Innovations of Agricultural Scientific Research Institutions in Management of Special Materials

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Abstract In recent years, the Ministry of Agriculture has increased input in agricultural scientific research projects. As a result, the procurement amount and quantity of special materials are increasing gradually, and the management of special materials becomes more standardized. In order to do well in management of special materials, the authors made exploration and thinking about further strengthening management of special materials in combination with actual conditions, including establishing regulations and systems, enhancing procurement process, strengthening requisition and safekeeping, and reinforcing general ledger management of special materials.

Key words Special materials, Management, Exploration and thinking

1 Introduction
The material management is a science\(^1\). In agricultural scientific research institutions, the material management is mainly reflected in management of special materials. Special materials of agricultural scientific research institutions are mainly applied in agricultural scientific research experiments, so they are beyond the range of management of fixed assets. Generally, special materials include bulk materials and low value consumables. Bulk materials mainly include seedlings and seeds purchased for experiment. Low value consumables mainly include raw materials that can not be restored after one time of use (such as chemical reagents, agricultural materials, and fuels) and tools and equipments not enough to reach fixed assets standard and not belonging to materials (such as low value instruments, meters, tools, measuring tools, scientific research devices, glassware, parts, accessories, and animals and plants for experiment). In recent years, the Ministry of Agriculture has increased input in agricultural scientific research projects. As a result, the procurement amount and quantity of special materials are increasing gradually, and the management of special materials becomes more standardized. In the new situation, it is an expectation of every manager to find out how to strengthen management of special materials, and provide high quality and low cost special materials for their organizations. In this study, we made some tentative exploration and thinking on further strengthening management of special materials in agricultural scientific research institutions in combination with actual conditions.

2 Establishing scientific management regulations on special materials
In order to strengthen management of procurement of special materials, increase efficiency of use of funds, and ensure smooth progress of scientific researches, it is required to establish appropriate regulations according to amount of procurement. For example, it is required to set up procurement management methods for bulk materials with amount higher than 50 000 yuan, and establish management methods for procurement of low value consumables with amount lower than 50 000 yuan. Regulations should clearly specify procurement item, procurement amount, procurement procedure, inspection and acceptance procedure, warehouse entry and exit procedure, make definite procurement, inspection and acceptance, warehouse entry, requisition, and safekeeping processes of special materials, improve internal control, and realize management of special materials having regulations to follow.

3 Taking effective control of material procurement and strengthening procurement procedure
3.1 Strengthening examination and approval of procurement and achieving multi-level approval
For the same type of special materials, centralized procurement is required. For those conforming to provisions of procurement management, it is required to strictly implement related provisions of procurement management of government. For procurement through inquiry, it should collect and keep related original records. The examination and approval of procurement needs passing approval of responsible person of central department and deputy director in charge, and the procurement should be carried out in the approved scope. After procurement, it is required to make registration in functional department and review if procurement documents are complete; for materials with single bill amount above 50 000 yuan or the total amount of bills above 100 000 yuan, procurement contract must be signed and procurement shall not be made without approval of the legal person; the procurement shall be conducted within the range of budget and pass multi-level examination and approval.

3.2 Accurately taking procurement methods and strictly implementing procurement budget
Procurement of special materials include judgment of details of decisions\(^2\), budget of special materials accounts for a large portion of scientific research project,
3.3 Setting up procurement registration system and doing well in filing and registration The procurement of special materials is an odd and complex job, thus it needs doing well in filing and registration. After completion of procurement, it is required to submit invoice and other documents to procurement management department for review. The management department should correctly register special materials according to procurement amount, and should review following items: (1) if the procurement is in the range of budget; (2) if procurement method conforms to regulations; (3) if procurement formalities are complete. After completion of review, the management department should make registration according to procurement amount, set up registration forms for procurement of bulk materials and low value consumables (as listed in Table 1 and Table 2), ask the person handling or purchaser to confirm by signature, and urge the person handling to collect and keep related original procurement records.

### Table 1 Registration form for procurement of bulk materials

<table>
<thead>
<tr>
<th>Procurement of special materials</th>
<th>Amount (104 Yuan)</th>
<th>Stock Out and Stock In</th>
<th>Purchaser</th>
<th>Registrant</th>
<th>Registration time</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>□ Yes</td>
<td>□ No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2 Registration form for procurement of low value consumables

<table>
<thead>
<tr>
<th>Registration date</th>
<th>Name of material purchased</th>
<th>Amount (10^6 Yuan)</th>
<th>Expenditure item</th>
<th>Stock Out and Stock In</th>
<th>Purchases and sales contract</th>
<th>Purchasing department</th>
<th>Purchaser</th>
<th>Registrant</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>□ Yes</td>
<td>□ Yes</td>
<td>□ No</td>
</tr>
</tbody>
</table>

3.4 Strictly controlling inspection and acceptance of materials and managing warehouse entry and exit With arrival of materials purchased, it is required to carefully handle inspection and acceptance and warehouse entry formalities, and assign special person to inspect and accept special materials. In the process of inspection and acceptance, it should focus on quantity counting, quality inspection, and document checking. If there is shortage, damage or inconsistency with contract found in the process of inspection and acceptance, the purchaser should inform supply unit or carrier according to related provisions, and handle return, replacement or compensation formalities in time. For special materials passing the inspection and acceptance, the management person of bulk materials in each center should handle warehouse entry formality, and fill in both the stock in and stock out notes. Financial department should review certificate of material inspection and acceptance, and never render account without signature of the personnel handling inspection and acceptance; material purchasing department should organize related management departments to spot check inspection and acceptance of materials from time to time.

4 Enhancing physical management and making registration of requisition and safekeeping

4.1 Keeping of materials should be safe It is required to set up centralized safekeeping system for special materials, standardize inspection and acceptance, quality inspection, warehouse entry, requisition, and inventory of materials, make clear storage place and responsible person of management, and enhance safe management of warehoused special materials, especially toxic and harmful materials, to ensure personal safety and material safety. Storage places should meet requirements of fire protection and gas defense according to physical, chemical and process properties of materials. Materials requiring special safekeeping conditions due...
to physical and chemical properties should be separated from other materials. Agricultural scientific research institutions will generally use some harmful and toxic reagents in some scientific research experiments. For example, molecular marker experiment needs EB coloring, while EB is a strong carcinogen; in tissue culture, HgCl₂ is a toxic chemical agent; in molecular biology, phenol is a toxic agent; formamide may lead to monster. Thus, these agents should be stored in special cabinets. Some open laboratories have high flow of people, so it is required to enhance safekeeping of materials. In addition, it should reinforce education of safekeeping personnel, make clear responsibilities of safekeeping personnel, and strengthen their sense of duty.

4.2 Warehouse exit should be registered Before using special materials, each research team should handle warehouse exit formality, and make registration of use of special materials (see Table 3), to ensure tracing of all materials.

Table 3 Registration form for use of special materials

<table>
<thead>
<tr>
<th>Name of material purchased</th>
<th>Purchasing date</th>
<th>Purchased amount</th>
<th>Date of requisition</th>
<th>Quantity of requisition</th>
<th>Handled by</th>
<th>Application</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Date</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td>Month</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Year</td>
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</tr>
</tbody>
</table>

5 Establishing general ledger of special materials, to realize accounts agree with physical inventory
It is recommended to establish auxiliary account for accounting of special materials, and reinforce financial accounting management of special materials. Material safekeeping and use departments (research teams) should establish and improve general ledger for purchasing, selling and storage of materials, strengthen physical management of special materials, and do well in registration of account books, to ensure accurate and complete data of special materials.

6 Conclusions
From the above analysis and discussion, we can reach following conclusions. Firstly, it is required to take effective management of special materials, enhance organization leadership, reinforce procurement procedure of special materials, establish and perfect procurement system, strengthen physical management, and establish general ledger of special materials, to make accounts agree with physical inventory. In addition, it is required to strengthen training of personnel in procurement management department, fully understand market situation and price trend, find out strength of suppliers, know whether quotation of suppliers is reasonable, and visit suppliers to check their supplying capacity, and improve professional quality of purchasers and strengthen professional ethics and sense of duty.

References

(From page 113)