

LLM Botanical Identification - GPT-4 Results Summary

This document presents a synthetic example of answers provided by GPT-4 (May 2025) to two key prompts used in the Lyra Botanical Protocol. The protocol aims to identify flowering species in Mediterranean lowland calcareous prairies by combining field observations and LLM-based inference.

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PRIMARY PROMPT (Direct Identification)

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Context:

Two plants observed in April in a calcareous open prairie (~200 m altitude).

- Plant 1: Yellow flowers, ~20 cm, solitary
- Plant 2: Purple monocotyledon, ~20 cm

GPT-4 Response:

Plant 1 (Yellow flower):

1. *Narcissus assoanus* - 65%
2. *Narcissus jonquilla* - 15%
3. *Narcissus pseudonarcissus* ssp. *moschatus* - 10%
4. *Narcissus dubius* - 5%

TOTAL: 95%

Plant 2 (Purple monocotyledon):

1. *Iris lutescens* - 80%
2. *Iris germanica* - 10%
3. *Iris pumila* - 5%

TOTAL: 95%

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SECONDARY PROMPT (Biotic Co-occurrence Inference)

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Context:

Prairie already containing *Narcissus assoanus* and *Iris lutescens*, between early April and mid-May.

GPT-4 Response - Third most likely flowering species:

1. *Fritillaria tubiformis* ssp. *burnatii* - 35%
2. *Anemone coronaria* - 20%
3. *Tulipa sylvestris* ssp. *australis* - 15%
4. *Ophrys lutea* - 10%
5. *Gagea bohemica* - 10%
6. *Romulea columnae* - 5%

TOTAL: 95%

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Significance:

This probabilistic method has also been previously validated with high accuracy in the identification of *Orchis* species under similar field constraints. As such, it demonstrates the viability of a new field

ecology protocol that meaningfully integrates LLMs into participatory science workflows.