**AMF Community Response (RQ4)**

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**RQ 4: Does the identity of an AMF isolate introduced into a community affect AMF community structure (diversity and composition)?**

This research question investigates the effect of AMF isolate identity (treatment) on AMF community response.

1. **Repositories**

All sequences deposited at, <https://github.com/Joya-CA/AMF-sequences-thesis-2025.git>

/RQ4\_AMFCommunityResponse/ – All files required to reproduce the analysis

/Analysis/ – Bioinformatics pipeline and all scripts to reproduce statistical analysis and generate visuals

/file\_exports\_97\_blastn\_merged/ – Exported files to recreate R visuals and SIMPER analysis on 97% OTUs

/file\_exports\_99\_blastn\_merged/ – Exported files to recreate R visuals and SIMPER analysis on 99% OTUs

1. **Data Descriptions (located in /RQ4\_AMFCommunityResponse/)**

| **File Name** | **Description** |
| --- | --- |
| METADATA.tsv | Contains all metadata used for the bioinformatics analysis. |

1. **How to Use**

Open the appropriate QIIME 2 Pipeline or R Markdown file and use the corresponding dataset(s) to reproduce the analysis. Run the code from top to bottom.

| **Anlaysis File** | **Corresponding Data Files** |
| --- | --- |
| QIIME2\_Workflow\_97\_Percent\_Blastn\_2025 | Raw AMF sequences |
| QIIME2\_Workflow\_99\_Percent\_Blastn\_2025 | Raw AMF sequences |
| QIIME2Conversion\_TaxonomyAssignment\_Markdown | Steps to convert taxonomy assignment to QIIME2 compatible format |
| BioinformaticsVisuals\_SIMPER\_RMarkdown | Code to reproduce alpha diversity visuals and cleaned rarefication curves. Code to reproduce the SIMPER analysis. |

1. **Dependencies**

QIIME2

R version 4.3.2

1. **Data Reference**

| **Variable** | **Description** |
| --- | --- |
| treatment | AMF isolate identity (Control, DAOM 197198, DAOM 240448, DAOM 240720) |
| species | Host plant species (*Gaillardia aristata, Festuca idahoensis, Bromus tectorum, Taraxacum officinale*) |
| mesocosm\_id | Unique identifier for each mesocosm (experimental unit) |
| date\_harvested | Date each mesocosm was harvested and soil sample collected |