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# Archaeobotanical Findings from Jebel Barkal

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## Introduction

This poster presents the preliminary results of the archaeobotanical analysis from the ongoing excavations at the site of Jebel Barkal, Sudan. At this site, flotation of samples from the 2020, 2022, and 2023 seasons has been carried out with the material from the 2020 season having been fully analysed.

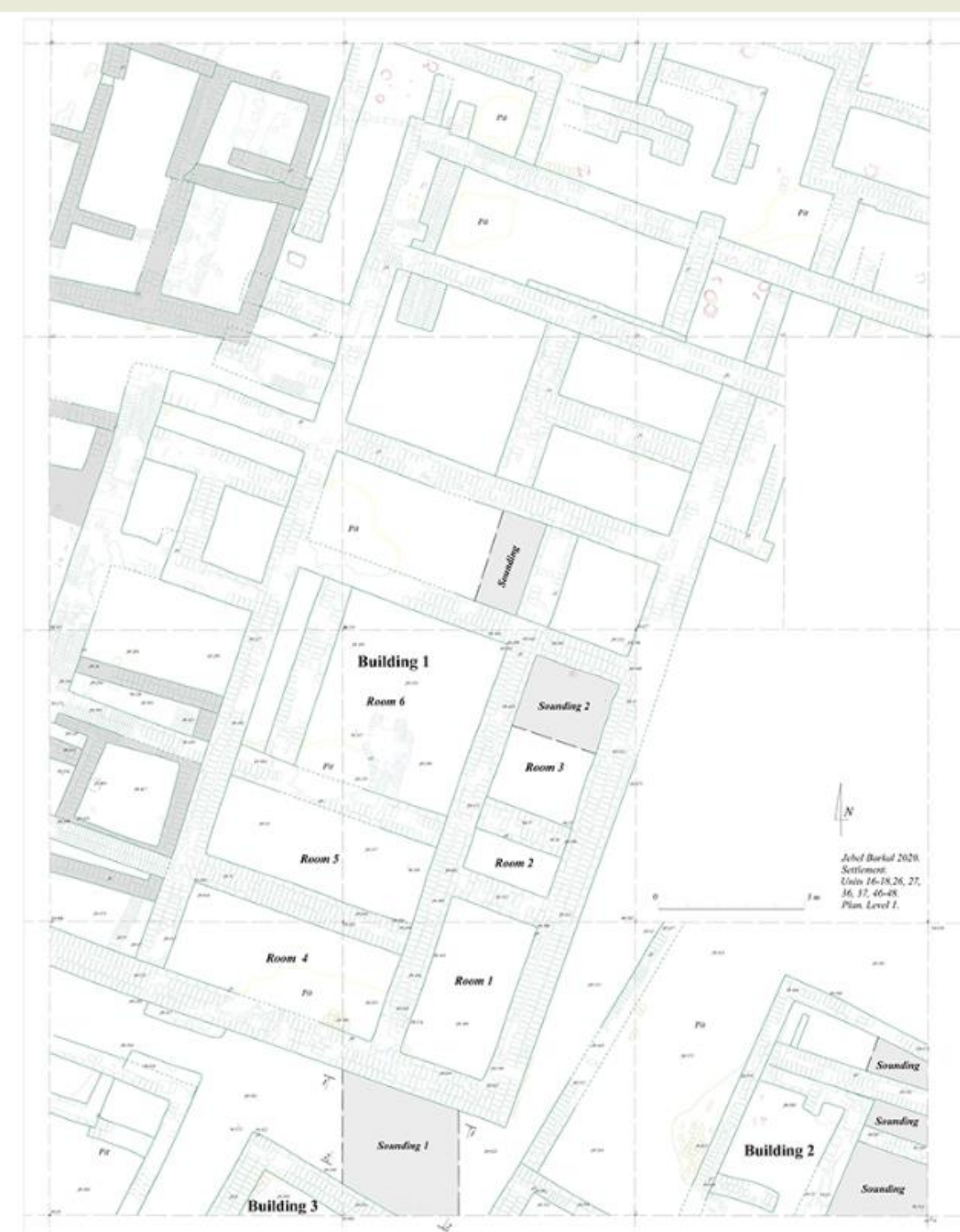
This poster presents the results of the 2020 excavation, in which year:

- 244.2 litres of soil were sampled, flotation using 250 µm mesh;
- 56 flotation samples (max 20 L. each) were taken from 14 loci (contexts): which constituted of floor surfaces, hearths, fills of pots;
- In total, 362 carbonised seeds were retrieved;

The excavation focusses on the non-elite residences at the palatial city of the now UNESCO World Heritage site. Contexts are tentatively dated to be late Napatan – Meroitic. The joint University of Michigan-NCAM research project looks specifically at resilience and change in the face of changing climates at the start of the Meroitic period.



Map: © Lorene Sterner, 2021 (<https://sites.lsa.umich.edu/bap/>)  
Above: View of Jebel Barkal from the excavation site - © Julian Sanchez



Map: © Nadejda Reshtnikova, 2020 (<https://sites.lsa.umich.edu/bap/>)  
Top right: Submerged jars in situ - © Anna den Hollander

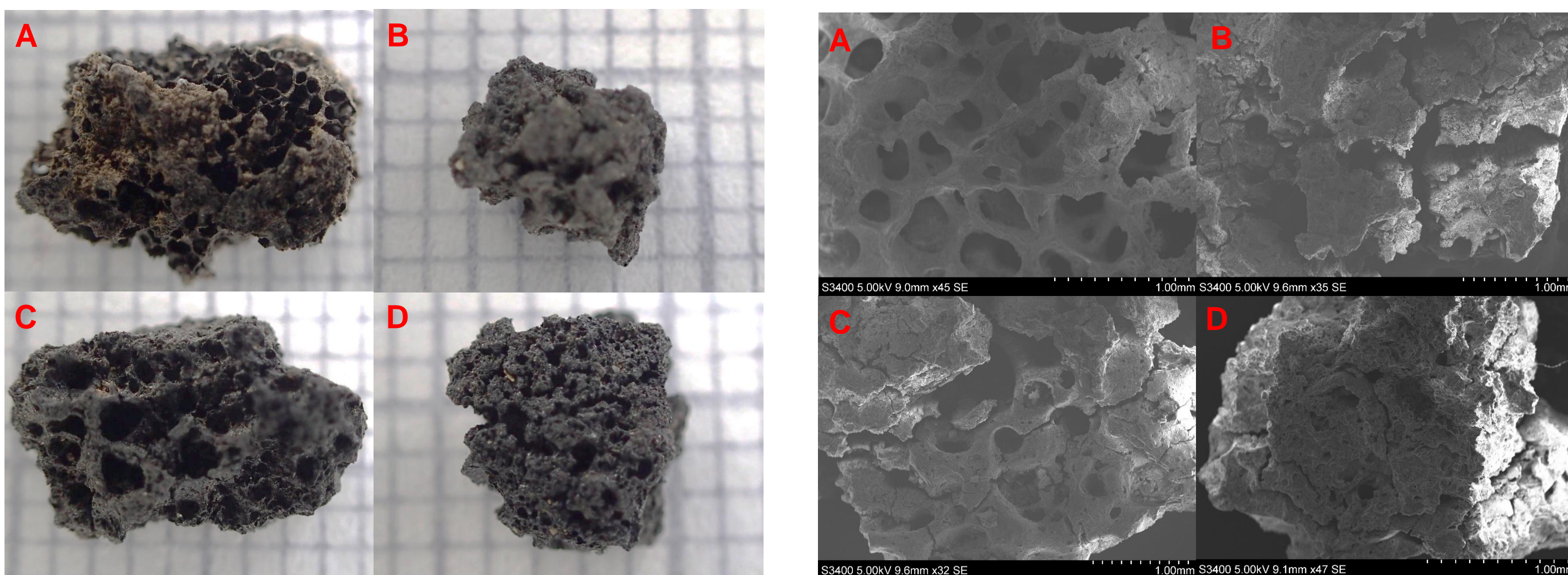


## Contexts, 2020, 2022, 2023

- Residential non-elite buildings, mudbrick walls; Systematic sampling of:
  - Floor surfaces; hearths; submerged jars with evidence for fires, storage, or possibly brewing;
- Sample size: 20L (2020) or 60L (2022, 2023), or bulk.

## Amorphous Food Lumps (2020)

- Amorphous charred food remains (n=68) are noticeably present in three samples.
- These may derive from breads, dough or porridges. Preliminary SEM studies (after González Carretero *et al.* 2017) distinguished the following types:



A) Type 1: "dough" – BARKAL2022 A18/L:230; B) Type 4: "porridge" – BARKAL2020 A18/L:239A; C) Type 1 or 4 "dough" – BARKAL 2022 A18/L:239A; D) Type 2: "Flat bread" – BARKAL2020 A18/L:239B

## Limitations

- Small sample size, and poor preservation; for none of the loci a representative sample has been returned.
- The richest sample returned 240 items and 15 taxa, but most contexts had significantly less.

## Preliminary Conclusions

- The agricultural assemblage corresponds with reported finds from other Meroitic sites and assemblages from the Middle Kingdom and New Kingdom Egyptian occupations in Nubia.
- Focus on winter cereals (emmer wheat, hulled 6-row barley) and their associated pulses (lentil, pea, grasspea).
- *Sorghum* is notably very rare (so far).
- Lesser presence of summer crops such as millets in line with projections that millets and sorghum are likely to have been more important further south (Savannah agricultural tradition).

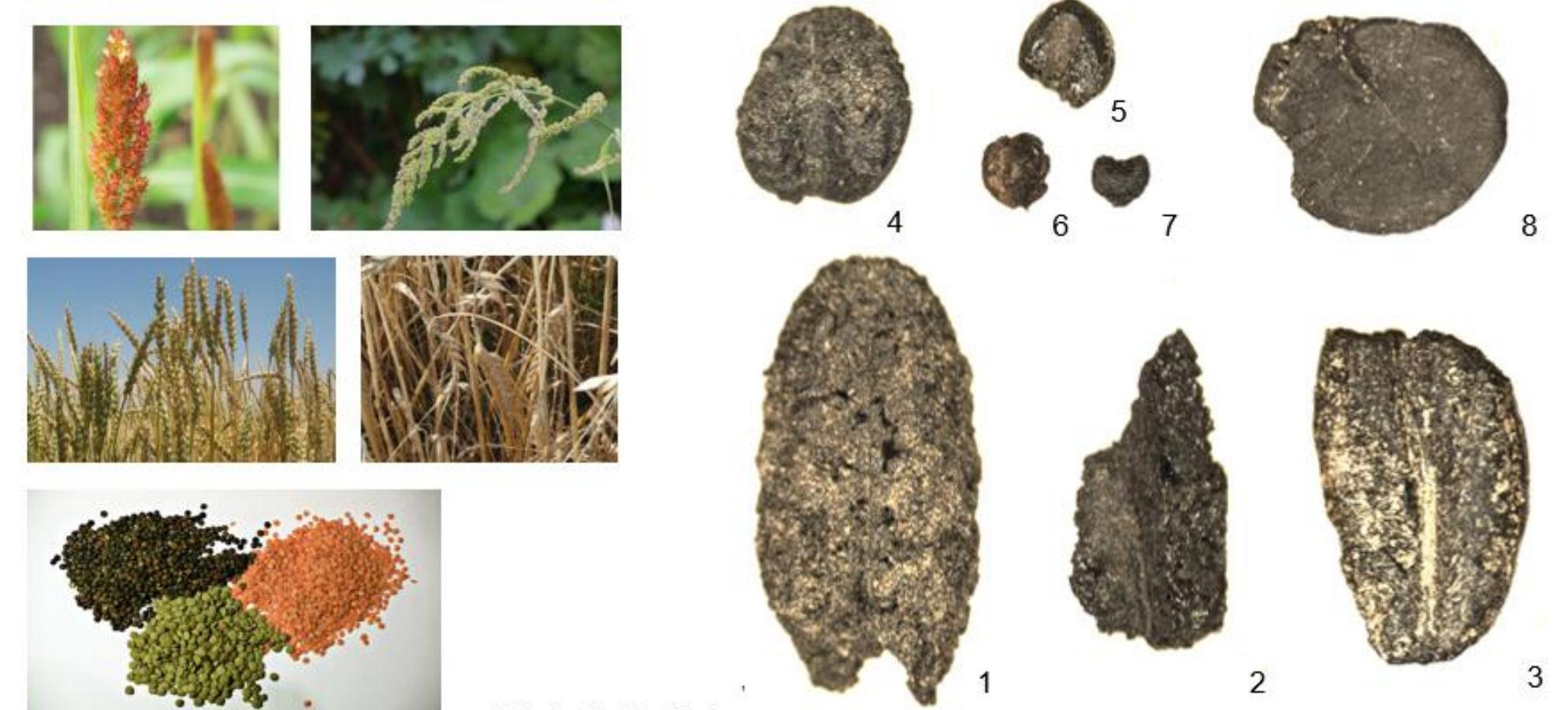
## Taxa Identified (2020)

**Food crops:** *Hordeum hexastichum*<sup>3</sup>, *Hordeum vulgare* (sensu lato)<sup>1,2,3</sup>, and *Triticum sp.* (combined n=43)<sup>1</sup>, *Lens culinaris* (n=4)<sup>8</sup>, *Sorghum bicolor* (n=1), *Phoenix dactylifera*<sup>12</sup> (n=6). Ubiquity: 8/13 loci sampled. In addition, *Trifoliae: cf. Medicago Sativa* (n=5) was identified across three different loci, with a potential cultivation as fodder crop.

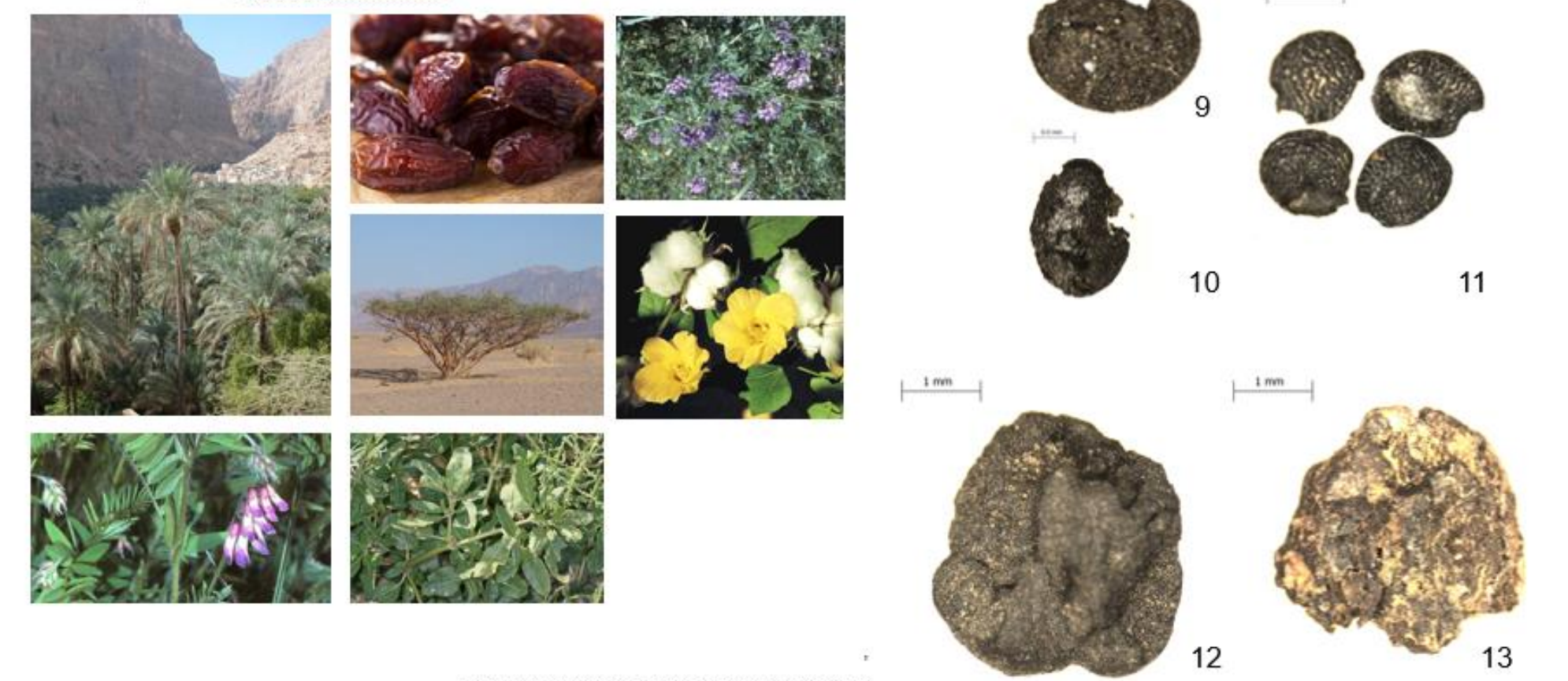
**Small weeds:** *Vicia cf. sativa*<sup>9</sup>, *Trifolieae* tribe<sup>10</sup>, millet grasses *Echinochloa sp.*<sup>6,7</sup> and *Setaria sp.*<sup>5</sup> as well as some *Poaceae* fragments, not further identifiable.

**In addition,** *Zaleya petandra*<sup>11</sup> (n=18) was relatively ubiquitous. *Vachellia [previously Acacia] cf. tortilis*<sup>13</sup> (n=1) was found in one location.

Economic Crops: wheats and pulses



Fruits, nuts, and weeds



Examples of archaeological seeds, numbers indicated as superscript in taxa list above.

## Future Work

Continue analysis on materials retrieved during excavations in 2022 and 2023, including larger sample sizes.

- > 1500 litres of soil processed, flotation using 500 µm mesh.
- 91 flotation samples.
- contexts sampled: floor surfaces, hearths, fills of pots.
- 32 ceramic sherds as well as their macroscopic encrusted residues were selected for further study. This include both (ritual) bread moulds and submerged jars.
- SEM analysis of amorphous food remains.
- Metrical analyses of selected crop remains.

Future seasons can hopefully provide additional contexts and lower levels of the Napatan period.