

# INNOFarms - Execution Roadmap

This guide explains how to set up the environment and run the system from scratch to verify full functionality.

## 1. Environment Setup

If you haven't created a virtual environment yet:

```
# Create virtual environment
python3 -m venv venv

# Activate (macOS/Linux)
source venv/bin/activate

# Install dependencies (including PyYAML and python-dotenv)
pip install -r requirements.txt
```

## 2. Configuration Check

Ensure your configuration is correct before running the system.

1. **Secrets:** Check `.env` contains your API key.

```
cat .env
# Should show: USDA_API_KEY=...
```

2. **Settings:** Check `config/settings.yaml` for general settings.

```
cat config/settings.yaml
```

3. **Verify Loader:** Run this command to verify Python can load the config:

```
python3 -c "from src.utils.config import config; print(f'Config OK. DB:
◀ |                                     | ▶"
```

## 3. Execution Steps

Run these commands in order to generate data and reports.

### Step 3.1: Run Scrapers (Data Collection)

This will fetch data and create the `data/raw` directory.

```
python3 src/scrapers/main_scraper.py
```

*Expected Output:* "Scraping Complete", logs showing records saved to `data/raw/...`

### Step 3.2: Run ETL Pipeline (Data Processing)

This reads from `data/raw`, cleans data, and creates `database/market_data.db`.

```
python3 src/etl/etl_pipeline.py
```

*Expected Output:* "Pipeline completed", logs showing records extracted/transformed/loaded.

### Step 3.3: Run Analysis (Analytics)

This reads from the database and generates reports in `reports/`.

```
python3 src/main_analysis.py
```

*Expected Output:* “ANALYSIS COMPLETE”, trend/forecast/financial reports generated.

### Step 3.4: Generate Visualizations

Generates charts based on the analysis reports.

```
python3 src/visualizations/visualizer.py
```

*Expected Output:* “Generated X visualizations”, charts in `reports/visualizations/`.

## 4. Verification

Run the test suite to ensure all logic is correct.

```
pytest tests/ -v
```

*Expected Output:* All tests passed (green).

## 5. Troubleshooting

- **Missing Data:** Ensure `main_scraper.py` ran successfully before running ETL.
- **ImportKeyError:** Ensure `.env` exists and `USDA_API_KEY` is set.
- **ModuleNotFoundError:** Ensure `venv` is activated and requirements installed.