02	0.01		1516.72					1523.83
322 Moors and heathland												25.91				25.91
324 Transitional woodland/shrub													118.02			118.02
332 Bare rock				0.92	0.11	1.82										2.85
and area at 2001	4.46	16.72	0.04	44.03	0.18	1643.48	0.26	0.01	115.51	363.44	77.09	188.73	1521.02	25.91	118.04	4365.01

Land use change	Surface (ha)
Total RV (ha)	2.92
DV (ha)	0.02
Net RV (ha)	2.90
RV/yr (ha/yr)	0.73

→ 1990-2000: RV=7.3 ha (0.01% tot study area)

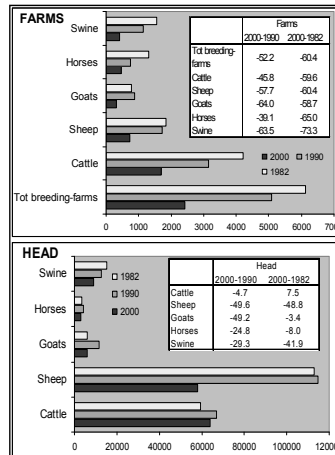


### Study area

#### Changes in the agricultural sector (Province level)

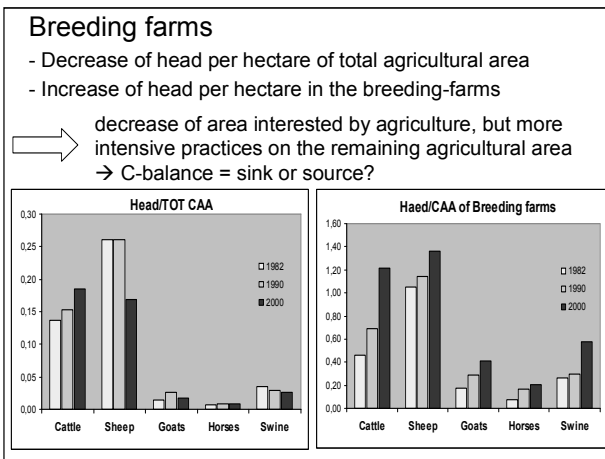
- 20% decrease of agricultural area (1990-2000)

- 15% decrease of average farm size (3 ha/farm in 2000)



#### Breeding farms (2000-1990):

Decrease in the total number of farms (>50%) and number of head



#### C- accumulation rates

HIGH UNCERTAINTIES

#### Carbon changes don't follow a single occurrence.

Several factors drive the carbon dynamics during a secondary succession:

- climate
- physiography (soil quality, exposure, slope, vegetation type)
- the former land-use
- disturbances

#### Sicily:

- Average maquis biomass: 26 t/ha, 0.7 t/ha/year  
Soil: -0,3 t/ha/year (>150% error)



## CONCLUSIONS

- Significance of RV constrained by elected criteria
- Under broad-assumptions natural vegetation expansion could play a role to achieve commitments in the Med area
- Very high uncertainties.
- CLC analysis
- C-accumulation rates
- Cost/benefit analysis should be developed before election (costs: monitoring, research)

