MANDATES

1998 UN General Assembly Special Session on Drugs:

Member States agreed to eliminate or significantly reduce the illicit cultivation of narcotic crops by 2008

→ Creation of UNODC’s Illicit Crop Monitoring Programme in 1999:
  • Provide technical assistance to Member States to develop national monitoring systems
  • Compile data at the global level and report to Member States:
    ▪ Base line information on illicit drug cultivation
    ▪ Progress: ups and downs/trends of cultivation and production
    ▪ Correlations with eradication efforts, prices, alternative development efforts, economic development
ICMP and Governments jointly implement annual illicit crop surveys

**Consistent & Comparable**
- Quality standards & control
- Harmonised methodologies
- Transparent (reports published)

**Comprehensive**
- Global coverage
- Annual surveys

**Participatory**
- Cooperation of national and international agencies
- Transfer of technology
Key data for reporting to Member States on the evolution of the global drug problem

World Drug Report, CND reports, etc…
The Work of UNODC’s Illicit Crop Monitoring Programme

UNODC HQ - Research and Analysis Section
Quality control and expert advice on Remote Sensing/GIS, statistics, survey design & implementation

ICMP coordination (Vienna)
Morocco

ICMP
Latin America

ICMP SW Asia

ICMP SE Asia

Regional Experts

National projects

Afghanistan

Myanmar

Laos

Morocco

Colombia

Peru

Bolivia
What do we monitor?

Key variable: Hectares

Socio-economic data

Deficit of 12 months: 3%
Deficit of 9 months: 15%
Deficit of 6 months: 27%
Deficit of 3 months: 55%

Prices

Production

Land use

Deficit of 9 months

15%

Deficit of 6 months

27%

Deficit of 3 months

55%
Cannabis monitoring in Morocco
2005 Cannabis Survey
Survey structure & organization

ICMP
- Technical team at HQ (RS/GIS expert, statistician, etc.)
- Regional Monitoring Expert in Dakar, Senegal

Total cost of survey: US$ 300,000

Cost-sharing with GoM

Government of Morocco
- lead agency APDN (Agence du Nord) - subcontracts CRTS, DPAE, Targa

Crop calendar: January-September
Survey calendar: May-October
ICMP in Morocco

Cannabis Surveys in 2003, 2004 and 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>Hectares</th>
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<tbody>
<tr>
<td>2003</td>
<td>134,000</td>
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<tr>
<td>2004</td>
<td>120,500</td>
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<tr>
<td>2005</td>
<td>72,500</td>
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</tbody>
</table>
Images used in Morocco

- 18 SPOT5 images
- 21 Ikonos/Quickbird images (archive, PAN band)
- MODIS time series
Two date imagery and segment data collection

24/06/2004, Chefchaouen (Image SPOT 5, RGB 4,2,1)

26/08/2004, Chefchaouen (Image SPOT 5, RGB 4,2,1)
3D Visualization of slope with cannabis in Chefchaouen (2005)
Effects of the drought in 2005 (MODIS images)

Gouvernement du Maroc - Système national appuie pour CNUDC
Methodology for image interpretation

- Based on comparison of pre-harvest and post-harvest images
- Creation of an mosaics of ortho-rectified SPOT images which have the same date (=similar spectral reflectance of vegetation)
- Use of ground truth information from ground segment survey (GPS points plus vegetation type) to identify the typical reflectance signatures of vegetation types present on the image
- Supervised classification of the pre-harvest image based on this information -> potential cannabis area (classes: cannabis, forest, soil, water, other vegetation)
- Challenge: how to exclude possible confusion between cannabis and forest?
- Classification of post-harvest image (classes: vegetation increase/decrease)
- Logical crossing of pre- and post harvest images: potential cannabis fields that show a significant reduction in vegetation are confirmed as cannabis (forest shows vegetation increase)
- Masking (exclusion of forests, urban areas, …)
- Filter applied on final product to reduce “noise” effect
Cannabis cultivation in Morocco

Rainfed

Irrigated
Yield differences irrigated / rain-fed cannabis by province (2005)
Estimation of potential raisin production

Gross cannabis production

Raisin extraction rate: 2% (2005)

Potential cannabis raisin production
Prices and total farm-gate value of cannabis production

Lower production + higher prices = higher total value (2005)

Information for national policy and development programmes
Cannabis market: regional and global picture

Seizures in Morocco


- Cannabis available for consumption
- Trafficking
- Seizure in or en route to Europe
- Cannabis market in Europe
Thank you very much!