📊 CHART OF ACCOUNTS (COA) IMPLEMENTATION GUIDE

Research Operations - Agroindustry

📋 TABLE OF CONTENTS

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1. OVERVIEW

Purpose

This Chart of Accounts (COA) is designed specifically for **research operations in agroindustry**, supporting:

- Multi-site research projects
- Grant and donor funding tracking
- Purchase Requisition (PR) and Purchase Order (PO) workflows
- Budget vs. Actual monitoring
- Fiscal year-based financial management
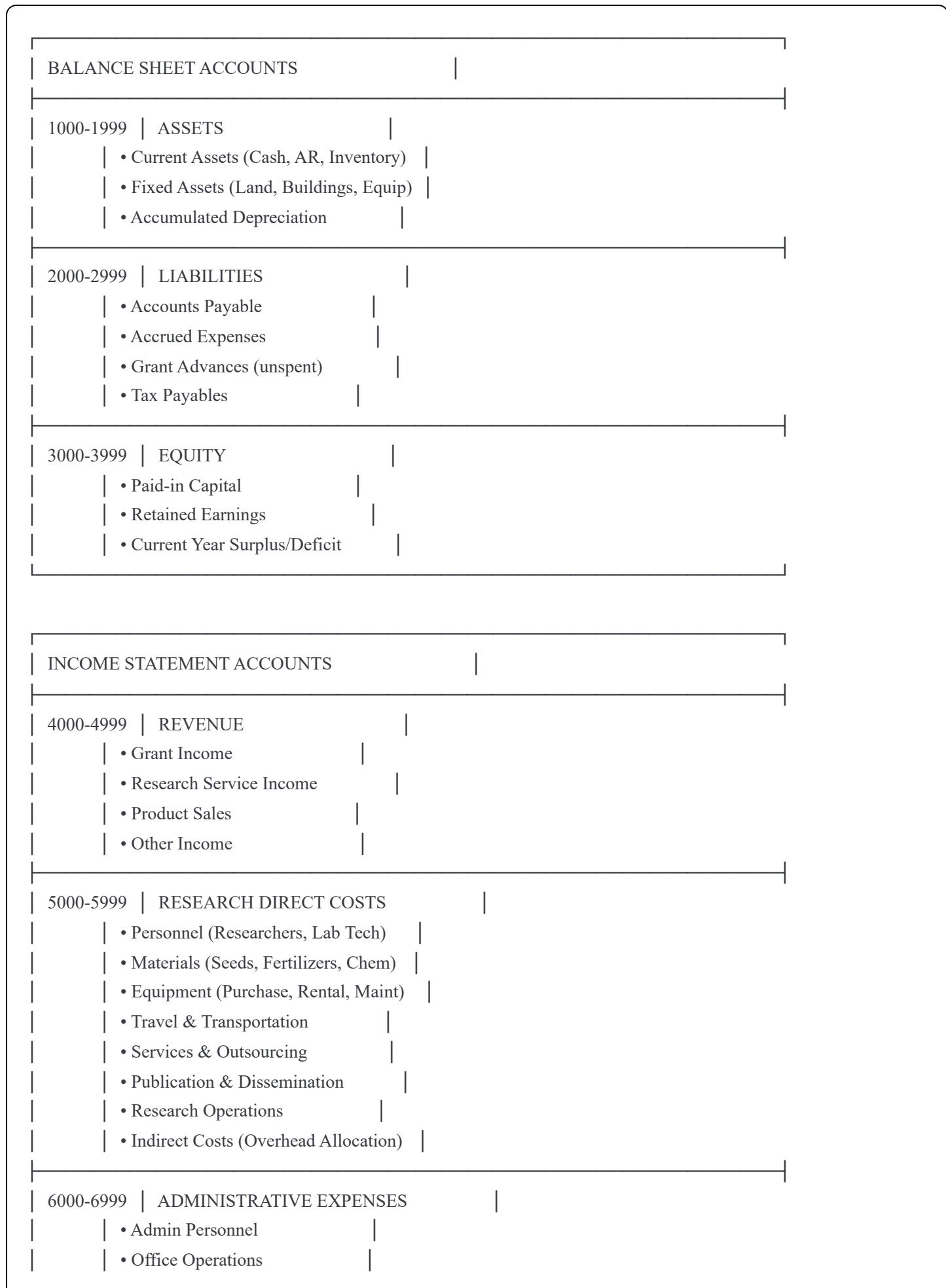
Key Features
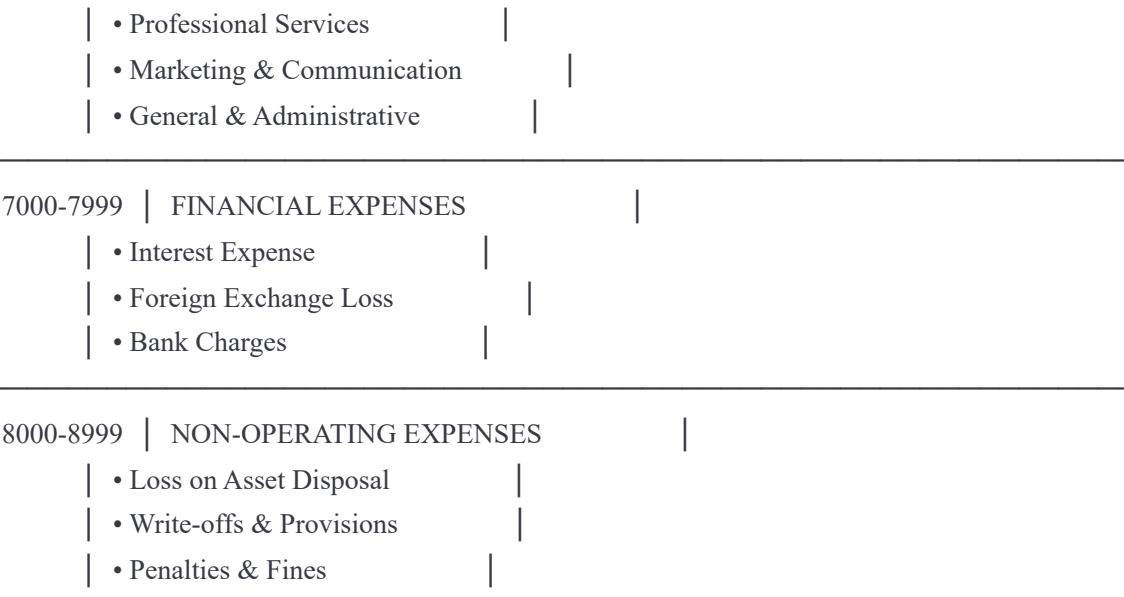
✅ **Complete Financial Coverage**: Assets, Liabilities, Equity, Revenue, and Expenses ✅ **Research-Centric**: Detailed expense categories for research activities ✅ **Budget Control Ready**: Accounts flagged for budget vs. actual tracking ✅ **Multi-Dimensional**: Support for project, site, and funding source tagging ✅ **Audit-Ready**: Comprehensive descriptions and usage guidelines

Total Accounts: 305 accounts

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2. COA STRUCTURE SUMMARY

Account Classes and Code Ranges

BALANCE SHEET ACCOUNTS

1000-1999 | ASSETS
- Current Assets (Cash, AR, Inventory)
- Fixed Assets (Land, Buildings, Equip)
- Accumulated Depreciation

2000-2999 | LIABILITIES
- Accounts Payable
- Accrued Expenses
- Grant Advances (unspent)
- Tax Payables

3000-3999 | EQUITY
- Paid-in Capital
- Retained Earnings
- Current Year Surplus/Deficit

INCOME STATEMENT ACCOUNTS

4000-4999 | REVENUE
- Grant Income
- Research Service Income
- Product Sales
- Other Income

5000-5999 | RESEARCH DIRECT COSTS
- Personnel (Researchers, Lab Tech)
- Materials (Seeds, Fertilizers, Chem)
- Equipment (Purchase, Rental, Maint)
- Travel & Transportation
- Services & Outsourcing
- Publication & Dissemination
- Research Operations
- Indirect Costs (Overhead Allocation)

6000-6999 | ADMINISTRATIVE EXPENSES
- Admin Personnel
- Office Operations

```
|              | • Professional Services        |
|              | • Marketing & Communication         |
|              | • General & Administrative          |
|──────────────────────────────────────────────────────────|
| 7000-7999  | FINANCIAL EXPENSES            |
|              | • Interest Expense          |
|              | • Foreign Exchange Loss         |
|              | • Bank Charges             |
|──────────────────────────────────────────────────────────|
| 8000-8999  | NON-OPERATING EXPENSES          |
|              | • Loss on Asset Disposal        |
|              | • Write-offs & Provisions       |
|              | • Penalties & Fines         |
|──────────────────────────────────────────────────────────|
```

Account Distribution by Type

Account Type	Count	Percentage	Primary Use
Expense	218	71.5%	Research and admin costs
Asset	41	13.4%	Cash, equipment, inventory
Revenue	26	8.5%	Grants, services, sales
Liability	16	5.2%	Payables, accruals, tax
Equity	4	1.3%	Capital and earnings
TOTAL	**305**	**100%**	Complete COA

3. NAMING CONVENTION

Standard Format

```
[CODE]-[CATEGORY]-[SUBCATEGORY]-[SITE]-[SEQUENCE]

Example: 5211-MAT-SED-KLT-001
```

Breakdown:

- 5211 = Account code (Seeds - Cereal Crops)
- MAT = Material category
- SED = Subcategory (Seeds)

- $\boxed{\text{KLT}}$ = Site code (Klaten)
- $\boxed{\text{001}}$ = Sequential number

Site Codes (Examples)

Site	Code	Usage
Klaten	KLT	Klaten research station
Yogyakarta	YGY	Yogyakarta research station
Bogor	BGR	Bogor research center
Multi-Site	MLT	Shared across locations
Head Office	HQ	Central administration

Best Practices

✅ DO:

- Use consistent abbreviations
- Include site code for site-specific expenses
- Use sequential numbering
- Document all custom codes

❌ DON'T:

- Mix naming conventions
- Use ambiguous abbreviations
- Create ad-hoc codes without documentation
- Exceed 50 characters total

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4. ACCOUNT HIERARCHY
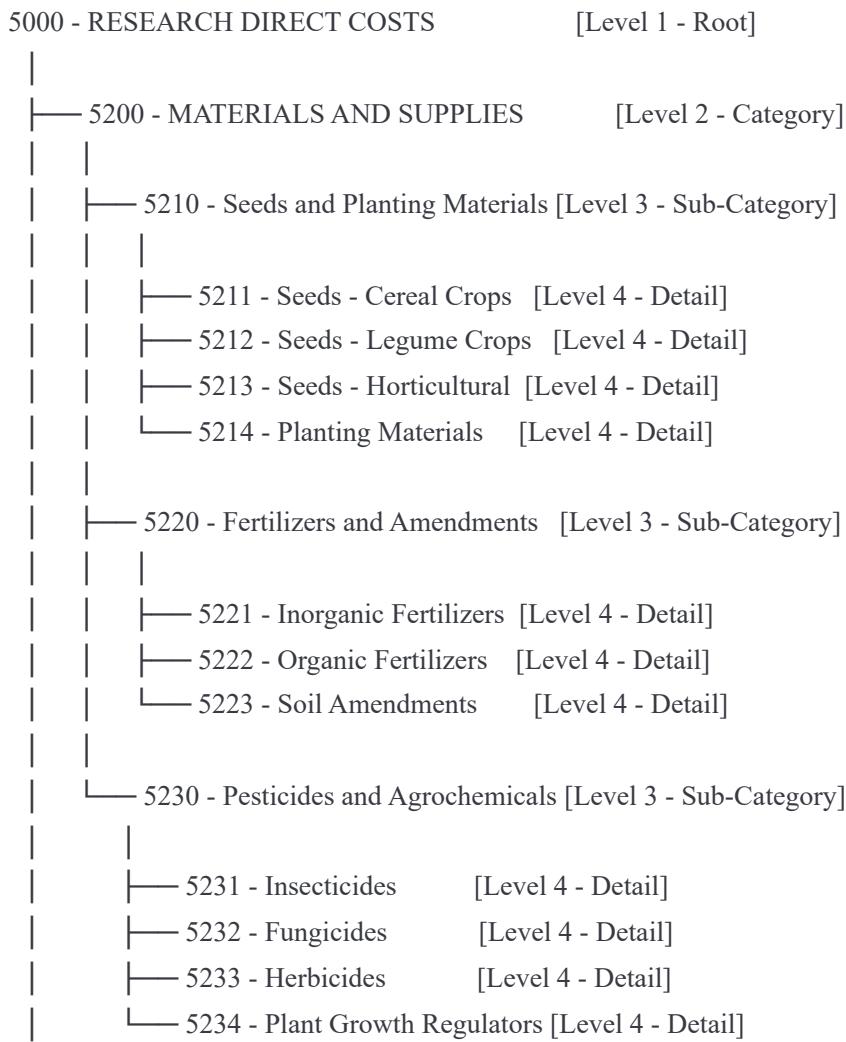
Level Structure

```
Level 1: Account Class (Root)
    └─ Level 2: Major Category
        └─ Level 3: Sub-Category
            └─ Level 4: Detailed Account
```

Example: Research Materials Hierarchy

```
5000 - RESEARCH DIRECT COSTS          [Level 1 - Root]
  |
  ├── 5200 - MATERIALS AND SUPPLIES       [Level 2 - Category]
  |   |
  |   ├── 5210 - Seeds and Planting Materials [Level 3 - Sub-Category]
  |   |   |
  |   |   ├── 5211 - Seeds - Cereal Crops   [Level 4 - Detail]
  |   |   ├── 5212 - Seeds - Legume Crops   [Level 4 - Detail]
  |   |   ├── 5213 - Seeds - Horticultural  [Level 4 - Detail]
  |   |   └── 5214 - Planting Materials     [Level 4 - Detail]
  |   |
  |   ├── 5220 - Fertilizers and Amendments   [Level 3 - Sub-Category]
  |   |   |
  |   |   ├── 5221 - Inorganic Fertilizers  [Level 4 - Detail]
  |   |   ├── 5222 - Organic Fertilizers    [Level 4 - Detail]
  |   |   └── 5223 - Soil Amendments        [Level 4 - Detail]
  |   |
  |   └── 5230 - Pesticides and Agrochemicals [Level 3 - Sub-Category]
  |       |
  |       ├── 5231 - Insecticides        [Level 4 - Detail]
  |       ├── 5232 - Fungicides          [Level 4 - Detail]
  |       ├── 5233 - Herbicides          [Level 4 - Detail]
  |       └── 5234 - Plant Growth Regulators [Level 4 - Detail]
```

Posting Rules

Level	Can Post Transactions?	Purpose
Level 1	❌ No	Roll-up only
Level 2	❌ No	Category grouping
Level 3	⚠️ If no Level 4	Sub-category (optional posting)
Level 4	✅ Yes	Detail accounts (primary posting)

Rule: Post to the **most granular level** available.

5. USAGE GUIDELINES

A. Research Direct Costs (5000-5999)

5100 - Personnel Costs

When to Use:

- Salaries of researchers, lab technicians, field assistants
- Wages for temporary field workers
- Consultant and expert fees
- Staff benefits directly attributable to research

Examples:

- 5111 - PI salary on specific research project
- 5121 - Daily wages for harvest labor
- 5141 - Statistical consultant for data analysis

Budget Control: ✅ YES - Track against personnel budget line

5200 - Materials and Supplies

When to Use:

- Seeds, planting materials
- Fertilizers, soil amendments
- Pesticides, agrochemicals
- Lab chemicals, reagents
- Consumable field and lab supplies

Examples:

- 5211 - Rice seeds for trial
- 5221 - NPK fertilizer for field experiment
- 5241 - HPLC reagents for analysis

Budget Control: ✅ YES - Track against materials budget

Tax Considerations: Most materials subject to VAT

5300 - Equipment and Facilities

When to Use:

- Equipment purchases < $5,000 (not capitalized)
- Equipment rental/lease
- Equipment maintenance and repairs
- Facility operational costs (greenhouse, lab utilities)

Examples:

- 5311 - pH meter ($1,200)
- 5321 - HPLC rental for 3 months
- 5331 - Spectrophotometer calibration

Budget Control: ✅ YES - Track against equipment budget

Capitalization Rule:

- < $5,000 = Expense immediately (Account 5310)
- ≥ $5,000 = Capitalize as Fixed Asset (Account 1230)

5400 - Travel and Transportation

When to Use:

- Domestic and international travel for research
- Conference attendance
- Field transportation (fuel, vehicle rental)
- Travel allowances and per diem

Examples:

- 5411 - Flight to attend research workshop
- 5422 - Hotel for international conference
- 5431 - Diesel fuel for field vehicle

Budget Control: ✅ YES - Track against travel budget

Per Diem Rates: Follow organization's travel policy

5500 - Services and Outsourcing

When to Use:

- Third-party laboratory analysis
- Contract field services
- Data processing and statistical analysis
- Professional services

Examples:

- [5511] - Soil NPK analysis by external lab
- [5522] - Contract planting services
- [5532] - Biostatistician consulting

Budget Control: ✅ YES - Track against services budget

Tax: Most services subject to withholding tax (PPh 23)

5900 - Research Indirect Costs

When to Use:

- Allocated overhead costs from administrative functions
- Facility depreciation allocation
- Shared utility costs

Examples:

- [5911] - Building depreciation allocated to research
- [5921] - Portion of admin staff salaries supporting research

Budget Control: ⚠️ Usually pre-allocated, not actively controlled

Allocation Method: Based on cost allocation policy (% of direct costs, headcount, etc.)

B. Revenue Accounts (4000-4999)

4100 - Grant Income

When to Use:

- Research grants received
- Donor funding
- Equipment and infrastructure grants

Recognition:

- Recognize revenue as grant funds are **spent** on allowable activities
- Unspent grant balance = Liability (Account 2130)

Examples:

- 4111 - Government research grant (Ministry of Agriculture)
- 4112 - International foundation grant (Bill & Melinda Gates Foundation)

4200 - Research Service Income

When to Use:

- Fee-based contract research
- Laboratory analysis services
- Consulting and training services

Recognition:

- Revenue recognized when service is **delivered** and invoice issued

Examples:

- 4211 - Contract research for private company
- 4221 - Soil testing services for farmers
- 4232 - Training workshop for extension agents

Tax: Subject to VAT (PPN 11%)

C. Administrative Expenses (6000-6999)

When to Use:

- Expenses NOT directly attributable to specific research
- General organizational overhead
- Central administrative functions

Examples:

- 6111 - Finance Manager salary
- 6212 - Office electricity
- 6321 - Annual external audit fees

Cost Type: Indirect

Allocation: May be partially allocated to research ($\rightarrow$ Account 5900)

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6. INTEGRATION WITH PR/PO WORKFLOW

PR/PO Account Selection

When creating a **Purchase Requisition (PR)**:

1. **Select Account Code** from dropdown (populated from COA)
2. System validates:
   - ✅ Account is Active
   - ✅ Account allows Budget Control
   - ✅ Sufficient budget available
3. PR approval based on account code and amount

Budget Check Logic

```
IF Account.Budget_Control = "Yes" THEN
    Available_Budget = Account.Budget - Account.Committed - Account.Actual

    IF PR.Amount <= Available_Budget THEN
      Allow PR Creation
    ELSE
      Alert: "Insufficient budget. Available: $X, Requested: $Y"
      Option: Request Budget Revision
    END IF
END IF
```

Account Code on Documents

Purchase Requisition:

```
PR-AGR-2025-0001
Item: NPK Fertilizer (50 kg x 20 bags)
Account: 5221 - Inorganic Fertilizers
Budget Line: Materials & Supplies
Research: AGR-2025-001 (Soil Fertility Study)
Amount: $500
Budget Available: $12,450 → After this PR: $11,950
```

Purchase Order:

PO-AGR-2025-0001

Reference PR: PR-AGR-2025-0001

Account: 5221 - Inorganic Fertilizers

Vendor: ChemSupply Indonesia

Amount: $480 (negotiated)

Invoice & Payment:

When invoice is paid:

DEBIT: 5221 - Inorganic Fertilizers $480

CREDIT: 1112 - Bank Account - Operations $480

Budget Status Update:

- Committed: -$500 (PR reversed)

- Actual: +$480

- Available: $11,970

Multi-Dimensional Tagging

Recommended Tags:

Dimension	Field Name	Example Values
Research Project	project_code	AGR-2025-001
Funding Source	funding_source	Grant A, Internal, Client X
Site Location	site_code	KLT, YGY, BGR
Department	department	Agronomy, Soil Science
Cost Center	cost_center	Research Division, Lab Services

Example Transaction with Tags:

Account: 5211 - Seeds - Cereal Crops

Amount: $350

Tags:

  - Project: AGR-2025-003

  - Funding: Grant B

  - Site: Klaten

  - Department: Agronomy

  - Activity: Field Trial

Benefit: Can generate reports by ANY dimension:

- Total spending on Project AGR-2025-003

- Total spending from Grant B

- Total spending in Klaten site

- Total Agronomy department spending

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7. IMPLEMENTATION ROADMAP

Phase 1: Setup (Weeks 1-2)

Week 1:

☐ Import COA structure into Green Ledger system
☐ Configure account types (Asset, Liability, Equity, Revenue, Expense)
☐ Set up parent-child relationships (hierarchy)
☐ Configure "Budget Control" flag for applicable accounts

Week 2:

☐ Define approval authorities per account code range
☐ Create account code dropdown for PR/PO forms
☐ Configure budget check validation rules
☐ Set up fiscal year structure (FY 2025, FY 2026, etc.)

Deliverables: ✅ Fully configured COA in system ✅ Account selection available in PR/PO module ✅ Budget control active

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Phase 2: Migration (Weeks 3-4)

Mapping Exercise:

Old Account	Old Name	New Account	New Name
klaten-expense-001	Research	5100-RES-GEN-KLT-001	Research Personnel - Klaten
klaten-expense-004	Agronomy	5200-MAT-AGR-KLT-001	Agronomy Materials - Klaten
klaten-expense-005	Agri Input	5210-MAT-SED-KLT-001	Seeds - Klaten

Migration Steps:

1. Export all transactions from old accounts

2. Map to new account codes (use mapping table)

3. Import into new COA structure

4. Validate opening balances match

5. Run reconciliation report (old vs new)

6. Archive old account structure (read-only)

Validation Checklist:

☐ Total Assets match
☐ Total Liabilities match
☐ Total Equity match
☐ Budget allocations transferred correctly
☐ All active research projects have accounts

Phase 3: Integration (Weeks 5-6)

PR/PO Integration:

☐ Link PR form to COA (account dropdown)
☐ Enable real-time budget check on PR submission
☐ Configure auto-commit budget on PR approval
☐ Configure auto-reverse commit and post actual on invoice payment

Reporting Setup:

☐ Budget vs Actual by Account (monthly)
☐ Budget vs Actual by Research Project (on-demand)
☐ Budget vs Actual by Funding Source (quarterly)
☐ Expense by Category (management dashboard)

Dimensional Tagging:

☐ Add custom fields: project_code, funding_source, site_code
☐ Make fields mandatory for research expense accounts (5000-5999)
☐ Train users on proper tagging

Phase 4: Training (Week 7)

Audience: Finance Team, Research Managers, PIs, Procurement Staff

Training Modules:

1. **COA Overview** (1 hour)
   - Account structure and hierarchy
   - Naming convention
   - When to use which account

2. **PR/PO with New COA** (1.5 hours)

   - Selecting correct account code

   - Understanding budget availability

   - What to do if insufficient budget

   - Multi-dimensional tagging

3. **Reporting** (1 hour)

   - How to read Budget vs Actual reports

   - Drilling down from summary to detail

   - Exporting for further analysis

Materials:

- User Guide (PDF)

- Quick Reference Card (1-page cheat sheet)

- Video tutorials (10-15 min each)

- FAQ document

Phase 5: Go-Live & Support (Weeks 8-12)

Week 8: Parallel Run

- Both old and new COA active

- Compare outputs daily

- Fix discrepancies

Week 9: Soft Launch

- New COA becomes primary

- Old COA read-only

- Helpdesk support (dedicated person for Q&A)

Weeks 10-12: Stabilization

- Daily monitoring of PR/PO creation

- Weekly review meeting with champions

- Collect feedback and adjust

- Measure adoption rate (target: 95%+)

Success Metrics:

- ✅ 95%+ of PRs use new COA
- ✅ <5 escalations per week
- ✅ Budget vs Actual reports accurate
- ✅ User satisfaction score >80%

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8. FAQs

Q1: Can I create a new account on my own?

A: No. New accounts must be requested via Finance Team and approved by Finance Manager. This ensures COA integrity and prevents duplication.

Process:

1. Submit "New Account Request" form
2. Finance reviews and assigns account code
3. Finance Manager approves
4. Account activated in system (usually 2-3 days)

Q2: What if my expense doesn't fit any existing account?

A: First, check if a general/miscellaneous account exists in that category (e.g., "5299 - Other Materials"). If not, submit a New Account Request with clear justification.

Example: You need to buy drones for aerial crop monitoring. No specific account exists.

- Temporary solution: Use 5312 - Small Field Equipment
- Long-term: Request new account 5315 - UAV and Drone Equipment

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Q3: How do I know which account to use for lab chemicals?

A: Use the **Quick Reference - Research** sheet in the Excel file. For lab chemicals:

- General lab reagents → 5241 - Analytical Reagents
- Glassware and plastics → 5242 - Glassware and Plasticware
- Culture media → 5243 - Culture Media and Buffers
- DNA/RNA supplies → 5244 - Molecular Biology Supplies

If unsure, contact Finance Team or use the general account 5240 - Laboratory Chemicals (parent account).

Q4: My PR was rejected because of "insufficient budget". What now?

A: You have 3 options:

1. **Wait for budget replenishment** (if expecting additional funds)
2. **Request budget reallocation** from another account with surplus
3. **Request budget increase** from management (requires justification)

Process: Submit "Budget Revision Request" form → Manager approval → Finance updates budget allocation.

Q5: Can I charge one expense to multiple accounts?

A: Yes, if the expense benefits multiple research projects or funding sources.

Example: You buy 100 kg of fertilizer. 60 kg for Project A, 40 kg for Project B.

Split the expense:

- 60% → Account 5221, tagged with Project A
- 40% → Account 5221, tagged with Project B

The account code is the same, but dimensional tags differentiate.

Q6: What's the difference between "Budget Control" and "Tax Applicable"?

A:

- **Budget Control** = Whether the system checks budget availability before allowing transactions
  - YES = Must have sufficient budget to create PR/PO
  - NO = Can transact without budget check (e.g., depreciation, allocations)
- **Tax Applicable** = Whether the transaction typically involves tax (VAT, withholding tax)
  - YES = Tax calculation required (e.g., vendor purchases, services)
  - NO = No tax (e.g., salaries, internal allocations)

Q7: When should I use Direct Cost vs Indirect Cost accounts?

A:

- **Direct Costs (5000-5899)**: Expenses clearly attributable to a specific research project
  - Examples: Seeds for field trial, lab analysis for Project X, travel to collect samples
- **Indirect Costs (5900-5999, 6000-6999)**: Shared overhead not specific to one project

- Examples: Admin salaries, office rent, general lab utilities

Rule of Thumb: If you can answer "Which research project is this for?" → Direct Cost. If it benefits multiple projects or the organization as a whole → Indirect Cost.

Q8: How often is the COA updated?

A:

- **Quarterly Review**: Finance Team reviews account usage, identifies unused accounts, proposes new accounts
- **Annual Revision**: Major updates aligned with fiscal year planning (e.g., adding accounts for new programs)
- **Ad-hoc**: New accounts can be requested anytime via proper approval process

Change Log: All COA changes are documented and announced to users.

Q9: Can I see historical transactions by old account codes?

A: Yes, after migration:

- Old account codes are archived (read-only)
- A mapping table links old → new codes
- Historical reports can show both old and new codes side-by-side
- Full transaction history is preserved

Q10: What happens if I select the wrong account code?

A:

- **Before PR Approval**: You can edit the PR and change the account code
- **After PR Approval but before PO**: Finance can modify during PO creation
- **After PO Issued**: Requires "Journal Entry Correction" approved by Finance Manager

Best Practice: Double-check account code before submitting PR!
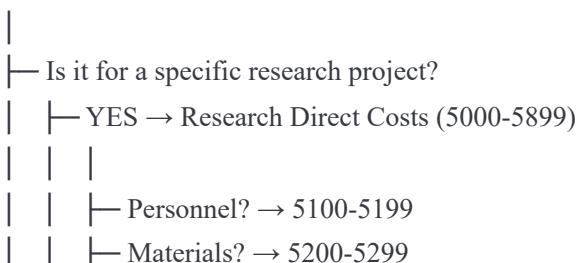
APPENDIX A: QUICK REFERENCE TABLES
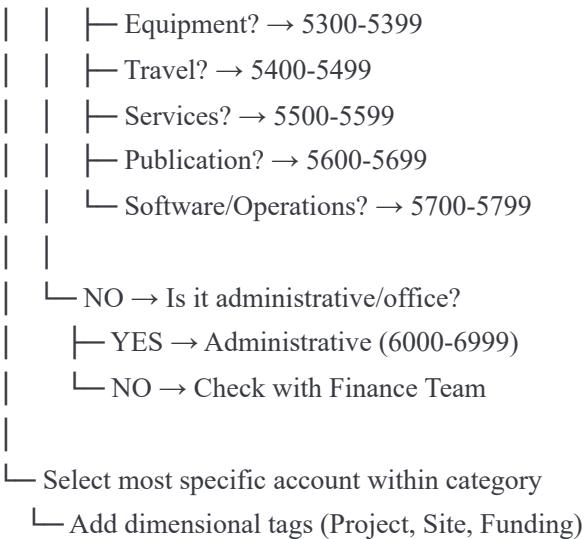
Most Commonly Used Research Accounts

Account	Name	Use For
5111	Salaries - PIs	Principal investigator salaries
5113	Salaries - Lab Techs	Laboratory technician salaries
5121	Wages - Field Workers	Daily/seasonal field labor
5211	Seeds - Cereal	Rice, wheat, corn seeds
5221	Inorganic Fertilizers	NPK, Urea, TSP, KCl
5231	Insecticides	Insect control chemicals
5241	Lab Reagents	Analytical chemicals
5311	Small Lab Equipment	Equipment < $5,000
5321	Equipment Rental	HPLC, GC-MS rental
5331	Equipment Maintenance	Calibration, repairs
5411	Domestic Airfare	Flights within country
5412	Accommodation	Hotel and lodging
5431	Vehicle Fuel	Gasoline, diesel
5511	Soil Analysis	External soil testing
5532	Statistical Analysis	Data analysis services
5611	Publication Fees	Journal APC charges
5711	Statistical Software	SAS, SPSS, R licenses

Account Selection Decision Tree

```
START: Need to create PR
  │
  ├── Is it for a specific research project?
  │   ├── YES → Research Direct Costs (5000-5899)
  │   │   │
  │   │   ├── Personnel? → 5100-5199
  │   │   ├── Materials? → 5200-5299
```

```
│   │   ├─ Equipment? → 5300-5399
│   │   ├─ Travel? → 5400-5499
│   │   ├─ Services? → 5500-5599
│   │   ├─ Publication? → 5600-5699
│   │   └─ Software/Operations? → 5700-5799
│   │
│   └─ NO → Is it administrative/office?
│       ├─ YES → Administrative (6000-6999)
│       └─ NO → Check with Finance Team
│
└─ Select most specific account within category
    └─ Add dimensional tags (Project, Site, Funding)
```

APPENDIX B: GLOSSARY

Account Code: Unique identifier for each account (e.g., 5211)

Account Type: Classification (Asset, Liability, Equity, Revenue, Expense)

Budget Control: System feature to check budget availability before transactions

Chart of Accounts (COA): Complete list of all accounts used in financial system

Cost Type: Classification as Direct, Indirect, or Overhead

Fiscal Year (FY): 12-month accounting period (e.g., FY 2025 = July 1, 2024 - June 30, 2025)

Hierarchical Structure: Parent-child relationship between accounts

Parent Account: Summary account that rolls up child accounts (cannot post transactions directly)

Posting Account: Detailed account where transactions are recorded (Level 4)

Dimensional Tag: Additional classification beyond account code (Project, Site, Funding Source)

DOCUMENT VERSION HISTORY

Version	Date	Author	Changes
1.0	2025-02-03	Finance Team	Initial COA structure for research operations
			305 accounts across 5 account types

For Questions or Support: Contact: Finance Team
Email: finance@organization.com

Ext: 1234

COA Owner: Finance Manager
Document Maintained By: Finance Team
Next Review Date: July 2025