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Expert Workshop:
Assessing the Sustainable Yield in MAP Collection
INA, Isle of Vilm, Germany, 14-17 September 2006

What makes medicinal and aromatic plants special?



University in Landau
Institute for Natural Sciences

diversity of plant uses ..

Shelter

Transport

Tea

Liqueur

Dietary supplements

Varnishes

Essential oils

Tools

Clothing

Insecticides

Cosmetics

Medicines

Construction

Narcotics

Ornamental

Spices

Food

Sweets

Spirits

Paper



overlap of plant uses ...

Matricaria recutita, Chamomile

uses: medicine, tea,
cosmetics, household products



Glycyrrhiza spp., Liquorice

uses: medicine, TCM,
beverages, sweets, liqueur,
tea



Many terms in use

Focus on *product* and
plant origin

botanical (drug)

herb

gum

resin

pharmaceutical plant

Focus on *plant species*
and use

medicinal plant

medicinal and aromatic plant

spice plant

Focus on *product* and
habitat origin

NWFP

NTFP

Focus on *product* and *use*

official drug

non-official drugs

medicinal

Salep: tubers from various orchids



Platanthera
spec.

Orchis spec.
Ophrys spec.

Dactylorhiza spec.

Gymnadenia spec.



Harvest of leaves of the species Aloe ferox in South Africa



MAP: The focus is on the species not on the product!

Overlap of terms

wetland

grassland

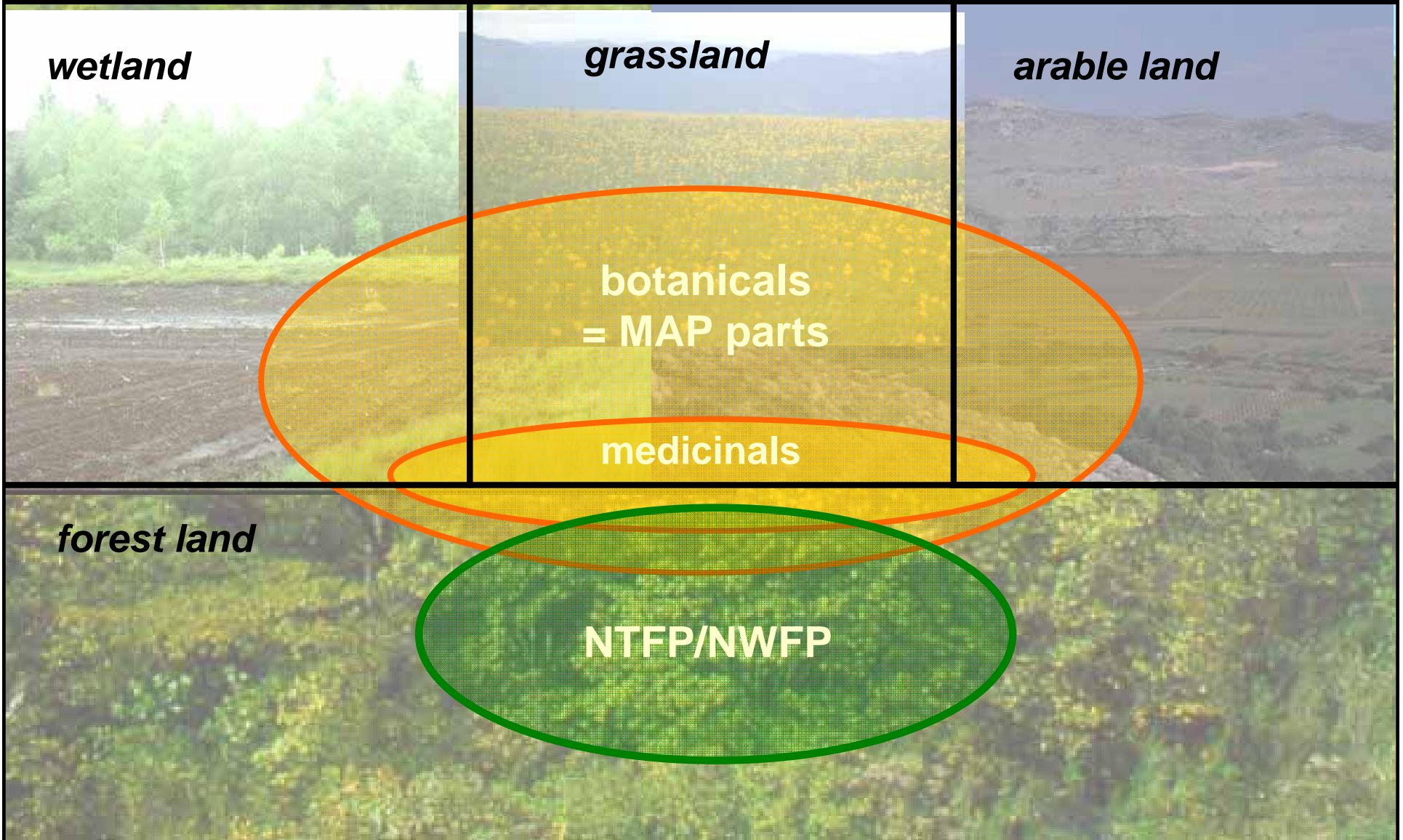
arable land

botanicals
= MAP parts

medicinals

forest land

NTFP/NWFP



A photograph of a field of yellow flowers, likely buttercups, with a soft, slightly blurred background. The text "Important facts about MAPs ..." is overlaid in the center in a bold, black, sans-serif font.

Important facts about MAPs ...

How many plants are MAPs?

- **World** **50-70,000 MAP species**
- China 5,000 MAPs (>10,000 MAPs)
- Bulgaria 750 MAPs
- INCI-list 700 MAPs

Purple Coneflower
(NA_m)



Sage (Eu)



How many MAPs are traded internationally?

Germany	1,500 MAPs
Europe	2,000 MAPs
Global estimate	c. 3,000 MAPs

Cape Aloe (SA)



Dendrobium
(China)

What do we know about production?



Harvest of wild Aloe leaves in South Africa



Opium Poppy cultivated since 2700 B.C.



Arnica: cultivated and wild collected

- Cultivation
- Wild-collection



Cultivation versus wild collection

**c. 900 MAPs are
commercially
cultivated!**

MAPs in cultivation

Large scale cultivation

- Europe 150 species
- China 100-250 species

Small scale cultivation

- Germany c. 200 species

**Most MAPs are now –
and will continue to be
– wild collected!**

Estimation of wild collection

(70) – 90 % in terms of species number
50 – (70%) in terms of quantity

SE+E-Europe 30-45,000 t/a

Nepal > 15,000 t/a

China > 200,000 t/a?



MAPs span all life forms!

Life form	Number of MAPs
Annual-biennial (therophyte)	214
Perennial herb (hemicryptophyte+cryptophyte)	625
Shrub (chamaephyte)	292
Tree (phanerophyte)	299

Example:
1,500 MAPs used in Germany
worldwide imports

Life form spectrum of selected habitats

Habitat/life form	trees	shrubs	perennial herbs	geophytes	annual-biennial
Tropical rainforest	96%	2%	-	2%	-
Warm temperate deciduous forest	54%	9%	24%	9%	4%
Cold temperate coniferous forest	10%	17%	54%	12%	7%
Steppe	1%	12%	63%	10%	14%
Semi desert	-	59%	14%	-	27%
Tundra	1%	22%	6%	15%	2%

Susceptibility of MAPs to overcollection

Life form Plant part used	tree	shrub	perennial herb	annual- biennial
Wood	++	++	----	----
Bark	++	++	----	----
Root	++	++	+++	+++
Leaf	-	-	-	+
Flower	-	-	+(++)	+++
Fruit/seed	-	-	+(++)	+++



non-sustainable use:



CITES:
64 MAPs listed

**c. 10,000 – 15,000 MAPs
may be **threatened****

Red-listing of MAPs

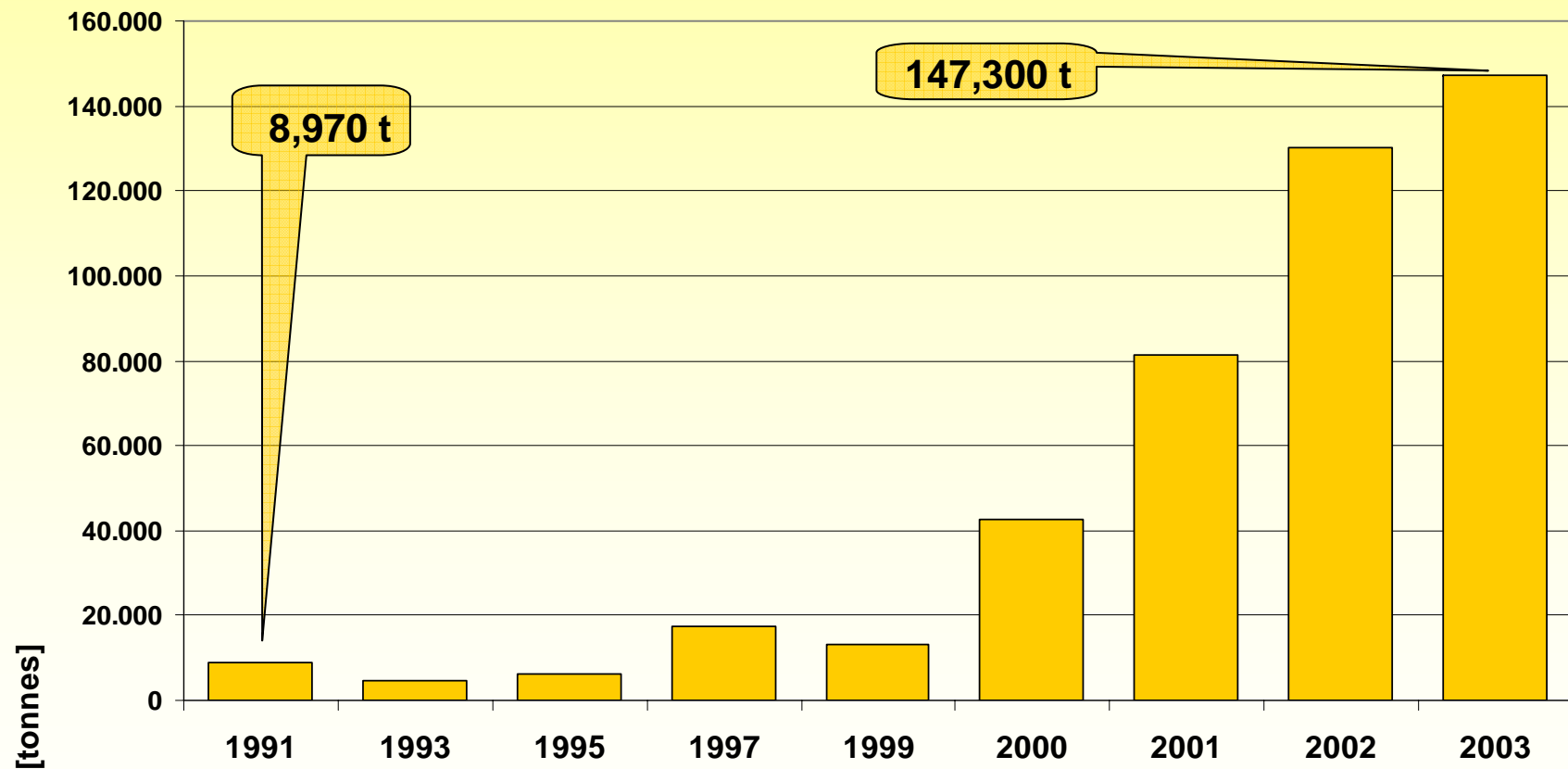
e.g. *Gentiana lutea*

En (AL,GE,PT) - V (AL,BiH,RO) -
R (CZ,PL)

Booming markets

Export trends of Mexico

Import 1991-2003	6,450 t	10,577,000 US\$
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The diversity of MAPs or - challenging facts

MAPs span

- ✓ all taxonomic groups
- ✓ all life forms
- ✓ all plant parts
- ✓ all habitats
- ✓ all climatic regions
- ✓ widely to narrowly distributed species
- ✓ large to small population sizes
- ✓ broad to narrow genetic variability
- ✓ broad to restricted habitat-specific species
- ✓ slow to fast growing species and
- ✓ indigenous to alien plants
- ✓ stable markets to explosive demands





***Thank you for
your attention!***

**Meadows with flowering
Arnica montana in the Vosges**