PLANNING AND MANAGING FORESTRY RESEARCH:
A SELF-LEARNING COURSE

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MODULE 6
IMPLEMENTING THE RESEARCH PROGRAM
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MODULE 6
IMPLEMENTING THE RESEARCH PROGRAM

Introduction to the Module

As manager of a forestry research program, you must make an accurate assessment of what resources you need to carry out your planned research. You must develop an annual plan of work that is closely tied to your annual budget and other resources available to you. Also, you must continually and successfully coordinate your organization's personnel, facilities, funds, and other resources to carry out your planned research activities. Without such coordination, your organization's research activities would quickly grind to a halt.

This module is practically oriented. In it, we will try to help you master the "nuts and bolts" of research management. We will address the problem of determining the resources needed to carry out a planned program of research. Special attention is paid to developing an annual plan of work, which outlines how you will use the resources available to you during the coming year. We also will review the critical and troublesome day-to-day tasks of coordinating the use of available resources, and managing your time to become a more effective manager. We'll show you, as best we can, how to balance the different (and often competing) demands for resources within your organization. Does your organization have some problems that seem to stem from incomplete planning, thorny conflicts over resource distributions? Do you sometimes wish that you would like to manage your time better? If so, then give this module a try. We think you'll find it helpful!

List of Study Units Covered in the Module:

| Study Unit 6.1. | Determining resource needs and other requirements |
| Study Unit 6.2 | Developing the annual plan of work |
| Study Unit 6.3. | Coordinating activities and uses of resources |
| Study Unit 6.4. | Managing time |
If you would like to find out how much you improve your skills and knowledge by studying this module, we suggest that you complete the exercise on the next page before you begin this module. This will establish your current level of skills and knowledge about the topics covered in this module. At the end of the module there is an identical skill and knowledge assessment form which you can complete once you have finished the module. By completing and comparing the before and after assessments, you can determine the extent to which you have improved your skills and knowledge.
Below are listed a number of skill and knowledge statements derived from the objectives of the study units in this module. These are identical to those listed for this module Study Unit 0.3 - Self-assessment of Training Needs, which you may have completed initially to guide your course of study. Please read each statement carefully and indicate with a check mark the competence level that best describes your current level of competence, from 1 to 5, using the following descriptions:

1 - I cannot perform this skill, or I have not been exposed to the information.
2 - I cannot perform this skill, but have observed the skill or have been exposed to the information.
3 - I can perform the skill or express the knowledge with assistance from others.
4 - I can perform the skill or express the knowledge without assistance from others.
5 - I can perform the skill or express the knowledge well enough to instruct others.

<table>
<thead>
<tr>
<th>Skill or Knowledge Statement</th>
<th>Your Level of Skill or Knowledge</th>
</tr>
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<tbody>
<tr>
<td>a) Assess your own research organization's research capacity,</td>
<td></td>
</tr>
<tr>
<td>and identify key factors or constraints that could hinder successful completion of proposed</td>
<td></td>
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<tr>
<td>research projects and programs that your research organization might undertake.</td>
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</tr>
<tr>
<td>b) Describe the functions of annual planning and budgeting.</td>
<td></td>
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<tr>
<td>c) Utilize timelines to assist in annual work planning.</td>
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<tr>
<td>d) Understand the importance of and need for coordinating the use of resources needed in</td>
<td></td>
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<tr>
<td>implementing your organization's research program.</td>
<td></td>
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<td>e) Utilize several techniques to identify and resolve potential resource use conflicts</td>
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<td>within your organization.</td>
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<td>f) Describe a number of practices that can help you better organize your work.</td>
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<td>g) Identify some weaknesses in your personal style of time management, and take steps to</td>
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<td>address or minimize those weaknesses.</td>
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Study Unit 6.1  
Determining Resource Needs and Other Requirements

In this unit we'll explore the importance of accurately determining resource needs and other requirements of planned research programs, and of planning for and scheduling the use of those resources. An important job of research management is to determine the resources, collaborative agreements, and other needs that will be required to implement a particular research project over the duration of the program, and to ensure these resource needs are clearly specified in planning research programs.

It is equally important to ensure that these resource needs are met in a timely manner, by overseeing the allocation of available resources within budget guidelines to meet actual needs as they occur.

In this unit, you'll learn how you can manage institutional resources to more fully utilize your organization's capacity to conduct quality forestry research. We'll suggest methods you can use to identify critical factors that are likely to inhibit the successful completion of the research you supervise, and to develop a strategy to overcome key obstacles to the desired research.

Objectives

When you have completed this study unit you should be better able to:

- develop a checklist that you can use to determine important resources and other requirements that would be needed to implement your organization's forestry research activities;

- assess your own organization's research capacity, and identify key factors or constraints that could hinder successful completion of proposed research projects and programs that it might undertake; and

- develop a practical strategy to deal with the key constraints that could hinder implementation of your research activities.
Managing Resource Requirements

When evaluating or developing potential research proposals, whether they are broad research programs or specific research projects, the research manager must estimate what additional resources will be required by the proposed programs and projects. It is important to estimate as closely as possible what additional resources will be needed to successfully conduct the proposed research, and when and where they will be required. These resource requirements must then be compared with the expected resource availability to determine if the necessary resources are likely to be available when needed. It may be possible to meet some resource needs of new research activities by using existing resources that are not being fully utilized. However, many new research programs will require resources in addition to those available in the organization.

Determining Resource Needs

All forestry research requires resources of one kind or another. Even research that is primarily conceptual and intellectual in nature requires some space to work in, perhaps a desk, paper and pencils, and other materials, the salary of those doing that kind of research, support staff, and perhaps some communication facilities. All of these items (and there are likely to be many others) require financial resources. Much of forestry research may require a wide range of resources, including: human resources, such as research scientists, laboratory assistants, field work crews, secretarial and clerical assistance, and others; experimental facilities, such as land, buildings, and laboratories; specialized field, laboratory, and office equipment, such as tree seed extraction and drying equipment, soil testing equipment, site preparation equipment, planting equipment, transportation equipment, and office equipment; supplies, such as plastic bags for seedlings, fertilizer, fuel, paper, and pencils; and funding to provide these resources and to purchase other needed goods and services.

In assessing resource requirements, the following categories should be considered:

Human resources. Iyamabo (1992) and Dagg and Haworth (1988) emphasize that human resources are a key element in the research program, and can have a significant impact in determining the strengths and weaknesses of research institutions. An assessment of human resources includes estimating the various kinds of personnel and skills required for each research project including: research scientists, research support personnel (to provide office, laboratory,
and field assistance), and administrative and management personnel. These estimates include not only what skills are needed, but also when they are needed. If skills are lacking, it may be necessary to plan for training to provide the needed skills. If personnel with the required qualifications are not available to conduct the research, it may be necessary to either obtain additional personnel or modify the proposed research so as to make use of the personnel available.

In assessing human resources, special attention should be given to potential conflicts in scheduling time for those personnel who may have to devote time to more than one research project. If more than one research project requires the same person's time at the same time, this could delay completion of at least one, if not both, of the projects. The research manager must resolve any potential conflicts over the use of personnel. The management of human resources, including the recruitment, training, and assignments of jobs, will be covered in more detail in Module 9.

**Funding.** In the broadest sense, the funding available to the forestry research organization is what provides for all of the resources available for research activities. A realistic budget should be developed for proposed research activities. It is usually necessary to develop budget estimates by some accepted formal budget category of expenses. This can become a major planning and reporting problem for research managers if the funding comes from one or more outside agencies that insist on having all estimates and reports made using their own particular budget categories, while your own organization requires that records be kept using their own set of budget categories that differs from the funding agency.

Rules and regulations regarding permissible transfers of funds among budget categories differ greatly among various government agencies and organizations. In many organizations it may be difficult to transfer funds among planned categories of expenditures once the budget has been approved by both the granting and administering agency. Thus, it is important to develop good estimates of expenditures in preparing the initial budget. Because the budget categories used by various organizations differ so greatly, it is difficult to generalize. However, estimates of funding needs normally would include at least the following categories of expenditures: salaries of project personnel; purchase of equipment; construction of special facilities; contracts for special services; operating supplies and expenses; communications; transportation and travel expenses; and other special expenses particular to each project. More detailed breakdowns of each expense category may be desirable or be required.

An important consideration is not only the actual amounts of funding required, but the schedule of when they will be required, and the proposed schedule of payments or the availability of funds (cash flow). If a considerable amount of funds are required for equipment purchase, site preparation, or other purpose at the beginning of the project, then care should be taken to ensure that the budget provides for the funds to be available in the amounts needed, when they are needed, and for the appropriate expenditure categories that are needed. The lack of funds when they are needed may cripple a research project and ensure its failure.

**Facilities.** The facilities required to conduct proposed programs of research must be carefully and fully specified. An assessment is needed to determine if the required facilities will be available
when they are needed. By properly scheduling the use of limited facilities, research managers can ensure that the facilities will be available to meet the needs placed upon them by various competing research projects (for more detail on scheduling, see Study Unit 6.3). If special facilities must be constructed, and funding for this is available, then an important consideration is scheduling the construction to ensure that the facilities will be available at the time they are needed.

An important consideration in developing research facilities, such as specialized laboratories, is their potential use for future research projects. It also is important to recognize that facilities such as buildings, special access roads, bridges, etc., require maintenance if they are to continue to be useful. Such maintenance imposes a constant drain on future budgets, and provisions must be made for funding to provide this future maintenance. It is well to be cautious in accepting offers of outside funding agencies to construct new facilities if there is no additional funding available for their future maintenance.

**Equipment.** New research proposals may require a substantial amount of office, laboratory, and/or field equipment. The experienced research manager pays particular attention to equipment requirements contained in or implied by new research proposals to ensure that the equipment required can be provided, and is likely to be available when needed. If the required equipment is now available within the organization, then in planning new research programs a key task is to schedule the equipment to assure that it will be available for use on the new research project when it is needed. If the equipment is not available, then it may be necessary to consider the purchase or construction of the needed equipment, and justify the additional expense.

An important consideration is whether or not the expertise to set up and operate special equipment is available. Acquiring certain types of laboratory or office equipment (for example, computers and new software packages for them) may require special training programs before they can be used effectively. Including such special training activities in the research project budget will ensure that funds will be available for that purpose.

Another consideration in acquiring equipment for a research activity is how it can be maintained and repaired if necessary. Equipment must be maintained in good working order if it is to be useful. Some types of equipment may require regular scheduled maintenance to keep it in good operating performance. Other equipment may be subject to unexpected breakdowns, and be unavailable until it is repaired. Equipment that may require special parts that are not available locally and must be imported from other countries, or that requires special repair expertise not available locally, may be a poor risk if there is a chance of a breakdown at a crucial time.

**Supplies.** New forestry research projects will require office supplies, and may require laboratory and field supplies. In assessing resource requirements, the need for and use of such supplies should be recognized. There may be a need for special supplies that are not normally available within the organization, such as laboratory chemicals, seedling containers, imported seed, etc. The availability of certain supplies at certain times may be crucial to the successful completion of the research project. The research manager must plan for the timely ordering and stocking of such supplies so that they are available when needed.
It is easy to overlook the fact that all types of supplies require some sort of storage space. Some supplies require special storage facilities that must be constructed or installed if they are not available. For example, some supplies may need refrigerated space, protection from rain, secure locked storage space, or special facilities for storing hazardous materials. If such special storage facilities will be needed, and are not presently available, they may need to be included as part of the research budget.

**Institutional support.** Experienced research managers recognize that new research projects may impose additional burdens on the institutional support system currently in place. They determine what additional or new kinds of institutional support may be required by the proposed research, and allow for the costs of such added services in developing the project budget. This includes training programs to upgrade qualifications of project personnel; scientific support services, such as statistical and computer support; and administrative services, such as personnel, purchasing, and budget operations.

It is easy to overlook the impact that additional new research program activities may have on existing research support services. If such services become overloaded to the point that they cannot function effectively, costly delays and mistakes may occur, jeopardizing research program accomplishments.

**Coping With Inadequate Resources**

Assessing resource needs, and allocating existing resources among competing research projects and programs, is one of the most important tasks facing the research manager. It also can be one of the most frustrating tasks when the resources available to do the job are less than what is needed. Although managers may have control over estimating resource needs, they may have little control over what resources they actually receive. A manager may do an excellent job in estimating resource needs, only to be told that the funds needed to procure those resources are not available. The manager often must cope with the breakdown of critical equipment, the failure to deliver necessary supplies on time, the illness of key people, delays in appropriating necessary funds, and any number of other problems that threaten completion of scheduled research activities. In developing a strategic research plan, the manager should assess the likelihood that the resources required for proposed research programs and projects may not be available when they are needed. Contingency plans should be developed to indicate how potential shortages of critical resources could be overcome. If resources are not available when they are needed, key research activities may be delayed or may fail to be performed, resulting in a delayed or incomplete project output.

In order to cope with resource shortages it may be necessary to scale back or delay planned research activities, and revise study plans and annual plans for work accordingly. Or, it may be possible to seek additional resources by entering into new partnerships with other research organizations and/or funding agencies. For example, many international sources of funding are willing to join other agencies and organizations in a cooperative effort, when it is in their interests to do so. However, it is the job of the forest manager to develop and "sell" such a cooperative research proposal to appropriate potential collaborators.
Activities - Study Unit 6.1

Please read the situation presented below and answer the questions that follow.

Situation Analysis

It's Monday morning, and you haven't been in your office for five minutes when the phone rings. You're not at all prepared for the news: your superior, the minister of Natural Resources, informs you that the Research Support Services manager for the Department of Forestry Research has taken a sudden, extended leave-of-absence, apparently because of a personal conflict he had with the minister. The minister requests that you take over this manager's responsibilities until he returns or is replaced, a date vaguely set 3 to 6 months in the future. While you point out that you are already overloaded with work, the minister is adamant and says that you are the most competent person available to fill in for this manager. Seeing no choice, you reluctantly agree.

As you get off the phone, you feel discouraged, realizing how little you want this additional responsibility. Managing the provision of research support services is an especially difficult assignment, having been plagued by severe problems and inefficiencies for years. Materials needed for research projects rarely arrived on time, or if they did arrive, they were the wrong items, or lacked essential parts. Scientists always had to scramble to secure available and running four-wheel-drive vehicles that could make it over the rough roads. Despite the purchase of new vehicles every few years, most vehicles just ended up sitting in the shop, waiting for parts, or being cannibalized for parts to keep the remaining vehicles running. Further, the implementation of several research projects have been delayed more than once because important collaborative agreements between your research organization and private landowners were not signed in time. And finally, the chronic shortage of competent, well-trained forestry technicians to support your research scientists is largely a result of delays in hiring, not due to the lack of available funds.

But the Research Support Service Division can't always be blamed for all of these problems. It's no secret that some of your scientists planned their research poorly. Materials, supplies, and personnel that were needed to implement the studies were not well thought out, nor ordered in a timely or thorough manner. And in one case, collaborative agreements with some landowners for on-farm agroforestry trials were never developed or signed until too late in the rainy season, mainly due to researcher delays in identifying potential collaborators. That particular study lost an entire year because of poor planning.

Despite your reservations regarding your new assignment, it is clear that opportunities exist to significantly improve the management and provision of services that support your division's research activities. The lack of planning and support has always been a major problem, with everyone avoiding responsibility and blaming the other division. Perhaps this is an opportunity for you to finally do something about it! You note to yourself how fortunate you are to have competent staff members who can take on these additional responsibilities, because you'll certainly need them!
Activity 1

How would you broadly determine the important resources and other requirements needed to successfully implement the division's research agenda? Circle the letters of all responses that you think best apply.

a. Delegate a few of your own most trusted and competent staff the job of conducting an extensive analysis of the resources needed to support your own division's research activities, specifically determining whether these needs are being met, and if not, why not.

b. Meet with your scientific staff to determine their view of what resources they need to implement their research programs.

c. Utilize a formal procedure to systematically analyze the operations of your division and determine the resource needs of each scientist's research program.

d. You really don't need to do a special analysis to determine your division's resource needs. You already are well acquainted with what resources your division needs to conduct its research programs, and thus you really don't need to ask anyone.
Comment 1

a. This is probably the best way to go about determining your organization's resource needs. With the additional responsibilities suddenly thrust upon you, you must be able to delegate time-consuming activities like this to your staff. However, insist that your staff do a thorough job, ensuring that all scientists are included in the analysis. And let them know that you will be using this analysis to make key decisions that can improve the implementation of their own individual research projects.

b. This is also a good idea, but it would be better if you appointed an *ad hoc* committee to deal with the resource analysis, who would eventually report back to you with their recommendations. Trying to do all the work yourself would not be efficient or effective use of your time.

c. Again, an excellent idea, as long as you delegate the bulk of the work to competent subordinates. A systematic resource analysis can provide a more thorough review of the available resources, and reduce the chances that important aspects of the issue will not be overlooked.

d. While you probably know in a general way what resources your division needs to do its work, a good manager will always draw upon his or her staff to ensure that important factors are not overlooked. The staff also feels included in the decision making process, and a sense of *esprit-de-corps* is strengthened. It is particularly important that the individual scientists and key laboratory and field personnel who actually conduct the research studies be contacted for their input. Similarly, clerical and other support staff should be consulted regarding existing and potential problems resulting from additional demands on their resources.
Activity 2

What strategy would you use to identify and deal with the limitations and constraints that are hindering the effective implementation of the research program in this example? Circle the letters of all responses that you think best apply.

a. Meet with the staff of the Logistics Division to inform them of the change in the division's leadership, being sure they know the minister requested your participation, and request their help in assessing the current status of their division's activities.

b. Take a short walk around the repair yard, talk to a few employees of the Logistics Division, and make a rough determination of what needs to be done.

c. Based on the resource analysis you conducted earlier, determine whether the lack of these resources are in some way limiting the effective implementation of your research program. If so, determine if changes in the procedures of the Logistics Division would eliminate these resource constraints.
Comment 2

a. In this situation, it is an excellent idea for you to meet with the staff of the Logistics Division to update them of the changes in leadership, and to request their input regarding the operation of the division. But be aware that solving the problems in the Logistics Division may not solve the resource scarcity problems in your own division. Thus, as manager of forestry research, you must have a clear picture of the resource constraints that limit the implementation of your division's research agenda. Only then is it possible to accurately determine the cause of the constraints, and take specific actions to eliminate the constraints.

b. A short walk around the repair yard is probably not going to provide you with adequate information regarding the extent and cause of the resource constraints. A more systematic inquiry is called for in this case. However, it is always a good idea for managers to visit all aspects of their research program on a regular basis to remain up-to-date in a comprehensive way about the operations of their research programs.

c. This is the preferred approach to solving the resource allocation problems in this example. After first determining your division's resource constraints, and the causes of these limitations, a thorough review of the Logistics Division's role in the handling of these resources is in order. Changes in procedures or policies can then be precisely and effectively targeted at the source of the resource constraints, solving the problem.
Activity 3

The following checklist outlines some of the key types of resources required for the implementation of forestry research. Such a list can be used as a checklist in planning research projects and programs, preparing budget estimates for planned research activities, or preparing research proposals. Please review the list carefully, and add or delete any items that you feel better reflect the situation for your own organization.

Human Resources
- Administrators
- Research Scientists
- Technicians (specify)
- Clerical
- Research Support
- Maintenance Workers (janitorial, mechanics, gardeners, etc.)
- Other (list)

Financial Resources
- Core Funding
- Project Funding
- Other (list)

Facilities
- Office
- Laboratory
- Greenhouse
- Storage
- Experimental Areas
- Other (list)

Equipment
- Communication
- Computers, Software
Office
Laboratory
Field
Transportation
Other (list)

__________________________
__________________________
__________________________

Administrative Services
Procurement/Contracting
Budget/Finance
Personnel
Other (list)

__________________________
__________________________
__________________________

Research Support Services
Statistical
Editorial/Publication
Information (access to publications, other scientists, and other information sources)
Other (list)

__________________________
__________________________
__________________________
Module 6- Implementing the Research Program

Legal
Memorandum of Understanding
Contracts
Collaborative Agreements
Other (list)

__________________________
__________________________
__________________________

Other (list)
__________________________
__________________________
__________________________

Now, use the checklist above to evaluate the status of resource availability within your own forestry research organization. You can conduct such an evaluation by using categories such as scientist or researcher (that is, identify their needs according to the list above), by research project, or by using some broader categorization (such as your entire research organization). Why don’t you try using this format to review one particular research project, just to get used to the process!
Comment 3

We hope you added other resources to the list so that it is now customized to your own organizational environment. This list could serve as a basic guide for determining resource requirements when developing proposals and plans for future research.

If you used the format to review a particular research project, you probably found that some critical resources may be in short supply. This table and those that follow (activities 4 and 5) are designed to help you focus on those resource limitations and eliminate the resource constraints.
Activity 4

Based on the resource requirements identified in the previous question, determine, in a general way, the major constraints and limitations your organization experiences in obtaining resources required to support its research activities, and write them below.

<table>
<thead>
<tr>
<th>Resource Categories</th>
<th>Constraints and Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>Legal</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
Module 6- Implementing the Research Program

Comment 4

We can only guess what you will write as a response to this question, since this applies specifically to your own organization's resource constraints. If you follow the headings, you should be able to identify the major constraints your organization is facing as it tries to implement its research agenda.
Activity 5

For each constraint or limitation listed above in response to question number 4, develop a plan of action using the format below to reduce or eliminate the constraint, including how it will be dealt with, who will address the issue, and when it will be remedied.

<table>
<thead>
<tr>
<th>Constraint or Limitation</th>
<th>How Remedied</th>
<th>Who Addresses</th>
<th>When Addressed</th>
</tr>
</thead>
</table>
Comment 5

The key to management of any enterprise is to convert information into action. The suggested procedure outlined here is designed to help you advance to the action phase by translating the information you have generated into action. You already have identified the resources and their limitations (activity 3) and constraints (activity 4). By using the procedure in this activity to identify the manner in which the constraints will be resolved, the person or persons responsible for correcting the problem(s), and deadlines for addressing the issue(s), you now have created a plan of action for improved resource management for your research organization. You can feel confident that this plan can significantly improve the management of resources, eliminate bottlenecks and limitations, and help implement your research agenda.
Summary - Study Unit 6.1

In this unit you learned how your organization's ability or capacity to conduct research depends upon the available financial, physical, and human resources, and the management and administration of these resources. An important part of research management is to anticipate resource needs, to accurately plan for procuring the resources required for the successful completion of the proposed research, and to identify and remove or reduce potential constraints that would inhibit the organization's research activities. By completing this study unit, we hope you've learned some ways to manage institutional resources that will help you improve your organization's capacity to conduct quality forestry research.

If you would like more information about determining resource needs, we encourage you to obtain and review the interesting articles identified in the literature cited and other references listed at the end of the module. A key article directly related to the topics covered in the module, and cited in the text, is reprinted for your use in the section on readings at the end of the module.
Study Unit 6.2
Developing the Annual Plan of Work

Budgets and appropriations for public forestry research organizations usually cover a one-year period of time, a fiscal year. During that fiscal year the research organization may carry out simultaneously a number of different research activities, involving many different research projects or studies. Some long-term studies may be ongoing over a period of several years. Some may be terminating part way through the fiscal year. Others may start up during the fiscal year. Some short-term studies may start and end entirely within the fiscal year. An annual plan of work for the organization, or for each subunit of the organization, is a useful planning tool for organizing the work of the diverse research activities that go on during the year within the organization, and relating that work to budget and funding constraints that may vary from year to year.

Having an annual work plan is essential for the smooth operation of a research organization. This plan describes how you will implement your research agenda on a year-to-year basis. We designed this unit to take you through the process of creating an annual work plan that addresses your longer term research program. You’ll discover that annual plans are a valuable management tool for developing annual budgets, and for planning, allocating, and controlling the use of scarce resources within your organization. You’ll see how such plans can be used in achieving a consensus among your staff for the coming year's research agenda. We'll show you how to use information, whether from administrative or field sources, to formulate a realistic plan that addresses the concerns of all involved. Lastly, you’ll learn how to use your annual plan as a tool to monitor your program's progress and accomplishments.

Objectives

When you have completed this study unit you should be better able to:

- describe the functions of annual planning and budgeting;
- discuss the importance of linking annual work plans to program and strategic plans. Explain how this linkage is achieved; and
- utilize timelines to assist in annual work planning.
Annual Research Planning and Budgeting

Annual research planning and budgeting refers to planning for the upcoming fiscal year. The primary purpose of annual planning and budget formulation is to identify the immediate tasks to be accomplished—based on the direction provided by the strategic plan, the priorities established in program planning, and other factors—and specify what resources will be required to carry out these activities (Goldsworthy 1987). Annual budget requests must be closely coordinated with annual work planning, because the funding received in any one year strongly influences the work that can be accomplished in that year. In turn, annual planning and budgeting must be closely related to strategic and program planning, if it is to result in a coherent research program with documentation for its justification and cost.

The short-term perspective of annual planning implies that it is concerned with the work that will be carried out with existing personnel, facilities, and other resources. For the most part, research resources are basically fixed in the short-run. At this planning level, programs and projects and their objectives, resource requirements (dollars and person years), and allocation of resources are very specific:

"The annual work program is ... the firmest statement possible of the aggregate of experiments and studies to be carried out during the year with the capital resources and budget available..." (Dagg and Haworth 1988).

Functions of Annual Planning and Budgeting

Annual plans ordinarily are prepared for an organization's fiscal year. Annual plans are used by research managers for budgeting, resource allocation decisions, and monitoring and reporting accomplishments. They also provide guidance to researchers and other personnel in the organization as to what work is expected to be accomplished during the period of the plan.

Annual planning and budgeting fulfills several important functions (Arnon 1989):

- It is a key planning instrument. The budget is the main tool with which research resources are directed into those areas that conform best with research policy and the strategic and program plans. Budgeting requires that concrete decisions be made about the most effective use of scientific, technical, and support personnel, and research facilities and equipment. Managers are compelled to make hard decisions, such as striking an appropriate balance between basic and applied research, long-term and short-term research, and research on various problem areas. Strong guidance on these decisions should be provided in strategic and program planning, but specific monetary values are assigned in the annual budget.
• It serves an important function as an instrument for delegating authority. Specific activities and expenditures are approved in advance, so that team or project leaders can carry out those activities and dispose of the funds allocated for their research without further approval, unless there are deviations from the original budget requiring consultation with managers.

• It is a tool for: (1) monitoring and evaluating programs, projects, and studies (comparison of anticipated outputs, achieved outputs, and costs); (2) personnel appraisal; and (3) financial control. Careful planning and budgeting and periodic review keep expenditures in line with the approved allocations of financial resources. Reviews at fixed intervals also make it possible to compare expenditures to the performance of a research project.

• It increases awareness of the scarcity of resources facing the organization, and increases concern over efficient use of resources throughout the organization.

The Format and Content of Annual Plans

The annual plan of work outlines just what work a research unit or individual plans to undertake during the upcoming or current year. In some cases, the annual plan may go into considerable detail as to what studies will be initiated, what ongoing experiments will be measured, what travel will take place, what manuscripts will be submitted for publication, what other dissemination activities will be conducted, etc. Such activities use scarce resources (operating funds, equipment, laboratory and other facilities, time of key personnel, etc.) which must be scheduled to ensure that they will be available when needed. The research unit's annual plan of work may contain a detailed budget that outlines planned expenditures for salaries and operational expenses. In other cases, the annual plan may be relatively simple and informal.

The format and content of annual plans for a forestry research organization, and the span of administrative control that they encompass, vary greatly from one organization to another. They are strongly influenced by the particular legislation, regulations, and administrative policies relating to the organization. Because they differ so greatly from one situation to another, it is not practical to specify one particular format for the annual plan. Each organization will have its own particular requirements for annual planning and budgeting.

In a smaller research organization, there may be only one annual plan of work that covers all activities of the organization. In larger organizations, each research subunit may develop its own annual plan of work that specifies what activities the unit will undertake to carry out the program of research outlined in its program plan. A common requirement in larger organizations is that each administrative unit within the organization prepare some sort of annual plan of work for a prescribed budget level. Such research unit plans may be based on
annual work plans that are developed for each individual within the research work unit or administrative support unit. Both individual and unit plans may be required to indicate what work is to be performed, anticipated travel and other special expenditures (e.g. laboratory equipment, office equipment, etc.) that require special advance approval, anticipated expenditures by various budget categories (personnel, travel, equipment, supplies, etc.), and what accomplishments and outputs are expected to be achieved during the upcoming planning period (usually one year). Such plans often are tied to a specific expected budget, and may include contingency plans if budget expectations are not met.

**Linking Annual Work Plans to Program Plans**

To the extent feasible, annual plans of work for a research unit or individual should be closely tied to the research program outlined in the comparable program plans. To be effective, annual plans must be based on a realistic appraisal of not only what needs to be done and is scheduled to be done that year, but also what resources (time, facilities, supplies, equipment, funds, etc.) are likely to be available to do the job. The resulting annual plan of work usually is a compromise between what the research unit has stated what it wants to achieve, as outlined in the various program plans, and what it realistically can achieve, given the realities under which it must work during the coming year.

Any number of factors can make it difficult to keep on schedule: key people may be unavailable when needed, due to training, transfer, or other reasons; necessary equipment or supplies are not available when needed, so work cannot be carried out as planned; existing studies have been delayed, and resources that had been scheduled for other work must be diverted so they can be completed; etc. If the appropriations or other funding process fails to provide the resources needed to carry out the planned work, then annual work plans may have to be revised. Eventually, repeated failures to carry out planned research program activities may force revision of research work unit and program area plans.

Preparation of annual work plans is usually the responsibility of the manager of the research unit for which the plans are being prepared. However, such annual plans deal with specific field, laboratory, and office activities, to be carried out by specific individuals within the research unit, using particular equipment and facilities. Thus, it is essential to obtain input from all members of the research unit to obtain a realistic assessment of the feasibility of the work planned, given the limitations imposed by the actual work situation.

In addition to organizational unit plans, there are usually plans for individual research studies (discussed in study unit 5.2). The sum of activities scheduled for a given year under the
Milestones or mileposts refer to the markers (stones or posts) that were placed at regular intervals (every mile in the British system) along roads and highways to let travelers know where they were.

Individual study plans will determine a large part of the organization's resource needs for that year, and must be considered in developing annual plans of work. Severe limitations of resources in any one year may force postponement of scheduled work, or cancellation of planned studies or other activities. This in turn may jeopardize attainment of program plans, and ultimately result in a failure to achieve the strategic objectives of the organization.

Implementing Annual Plans

The purpose of operational planning, both program planning and annual planning, is to guide work that is being carried out by the organization to ensure that it is directed at accepted goals and objectives, and is within the stated mission of the organization. Regardless of how well they are written, operational plans serve little use if they are not implemented. Annual plans of work are the means by which program plans are implemented, and the objectives, goals, and mission of the organization are achieved. If the stated goals and objectives of the organization are to be realized, it is important to see that these annual plans are carried out as intended. Overseeing the implementation of annual plans is a key responsibility of the research manager.

Monitoring the implementation of annual plans can be done by requiring periodic progress reports on research accomplishments. One effective way to do this is to require that milestones (or mileposts) be established for specific tasks in all study plans and annual plans. Milestones are specific accomplishments that can be readily measured by some specific date. Examples of milestones might be:

- Complete statistical analysis of data gathered from field plots in remeasurement of study number 8703 by November 30.
- Complete installation of two experimental plots for study 9207. Expected date of completion - October 31.
- Complete first draft of a manuscript on "Growth and yield of ...". Due January 15.

These milestones can be displayed graphically as a fiscal year timeline to better help plan work for the coming year. To illustrate this technique, if we assume that the above milestones were for an individual research scientist, then the tasks and milestones might be as shown in figure 6.2.1. This is a simple monthly timeline. Although more complex timelines can be used, even a simple display such as was illustrated here will greatly help annual work planning, without imposing a large burden on individual scientists.

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1Milestones or mileposts refer to the markers (stones or posts) that were placed at regular intervals (every mile in the British system) along roads and highways to let travelers know where they were.
When there are numerous tasks to be completed, each requiring a considerable amount of time, systematically displaying the planned activities in a timeline can help to identify particular problems with allocating time or other resources. This same technique is useful for all types of activity planning. One can use this same timeline approach, but use a line to indicate the time periods during which the activity will take place. Or, one could show days or hours of work required for each task during each time period. The days or hours for all the tasks can be totaled for each time period, and then compared against the total time available for that period to check for scheduling conflicts. There are many variations of this timeline approach that are useful in planning.

Periodic progress reports can be required to inform managers about progress in achieving planned milestones, and document other research accomplishments. However, wherever possible such formal reports should be supplemented by frequent informal first-hand contacts with those carrying out the work. There is no substitute for first-hand observations of the actual situation on the ground. Such contacts can be greatly facilitated if there is good communication between managers and subordinates (see module 9).

Everyone recognizes that because of unforeseen circumstances it may not be possible to carry out activities exactly as they were planned. Events may require postponement, cancellation, or alteration of planned activities. Nevertheless, if plans are to serve their purpose, every effort should be made to implement approved plans, or else to modify the plans to better accommodate changing circumstances.

Frequent comparisons of actual accomplishments with planned activities can give the research manager an early warning signal about disparities between planned and actual events so that corrective action can be taken. This may mean a redirection of resources or research effort to get activities back on track. Or it may require a re-examination of planned activities and a redirection of plans to better correspond to the realities confronting the research organization.
Figure 6.2.1. A hypothetical example of a task timeline.

Fig. 6.2.1. has to be downloaded separately.
Activities - Study Unit 6.2

Please read the following activity description below and then complete the exercises that follow.

Assume you are lead scientist for the Ghosa Division of Forestry Research, Forest Products Area. You have 4 junior scientists under your supervision, each of whom are conducting research in various aspects of forest products. With the new planning emphasis at the division level, you are asked to develop an annual plan for your research area.

Activity 1

How would you go about developing such a plan? Write your response in the space provided below.

1.

2.

3.

4.

5.
Comment 1

Annual planning is a cyclical interactive process. In preparing the annual plan, top management staff consult with one another, their research staffs, and their stakeholders to obtain the following information:

1. the research organization's goals, objectives, and needs, as well as an evaluation of opportunities or threats (determined in the strategic planning process and reevaluated through strategic management).

2. expected continuation of funding for ongoing, specific research projects, activities, or expenditures.

3. expected budgetary increases or decreases for the planning period.

4. existing budget and allocation of resources across programs and projects.

5. proposals for new research initiatives developed by research staffs, or suggested by external stakeholders.
Activity 2

What general components would the final plan contain? Write your response in the spaces provided below.

1.

2.

3.

4.

5.

6.
Comment 2

Since organizations vary so much, it is difficult to list exactly what every annual plan should include. However, there are some general recommendations we can make of topics to include in annual plans:

1. individual study descriptions, new studies to be initiated, ongoing studies to be continued, older studies to be completed or terminated

2. budget requirements for all activities, including information regarding the use of scarce resources (money, equipment - including vehicles, laboratory and other facilities, personnel time, etc.), and detailed planned expenditures for salaries and benefits and operational expenses.

3. travel required to implement the research agenda

4. expected outputs, impacts, and accomplishments of the research unit, with specific milestones and completion dates.

5. publication/dissemination plans for communicating research results.

6. contingency plans if budget expectations are not met.
Activity 3

How would you use this plan in your daily management of your research staff and activities over the next year? Write your response in the spaces provided below:

1.

2.

3.

4.

5.
Comment 3

An annual work plan is a useful management tool. Research managers use annual plans in the following ways:

1. The budget contained within the annual plan is a key planning instrument which helps to allocate scarce resources, indicates research priorities and emphasis, and track research progress and expenditures throughout the year.

2. Such plans are useful means to ensure the delegation of authority to subordinate staff. By participating in the preparation and submission of the annual plan, subordinate staff have a stake in the outcome of the planned work, and can be expected to work to support the goals and targets they have proposed. Thus, authority to work independently, and to expend funds to facilitate the research can be delegated to this level, reducing bureaucratic controls and improving organizational flexibility.

3. Annual plans are excellent tools by which research managers can monitor and evaluate the performance of the research unit. Since annual plans include progress indicators with hard dates attached (milestones), actual progress can be compared to these indicators to determine performance at the study, area, or division level.

4. Since annual plans are used to allocate scarce funds among often competing research areas or studies, they can be effective communication tools when prepared in a participatory manner by the research staff. Researchers involved in the preparation process become acutely aware of the limitations of funding and the subsequent constraints. This awareness can help diminish conflict within the organization, and can contribute to more of a team approach among the research staff.

5. Finally, annual plans, when reviewed by key and concerned stakeholders, can be important message that their concerns are being addressed in a concrete and forthright manner. Of course, if the annual research agenda ignores the stakeholder concerns for research, then the annual plan could be interpreted by stakeholders as proof the research organization is not serious about their concerns. This is not a positive position for a research manager to defend!
Summary - Study Unit 6.2

Annual work planning refers to planning for the upcoming fiscal year. Annual plans identify the immediate research tasks to be accomplished, based on the direction provided by the strategic plan, priorities established in program planning, and the resources available to carry out these activities. Annual planning is dependent upon and intertwined with resources and their budgeting.

This study unit examined the concept and practice of annual work planning. By completing this unit, you learned of the functions or work plans—that is, how they are used. We explored how annual plans are prepared, and the cyclical, interactive role so important in their preparation and implementation. You also learned of their usual content and format, and how they are linked to program and strategic plans. Finally, we presented some common problems that are associated with annual plans and their implementation.

If you would like more information regarding annual work plans, we encourage you obtain and review the interesting articles identified in the literature cited and other references listed at the end of the module. A key article directly related to the topics covered in the module, and cited in the text, is reprinted for your use in the section on readings at the end of the module.
Study Unit 6.3
Coordinating Activities and Uses of Resources

Researchers need facilities, personnel, equipment, supplies, and other resources to implement their research programs. As you probably know, nothing destroys researcher morale faster than having their research interrupted due to resources that are suddenly and unpredictably not available when they are needed. As research manager, you are constantly challenged to consistently provide the resources needed for research in a timely, equitable manner. In this unit, you'll learn specific procedures to coordinate activities and schedule the use of resources. By completing this unit, we think that you will gain a much better understanding of the importance of anticipating and resolving potential conflicts in the use of scarce resources.

Objectives

When you have completed this study unit you should be better able to:

• understand the importance of and the need for coordinating the use of resources needed to implement your organization's research program;

• utilize several techniques to identify and resolve potential resource use conflicts within your organization; and

• more effectively and efficiently utilize the resources available to you to carry out the research program of your organization.
The Challenge of Coordinating Activities and Uses of Resources

One of the challenges facing research managers is to manage the flows of resources (people, facilities, equipment, funds, etc.) available to them so as to achieve the objectives and goals of the organization and accomplish its mission. A considerable amount of a manager's working day is likely to be devoted to this task—to planning the allocation and scheduling of available resources, coordinating activities, and dealing with the problems and crises that arise due to the lack of needed resources at a critical time.

In a small research organization or project, with only a few people, limited resources, and a few straightforward tasks to be performed, the job of coordinating activities and resources use may be relatively simple. Even though it may be frustrating at times to deal with shortages and breakdowns of equipment, lack of needed supplies, and the unavailability of needed information and special skills, coordinating and keeping track of resources use may not require any special methods. This job often can be done simply by keeping and posting notes and using sign-up scheduling sheets on a bulletin board. Conflicts that do arise over the scheduling and use of equipment can be handled and resolved on a case-by-case basis, often by simple agreements worked out by those who are affected, without the direct intervention of the manager.

In contrast, in larger organizations and on larger projects the job of anticipating and resolving potential conflicts over the scheduling and use of equipment, facilities, people, and supplies becomes far more complex. Special facilities and equipment may be needed simultaneously by several people on some days, and stand idle on others. Research managers of larger organizations who face problems of resolving conflicts over the use of resources may find some of the following techniques helpful in coordinating and scheduling research activities and resources uses.

Listing Of Sequential Task

This technique is easy to use, and is especially helpful in scheduling research activities where the activity involves a simple sequence of consecutive tasks, each of which must be completed before the following one can be started, and if there is a firm completion date or deadline for the entire job. It involves the following general procedure:

- list each task in the sequence in which it must be performed in order to complete the job;
- estimate the length of time required to complete each task, making allowance for unexpected delays and other contingencies;
• add up the total amount of time required for all of the tasks to get an estimate of the total time required for the entire job; and

• subtract the total time from the completion date to get an estimate of the latest date that the project can be started and still meet the specified completion date, and establish the beginning and ending dates for each task in the sequence.

For example, suppose that a final report on a research study must be prepared by a specified time, and that the preparation of a completed report involves the following sequence of tasks, with the time in working days required for each task:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Days Required</th>
<th>Cumulative Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assemble data for report</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2. Analyze data, prepare tables and graphs</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>3. Write report</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>4. Have report reviewed</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>5. Revise report</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>6. Edit final draft</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>7. Prepare final copy of report</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>8. Submit report</td>
<td>1</td>
<td>25</td>
</tr>
</tbody>
</table>

The completion of all of the tasks requires a total of 25 working days. Thus, the latest day to start task 1 would be 25 working days before the report is due, assuming that all the time available is to be devoted to this one job. Task 2 must be started at least 21 working days before the report is due (25 days total minus 4 days for task 1), task 3 at least 16 working days (25 days total minus 9 days for tasks 1 and 2), etc. Using a calendar, one can count back from the report due date to establish the beginning and ending date for each task, allowing for other tasks that must be completed during that same period of time.

Scheduling Resources Use With Calendar Planners

Simple weekly or monthly calendars may be useful in scheduling particular facilities (such as a conference room, special laboratory, etc.) that are used relatively frequently and for which conflicts over use may arise. An example of a weekly calendar that could be used to schedule the use of a conference room, a vehicle, or any number of other facilities or pieces of equipment, is shown below (figure 6.3.1). On this simple form, the user's name would be entered for the days and times for which the resource is to be used. Any conflicts that might arise among potential users of the resource would, of course, have to be resolved so as to schedule the use of the resource for a particular person, group, or use.
Such calendar planners or schedules need not be elaborate. They can be made up in almost any convenient form—on a single sheet of paper, or even drawn on a blackboard—whatever works best for a given situation. The important thing is to ensure that such calendar schedules do become the official and authoritative means by which the use of a particular resource is scheduled, and that this is recognized and accepted by all who are involved.

**WEEKLY PLANNER FOR THE USE OF Toyoto Pickup Truck**

*For The Week Of November 6-12, 1994*

<table>
<thead>
<tr>
<th>Time</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>M.Davis</td>
<td>Project</td>
<td>P.Haney</td>
<td>S.Sinde</td>
<td>Project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00 am</td>
<td>139</td>
<td>Project</td>
<td>Director</td>
<td>R.Perre</td>
<td>139</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 am</td>
<td>93</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>11:00 am</td>
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<td>Eval.</td>
<td>Unit</td>
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<td>12:00 noon</td>
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<td></td>
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</tr>
<tr>
<td>1:00 pm</td>
<td></td>
<td></td>
<td></td>
<td>P.Stam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 pm</td>
<td></td>
<td></td>
<td></td>
<td>Project</td>
<td></td>
<td></td>
<td>Motor</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>G.Hana</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pool</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>M.Davis</td>
<td>Project</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Servicing</td>
</tr>
<tr>
<td>5:00 pm</td>
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<td></td>
<td></td>
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</tbody>
</table>

**Figure 6.3.1.** Example of a weekly planner form for scheduling the hourly use of a facility or piece of equipment.

Scheduling sheets could be made up well in advance and kept in a loose-leaf notebook by the person responsible for scheduling the use of the particular resource. The same type of form could be used to schedule an individual's own time (however, this topic—managing time—is covered in more detail in study unit 6.4, and will not be discussed here).

If the use of a resource is of a longer-term nature, or less frequent, a monthly rather than a weekly calendar scheduling sheet may prove to be more useful (figure 6.3.2). On this form,
those wishing to use the resource on particular days or periods of a day could sign up in advance for that use. Again, if conflicts among potential users arise, they would have to be resolved so that the particular resource could be assigned to one particular use or user.

Scheduling devices such as this not only help to determine if there are likely to be conflicts over use, but past schedules provide a record of use that can help determine the actual use of particular resources. Such information can be a great help in planning, and in justifying resource needs if use is heavy.

**MONTHLY PLANNER FOR THE USE OF Headquarters Conference Room**

For The Month Of: November 1994

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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<td>29</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 6.3.2. Example of a monthly planner form for scheduling the use of a facility or piece of equipment.*
Planning and Scheduling Resources Use For Multiple Tasks

In many cases a number of tasks in an organization may be going on simultaneously, each requiring the use of limited resources. The research manager is often called upon to anticipate and resolve potential conflicts over resources use. One simple scheduling device that can be helpful is a chart on which the amounts of resources needed for each task or project can be shown for each time period (usually days or weeks). The total amounts required for each time period can be compared against the amounts available during that time period to determine if the resources available are adequate to meet the expected needs. If there are resources shortages during a particular period, either additional resources will have to be obtained (if that is possible), or the use of the resources will have to be rescheduled so as not to exceed the resources available.

To illustrate this method, assume that a research organization has two skilled technicians who are shared by five different research projects. The research manager requests each research project to provide an estimate of their need for these skilled technicians in terms of days needed for each week into the planning period (shown here for only 13 weeks). The work days requested by each research project are listed on a chart similar to figure 6.3.3. The total resources required by each project are determined by adding up the requested days for each week and entered at the bottom. The resources available during each week (considering holidays, vacations, and other job assignments not covered here) are also shown. The difference between the resources available and the resources required indicates whether there is a surplus of work days available during any one week, or if there is a shortage. In this example, there are shortages of work days available during weeks 1, 6, and 7, when the projects together are requesting 1, 6, and 5 more work days than are available. This is a problem that the research manager must resolve by either obtaining more skilled work days for those weeks for which there is a shortage, or by rescheduling work activities (if that is possible) to better balance work days needed and available.

For this illustration, let us assume that after consultation with project leaders work activities can be rescheduled so that for project 2 one day of work can be shifted to the second week and the 8 days of work planned for week 6 can be shifted to week 5, and that for project 3 two days of work can be shifted from week 7 to week 8 (figure 6.3.4). This shift (among many other potential changes that might be made) would eliminate the shortages of technician days, and bring about a better balance between resources required and those available.

Of course, this simple approach to weekly scheduling does not eliminate conflicts in scheduling within any one week. That would have to be resolved as a separate problem. But such weekly scheduling of resources use is a useful tool for planning work activities and scheduling resources use because it highlights potential conflicts in the use of particular resources. In this example, work days were used as the unit of resource to be scheduled. We could have used hours of work instead. This type of scheduling could be done using daily
scheduling by months, months for a fiscal year, or some other convenient unit of time. It could have been used to allocate resources among different tasks or activities within any one research project. This type of scheduling chart is a general approach useful in planning work activities and resolving conflicts over the use of resources. It can be adapted to fit many different types of resources, project activities, and time periods.

**PLANNING AND SCHEDULING RESOURCE NEEDS**
*(People, Equipment, Facilities, etc.)*

**Resource: Technician work days**

<table>
<thead>
<tr>
<th>Research Projects</th>
<th>Time Period - Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13</td>
</tr>
<tr>
<td>1.</td>
<td>4 6 6 2</td>
</tr>
<tr>
<td>2.</td>
<td>7 3 5 8 4</td>
</tr>
<tr>
<td>3.</td>
<td>8 8 2</td>
</tr>
<tr>
<td>4.</td>
<td>3 6 5</td>
</tr>
<tr>
<td>5.</td>
<td>1 2 6 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research Projects</th>
<th>Time Period - Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13</td>
</tr>
<tr>
<td>Total Resources Required</td>
<td>11 9 6 7 0 16 15 8 6 2 6 8</td>
</tr>
<tr>
<td>Total Resources Available</td>
<td>10 10 10 8 8 10 10 10 10 10 10</td>
</tr>
<tr>
<td>Excess Resources Not Used (shortage)</td>
<td>(1) 1 4 1 8 (6) (5) 2 4 8 4 2</td>
</tr>
</tbody>
</table>

*Figure 6.3.3.* Fictitious example to illustrate the planning and scheduling the use of skilled technicians among various research projects. This shows the first tentative allocation of technician work days among the projects, by weeks in the planning period.

Conflicts can be resolved by setting alternate dates for particular activities. Or, the manager may simply request the leaders of the projects where conflicts occur to get together and work out a satisfactory compromise. More difficult conflicts may need to be resolved through the intervention of a person who has been delegated specific mediating authority, using a process such as that outlined in study unit 9.3.
Module 6- Implementing the Research Program

PLANNING AND SCHEDULING RESOURCE NEEDS
(People, Equipment, Facilities, etc.)

Resource: Technician work days

<table>
<thead>
<tr>
<th>Research Projects</th>
<th>Time Period - Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13</td>
</tr>
<tr>
<td>1.</td>
<td>4 6 6 2</td>
</tr>
<tr>
<td>2.</td>
<td>6 4 5 8 4</td>
</tr>
<tr>
<td>3.</td>
<td>8 6 4</td>
</tr>
<tr>
<td>4.</td>
<td>3 6 5</td>
</tr>
<tr>
<td>5.</td>
<td>1 2 6 8</td>
</tr>
</tbody>
</table>

Total Resources Required: 10 10 6 7 8 8 10 7 7 7 6 8
Total Resources Available: 10 10 10 8 8 10 10 10 10 10 10 10
Excess Resources Not Used (shortage): 0 0 4 1 0 2 0 3 3 3 4 2

Figure 6.3.4. A potential solution to the conflicts over scheduling technician work days among various research projects illustrated in figure 6.3.3.

Another chart that can be useful in scheduling tasks is a bar chart for scheduling tasks by the month or the week. On this chart, which is similar to the previous charts, each task is listed and a bar is drawn through the various time units shown to indicate the scheduled starting and ending dates for each task. Such a bar chart gives an overview of work activities scheduled, and enables the manager to keep a visual record of work activities as reminder of due dates and future work scheduled. Figure 6.3.5 illustrates how this chart could be used to plan and implement a training session on research management. In this example, the following tasks (considerably simplified for purposes of illustration) are to be performed:

1. Arrange for course instructors (begin February 1, end March 15)
2. Arrange for training facilities (begin February 15, end March 31).
3. Identify and notify potential participants (begin March 1, end March 31).
4. Obtain training materials and supplies (begin April 1, end May 31).
5. Check on all preparations (begin June 1, end June 15).
6. Conduct training activities (begin June 15, end June 27).
7. Follow-up evaluation of training results (begin November 15, end December 31).
### Figure 6.3.5. Schedule of tasks required to plan and conduct a training workshop on research management (simplified for purposes of illustration).

In place of bars, one could have used XXXXs to indicate the number of weeks in each month the activity was to take place, or any other convenient symbol, including writing in the number of days assigned for each activity. This type of planning framework is very general, and can be adapted to many different situations and activities.

#### The Role of Administrative Staff

In larger organizations, the job of scheduling particular facilities or equipment may be delegated to some of the administrative services staff. The administrative personnel with such assignments should be directly involved or consulted when making plans regarding the use of facilities or equipment with multiple users, or where the exclusive use of such resources is being sought for a period of time. Those who directly supervise such facilities or equipment, are usually the most knowledgeable regarding their suitability and serviceability for the planned uses, and can advise on alternative substitutes that might be better suited for the planned activities. They also may be well aware of potential conflicts in scheduling that could arise, and can suggest alternative times or dates. Input from administrative staff can facilitate planning of research activities, and help avoid or reduce conflicts among potential users. By participating in planning activities, staff members are more aware of planned activities, and are in a better position to carry out their assigned scheduling responsibilities.
### Situation Analysis

Assume your organization is planning to implement a nursery study examining the role of container size on seedling growth and vigor. The study is to be implemented this year, and will take approximately 9 months to complete. Funding has been secured; thus, it is now time to begin actively planning the implementation of the study. As manager, you know this study will require resources that may at times conflict with those required for other ongoing studies. Thus, you direct the project investigator to prepare a series of charts that will allow you to better allocate the resources needed for this and other studies.

The investigator first lists all the activities associated with the study, as below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>develop study plans</td>
<td>March - 1st and 2nd weeks</td>
</tr>
<tr>
<td>identify species</td>
<td>March - 2nd and 3rd weeks</td>
</tr>
<tr>
<td>locate seed and order</td>
<td>March - 3rd and 4th weeks</td>
</tr>
<tr>
<td>prepare and sign contract with nursery</td>
<td>April - 1st and 2nd weeks</td>
</tr>
<tr>
<td>receive seed</td>
<td>April - 3rd and 4th weeks; May - all</td>
</tr>
<tr>
<td>install study</td>
<td>June - 1st week</td>
</tr>
<tr>
<td>survival measurement at 1 week</td>
<td>June - 2nd week</td>
</tr>
<tr>
<td>survival measurement at 3 weeks</td>
<td>June - 4th week</td>
</tr>
<tr>
<td>height/diameter growth measurements at 1 month</td>
<td>July - 1st week</td>
</tr>
<tr>
<td>height/diameter growth measurements at 2 months</td>
<td>August - 1st week</td>
</tr>
<tr>
<td>height/diameter growth measurements at 3 months</td>
<td>September - 1st week</td>
</tr>
<tr>
<td>height/diameter growth measurements at 4 months (final)</td>
<td>October - 1st week</td>
</tr>
<tr>
<td>data analysis</td>
<td>October - all; and Nov - 1st week</td>
</tr>
<tr>
<td>prepare draft report</td>
<td>November - all</td>
</tr>
<tr>
<td>prepare and distribute final report</td>
<td>December - 1st and 2nd weeks</td>
</tr>
</tbody>
</table>
Activity 1

Using the form below, prepare a bar chart (using xx's) that depicts the active time periods for each of the activities listed above. (We have graphed the first two tasks as an example.)

<table>
<thead>
<tr>
<th>TASK</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop study plan</td>
<td>xx</td>
</tr>
<tr>
<td>2. Identify species</td>
<td>xx</td>
</tr>
<tr>
<td>3. Locate and order seed</td>
<td></td>
</tr>
<tr>
<td>4. prepare and sign contract with nursery</td>
<td></td>
</tr>
<tr>
<td>5. receive seed</td>
<td></td>
</tr>
<tr>
<td>6. install study</td>
<td></td>
</tr>
<tr>
<td>7. measure 1week survival</td>
<td></td>
</tr>
<tr>
<td>8. measure 2week survival</td>
<td></td>
</tr>
<tr>
<td>9. measure 1month height &amp; diameter</td>
<td></td>
</tr>
<tr>
<td>10. measure 2month height &amp; diameter</td>
<td></td>
</tr>
<tr>
<td>11. measure 3month height &amp; diameter</td>
<td></td>
</tr>
<tr>
<td>12. measure 4month height &amp; diameter</td>
<td></td>
</tr>
<tr>
<td>13. analyze data</td>
<td></td>
</tr>
<tr>
<td>14. prepare draft report</td>
<td></td>
</tr>
<tr>
<td>15. distribute final report</td>
<td></td>
</tr>
</tbody>
</table>
Comment 1

The following bar chart indicates the time required for each activity described previously:

<table>
<thead>
<tr>
<th>TASK</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Develop study plan</td>
<td>xx</td>
</tr>
<tr>
<td>2. Identify species</td>
<td>xx</td>
</tr>
<tr>
<td>3. Locate and order seed</td>
<td>xx</td>
</tr>
<tr>
<td>4. prepare and sign contract with nursery</td>
<td>xx</td>
</tr>
<tr>
<td>5. receive seed</td>
<td>xx</td>
</tr>
<tr>
<td>6. install study</td>
<td>x</td>
</tr>
<tr>
<td>7. measure 1 week survival</td>
<td>x</td>
</tr>
<tr>
<td>8. measure 2 week survival</td>
<td>x</td>
</tr>
<tr>
<td>9. measure 1 month height &amp; diameter</td>
<td>x</td>
</tr>
<tr>
<td>10. measure 2 month height &amp; diameter</td>
<td>x</td>
</tr>
<tr>
<td>11. measure 3 month height &amp; diameter</td>
<td>x</td>
</tr>
<tr>
<td>12. measure 4 month height &amp; diameter</td>
<td>x</td>
</tr>
<tr>
<td>13. analyze data</td>
<td>xxxxx</td>
</tr>
<tr>
<td>14. prepare draft report</td>
<td>xxxxx</td>
</tr>
<tr>
<td>15. distribute final report</td>
<td>xx</td>
</tr>
</tbody>
</table>
Activity 2

In order to have a better idea of the resources this study will require, you also asked the investigator to list the resources needed for the duration of the study. The following list was received:

<table>
<thead>
<tr>
<th>Resource needed</th>
<th>When Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup truck</td>
<td>April, June, July, August, September, October</td>
</tr>
<tr>
<td>Drying oven</td>
<td>October</td>
</tr>
<tr>
<td>Laboratory space, scale</td>
<td>October</td>
</tr>
</tbody>
</table>

The investigator noted these resources will not be needed for the entire periods listed, but only on selected days. The specific days of the month when this equipment will be needed cannot be identified at this time.

Using the form below and the method you used in Self-assessment Activity 1, prepare a resources allocation chart based on the information in the list above.

**PLANNING AND SCHEDULING RESOURCES NEEDS**
(People, Equipment, Facilities, etc.)

<table>
<thead>
<tr>
<th>Resource Required</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
</tr>
<tr>
<td>Pickup truck</td>
<td></td>
</tr>
<tr>
<td>Drying oven</td>
<td></td>
</tr>
<tr>
<td>Laboratory space, scale</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comment 2

The following bar chart shows the resources schedules needed to implement this study as planned:

### PLANNING AND SCHEDULING RESOURCES NEEDS
(People, Equipment, Facilities, etc.)

<table>
<thead>
<tr>
<th>Resource Required</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup truck</td>
<td></td>
<td></td>
<td>xxxx</td>
<td>xxx</td>
<td>xxx</td>
<td>xxx</td>
<td>xxx</td>
<td>xxx</td>
<td>xxx</td>
<td>xxx</td>
<td>xxxx</td>
<td></td>
</tr>
<tr>
<td>Drying oven</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>xxxx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory space &amp; scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>xxxx</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Study Unit 6.3 58
Activity 3

It's now six months later, and the study is well underway. You are currently planning resource allocations for the first two weeks of October. The nursery study investigator has provided you with the following information regarding the resources required:

<table>
<thead>
<tr>
<th>Resource needed</th>
<th>When Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup truck</td>
<td>October 3 &amp; 4</td>
</tr>
<tr>
<td>Drying oven</td>
<td>October 3-8, 10-15</td>
</tr>
<tr>
<td>Laboratory space, scale</td>
<td>October 3-8, 10-15</td>
</tr>
</tbody>
</table>

Your organization has only one pickup truck available to meet the needs for all research and other activities in your organization. On the resources planning and scheduling form for pickup truck hours (below), you enter the information about pickup truck needs for this study, and find there exist some conflicts with other use demands for the use of the pickup truck.

PLANNING AND SCHEDULING RESOURCES NEEDS
(People, Equipment, Facilities, etc.)

<table>
<thead>
<tr>
<th>Resource: Pickup Truck Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Projects and Activities</td>
</tr>
<tr>
<td>1. Nursery study (described above)</td>
</tr>
<tr>
<td>2. Remeasurement of fuelwood growth and yield plots.</td>
</tr>
<tr>
<td>3. Construction of new laboratory facility</td>
</tr>
<tr>
<td>4. purchase and transport of new office equipment and supplies</td>
</tr>
<tr>
<td>5.</td>
</tr>
<tr>
<td>Total Resources Required</td>
</tr>
<tr>
<td>Total Resources Available</td>
</tr>
<tr>
<td>Excess Resources (- shortage)</td>
</tr>
</tbody>
</table>

1 Pickup is scheduled for 4 hours of monthly preventive maintenance on Monday, October 3.
How might the manager of this forestry research organization rectify these apparent conflicts over resource needs? *Write your response in the space provided below.*
Comment 3

There are a number of options available to the research manager that may alleviate conflicts over resources. Solutions might include:

• Negotiate among the various investigators to schedule nonconflicting times for the use of the resource.

• Examine the resources needs of each party even more closely (for example, on an hourly basis) to discover slack periods where conflicting needs may be rescheduled.

• Identify additional resources in cases where rescheduling cannot be done.

• Examine the resources use carefully, and suggest substitutes where appropriate. For example, the researcher may not specifically need a pickup truck simply to drive to the nursery in order to take measurements. A car may suffice, and may be less in demand than the truck.
Activity 4

If this were your organization, who would be the key people you, as manager, would want to involve in this logistical planning?
Comment 4

When conducting logistical planning, it is essential that managers include key members of their organization that are connected in some way to the resources being utilized or managed. When key people are left out of the planning "loop," the potential for later logistical and interpersonal conflicts rise dramatically. Meetings, both in the office and in the field, can be an effective means to achieve good coordination and management of logistics.
Summary - Study Unit 6.3

To conduct forestry research in a cost effective and efficient manner, researchers need facilities, personnel, equipment, supplies, and information to implement their research programs. Research managers are constantly challenged to consistently provide these resources in a timely, equitable manner.

This unit presented specific procedures that can help you to coordinate activities and schedule the use of resources. We hope that by completing this study unit, you have improved your ability to manage scarce resources and minimize potential conflicts.

If you would like more information about coordinating activities and uses of resources, we encourage you to obtain and review the interesting articles identified in the literature cited and other references listed at the end of the module. A key article directly related to the topics covered in the module, and cited in the text, is reprinted for your use in the section on readings at the end of the module.
Study Unit 6.4
Managing Time

Nothing is so dear and precious as time.
(François Rabelais, 1543)

It seems that there is never enough time. Time is scarce and getting scarcer. Once a second or minute passes, it is gone forever, never to be replaced. One of the most common complaints among managers is an acute lack of time, or "not enough hours in the day" to accomplish their daily tasks. Overburdened and overworked, it is not surprising that many research managers let their time slip away from them, allowing interruptions and the press of daily demands to take control of their working hours.

You can, however, take back control over your time. To do so you must establish *selective control* (Winston 1983), refocusing and harnessing the time you control, and to institute defensive measures to minimize the impact of the demands you can't control. This unit is designed to help you to take back control over your management of time. First, you'll complete a short exercise to help you determine your current level of control over time. If you find that your time management skills could use some improvement, read the text and complete the exercises. You'll find several practical tips on how you can better organize and manage your working environment and improve your productivity.

<table>
<thead>
<tr>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you have completed this study unit you should be better able to:</td>
</tr>
<tr>
<td>• describe a number of practices that can help you better organize your work; and</td>
</tr>
<tr>
<td>• identify some weaknesses in your personal style of time management and take steps to address or minimize those weaknesses.</td>
</tr>
</tbody>
</table>
Making Effective Use of Your Time

*Remember that time is money.*
*(Benjamin Franklin 1748)*

Everyone is allotted the same amount of time each day, but each uses that time differently. Some people use their time very effectively; they are productive, accomplish all their assigned tasks on time, and turn out a large amount of work. Others are ineffective in using time; they waste large amounts of time and fail to accomplish their assigned tasks. Most managers complain that they never have enough time to do everything they want to accomplish. They would like to find ways to improve their use of time.

For many managers and executives, too many work days are an unending series of unplanned interruptions and crises, one after another. Before one job can be completed, another is demanding your attention. As you begin work on that, the telephone rings just as a work associate comes into the room with a long-overdue report that requires immediate attention. Your necessary attendance at a long, unorganized, and tedious meeting takes up almost two hours. And so the day goes. Trying to accomplish work on schedule in such a chaotic environment can be frustrating, to say the least.

Although it is rarely possible to gain complete control over all events in our work environment, it is possible to gain some control over what might otherwise be a chaotic work environment. If you find yourself wanting to make better use of your time, this study unit may have some ideas of interest to you. By managing and using time more effectively at work, you can become more productive and perhaps reduce the stress of your job (box 6.4.1).
Box 6.4.1. What time management will and will not do for you.

**Time!**
- No one can take it from you.
- No one receives more or less.
- If you waste time, you still get the same amount.
- Is an essential resource you can't do without.
- Is irreplaceable.
- Is unstretchable.

**Time Management Will Not:**
- Teach you how to do everything fifty times faster.
- Tell you which tasks you should and shouldn't do.
- Deal exclusively with techniques and rules.
- Turn you into a clock watcher.
- Give you cookbook answers.

**Time Management Will:**
- Show you there is always time for the important things.
- Show you that you do not manage your time half as well as you know how to.
- Help you set goals and priorities.
- Give you tools to decide what you want from your life.


### Assessing Your Time Management Skills

*You can ask me for anything you want, except time.*  
*(Napoleon Bonaparte)*

To gage your current level of expertise at managing time, we suggest you complete the short exercise below (adapted from Winston 1983). Place a check in the box next to the statement that you think best describes your behavior regarding time management.
<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>Almost</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Almost</th>
<th>Never</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I know when I wake in the morning what my two or three primary tasks for the day will be.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I accomplish my two or three primary tasks for the day.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I complete tasks by the deadline.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I monitor my staff to make sure they complete their tasks by the deadline.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I do my hardest tasks when my energies are at their peak.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I do no task that a subordinate can do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I allow no more than three unplanned interruptions a day.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I don't push off difficult tasks or procrastinate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I return calls when I say I will.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. In general my day-to-day tasks reflect and support my larger goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Now score your results by applying the appropriate amount of points for each checkmark and write your score on the last column for each behavior. When done, total the scores in the last column to derive a total score.

**Scoring Directions:**

2 points for each "almost always"
4 points for each "usually"
6 points for each "sometimes"
8 points for each "seldom"
10 points for each "almost never"

**If your total score is:**

20-46 You are essentially in control. The time-management techniques outlined in this study unit will however, enhance your productivity and efficiency.

47-79 You are racing against the clock. Greater control is advisable.
80-100 You're on a treadmill. Restructuring time and work habits is vital to your productivity.

Organizing Your Work

One way to gain more control over your work time is to organize your work so as to make more effective use of your time. Practices that will help you organize your work (adapted from Haynes 1987 and Winston 1983) include:

- Set goals and objectives for yourself.
- Develop priorities for each major task.
- Assign clear responsibilities for each task or portion of the task.
- Specify and schedule tasks to be done by yourself.
- Deal systematically with paperwork.
- Reduce or eliminate distractions in your work environment.
- Make better use of your time.
- Use committees effectively.
- Make meetings more productive.

Some suggestions for carrying out each of these practices are presented below and in the following sections.

Setting goals and objectives. Developing a clear statement of what you want to accomplish, both over the long-term and in the short-term, can help you more easily decide which of the jobs and tasks you face each day contribute most towards those goals. Some suggestions in setting goals and objectives:

- Set long-term goals of where you want to be, and what you want to have accomplished in a year or so.
- Set long-term objectives you want to attain during the year.
- Set mid-term objectives you want to accomplish this month.
- Set short-term objectives of work assignments/tasks to be completed this day or week.
Statements of goals and objectives need not be elaborate; they can be informal lists on paper. The important thing is to get into the habit of thinking about and developing personal goals and objectives, and using those in planning your day-to-day work. They can serve as a reminder of what it is you want to accomplish, and can help you decide on job priorities.

**Developing job priorities.** By setting priorities on the jobs and tasks that come your way, you can decide which ones need immediate attention, and which can be postponed to be done if time permits, or perhaps which ones can be dropped from further consideration. Some suggestions for setting priorities:

- Decide what needs to be done first.
- Use a simple system of priorities—no more than three categories: *high, medium, and low*.
- In developing personal work priorities, use the following three criteria (Haynes 1987):
  1. Necessity—first ask yourself:
     
     *Is this job necessary? Does it have to be done at all?*
  2. Appropriateness—if the job must be done, then ask:
     
     *Is it something that I must do myself, or can it be delegated to others?*
  3. Efficiency—if you must do the job yourself, then ask:
     
     *How much time should I spend on this? Is there a better way of doing this?*

**Assigning job responsibilities.** By delegating work to appropriate subordinates, you may be able to free up a considerable amount of time for the more important jobs that require your personal attention.

- Delegate job responsibilities whenever possible. It reduces your own work load and builds up capabilities of subordinates.
- When delegating, make sure that the person to whom you are assigning the job is qualified to do it.
- When delegating, make sure that you clearly communicate what is to be done and the deadlines for completing the work, and that those who are to do the job understand clearly what is to be done and when it is to be done.

**Specifying and scheduling your work.** Once you have decided on what jobs and task you must accomplish yourself, it is well to use some system to organize jobs by priorities.
Schedule all of your assignments for specific days and/or periods of time to ensure that enough time is available to complete all of the work you plan to do. It may be necessary to estimate the number of hours or days that will be needed to complete major tasks or activities. Some sort of daily, weekly, or monthly calendar can be used to keep track of scheduled work (refer back to study unit 6.3). An analysis of the time required for your essential tasks may indicate that it will not be possible to complete all of those tasks. In that case, it may be necessary to reevaluate priorities and/or job assignments to reschedule jobs. In scheduling your activities you can make lists of things to do, when they are due, and who is to do them (monthly, weekly, daily).

In developing your work schedule:

- Make sure that enough time is allocated to complete major tasks.
- Set deadlines for completion of major tasks and jobs.
- Leave room in your schedule for unexpected events, unintended delays, and new jobs.

**Dealing systematically with paperwork.** A common problem of many managers is that they cannot decide what to do with the mountain of paperwork that crosses their desk every day. Some administrative forms and reports may require immediate and personal action by the manager. Some correspondence may require the manager's personal attention; responses to other correspondence may be delegated to others in the organization. Various reports may or may not have to be noted, read, or filed. Many interesting articles in newspapers, news magazines, technical journals, scientific papers, and other literature related to the work of the organization attract attention. Papers are shuffled from one part of the desk to another, often accumulating (and being lost) in various piles. Piles of unread magazines, reports, and journals accumulate at a great rate. All managers must find ways to cope with this mass of paperwork.

Winston (1983) suggests using the TRAF system as a means of dealing with this overload of paper work. The TRAF system requires that for each new piece of paperwork the manager must quickly scan the paperwork, and then decide to either:

- **T** - Toss the paper away because it does not need to be acted on and is of no interest; or

- **R** - Refer the piece of paperwork to someone else for action; or

- **A** - Act immediately yourself to complete the work required; or

- **F** - File the paperwork for some specified future action and date.
In making these decisions, managers must realistically estimate their capacity for dealing with the amount of paperwork coming to their attention, and make some hard decisions as to whether or not they can or cannot effectively deal with the item being considered within the specified (or an appropriate) time period. There is little reason to file something for future action, knowing that it is highly unlikely that the time will ever be available to deal with it.

**Reducing or eliminating distractions.** Continual interruptions from telephone calls, outside visitors, and staff consultations can make it difficult to complete preparation of research plans, budget estimates, progress or other reports, or other major tasks that require a lot of concentration. Some suggestions for reducing or eliminating some of these distractions include:

- Ask your secretary or assistant to intercept telephone calls and visitors to reschedule at a more convenient time, if possible.
- Set aside special hours for consulting with staff.
- Say no to interesting but not essential activities until high priority jobs are done.

**Making better use of your time.** People differ in the time of day in which they are most productive. Some people are most productive early in the morning. They awake easily and do their best work as soon as they get to the office. They may function well for several hours, but are less productive later in the day. Other people find it difficult to get up early in the morning and get going on even relatively minor tasks. They start the day slowly, and tend to be most productive later in the day. Managers who recognize the period of the day when they are most productive, and schedule their most creative and demanding tasks for that period, ensuring that interruptions are kept to a minimum during that time, can make much more effective use of their time. Activities that do not require the intense concentration of effort, such as telephone calls, answering routine correspondence, reading the mail, and attending routine meetings, can be set aside for the less productive hours of the day. More effective planning of meetings can save considerable amounts of time, not only for you, but for your staff and the others who attend them. Some suggestions for making better use of your time include:

- Set aside blocks of highly productive time for high priority tasks. Make it clear to all that you are not available during those special times, so that you can accomplish these tasks. If interruptions continue while working on critically important, time sensitive tasks, find a quiet place to work away from your immediate office (e.g., a spare office, library, home, etc.).
- Train your secretary to effectively screen calls and visitors, open and screen your mail, etc.
• Delegate authority to your staff so that your day is not spent micromanaging details better handled by subordinates. Effective delegation also builds individual and organizational capacity to solve problems.

• Insist that reports be well organized, are as brief as possible, and have a short executive summary. If problems are identified, then require a statement of recommended action—What actions are recommended? Where are these to be done? When are they to be done? Who is to do what?

• Plan and control meetings carefully to avoid wasting time (see later section on making meetings more productive). Make sure they are sharply focused, with clear objectives. Keep them small, involving only those who must be there. Keep them as short as possible. All meetings, no matter how small, should have clear objectives and an agenda, planned prior to the meeting.

• Say NO! to assignments or activities that are interesting but not essential or required by the nature of your job or by your superiors. Know the limits as to what you can accomplish, and let others know them too.

Using Committees Effectively

All organizations establish committees for many reasons. All managers of forestry research organizations will find themselves serving on committees and attending committee meetings of one form or another. They may be required to attend some committee meetings as part of their job, be appointed to and attend professional committees on a voluntary basis, and establish committees within their own organization for a variety of purposes. Although everyone complains about the time wasted in unproductive committee meetings, committees can be a useful tool to managers. When properly used, committees can help managers in many ways, including:

• carrying out tasks that otherwise would require the manager's personal attention;

• obtaining information and views from people with diverse backgrounds and interests;

• reviewing and recommending actions on decisions to be made by the manager; and

• reaching a consensus on important issues among key stakeholder groups.

Managers frequently establish two kinds of committees: standing committees and ad hoc committees. Standing committees are usually established to carry out tasks that occur periodically, often at regular intervals. For example, an awards committee may meet annually to review nominations and make recommendations for special achievement awards to experiment station personnel. A social committee may meet monthly, or more often, to plan
social events for employees of the organization. Members of standing committees are often appointed by the director for a fixed term, often one or two years at a time. Such committees usually meet periodically at specified intervals, depending upon the tasks they are assigned.

In contrast to standing committees, ad hoc committees usually are appointed for a specific purpose, and when their job is completed they are disbanded. For example, a committee may be appointed to initiate and develop guidelines for the development of a strategic plan for the research organization. When the guidelines have been produced, and a report prepared and accepted, that committee has fulfilled its function and could be disbanded. Or, the same committee might be given another limited special follow-up assignment to oversee the development of the strategic plan, and be disbanded when that assignment is completed. Alternatively, a special ad hoc committee may be formed to prepare a large interdisciplinary research proposal. Again, this committee may be disbanded when that proposal has been completed and submitted. The key difference between standing and ad hoc committees is that standing committees tend to be relatively permanent, while ad hoc committees are usually appointed for a specific one-time task or for a limited period of time to deal with a specific issue, and then are disbanded.

Several types of standing committees commonly found in forestry research organizations include committees on:

- Budget review
- Publications-dissemination
- Promotion-evaluation
- Awards
- Disciplinary
- Scholarship and training
- Social

To make effective use of committees it is important that they be given clear terms of reference that outline just what their responsibilities are, what they are expected to produce, and what authority they have to carry out their work. They also should be given a realistic time frame within which they are to complete their work. Too often, standing committees are formed without a clearcut assignment from management, and are left to work out their own duties. Meetings of such committees often end up being unproductive discussions that result in no clearcut actions.

As a general rule, committees should not be established unless there is a clear need for having such a committee. Before establishing a new standing committee, managers should ensure that there is a real need for such a committee, and carefully set down its terms of reference. Committee membership should be no larger than absolutely necessary. Committee meetings
can take up a considerable amount of valuable time. Also, the larger the group, the longer it can take to reach a decision.

In appointing a person to chair a committee, the director should give careful thought to that person's ability to manage the committee effectively so as to accomplish the committee's objectives with the least amount of wasted time. Too often, the person appointed to chair a committee fails to take the initiative and carry out the responsibilities of the committee. They may fail to schedule meetings when they are needed; when meetings are held they are disorganized and unproductive; committee work is delayed or never completed; and in general the committee fails to carry out its assigned tasks. On the other hand, standing committees are sometimes formed that have relatively little to do. The person chairing such a committee may feel obligated to be doing something, and searches around for things to do that may or may not be important, or be relevant to the assigned tasks of the committee. Such a situation is an indication that the standing committee is not needed, or else the terms of reference for the committee are not clearly stated or well thought out.

Committee meetings, if not managed effectively, can waste a lot of time of busy people. For tips on making committee meetings more productive, see the following section.
Making Meetings More Productive

"meetings will fill the amount of time allotted to them"

anon.

Meetings fill an essential role in managing any organization, and are an important tool for the research manager. Meetings can help to (adapted from Jay 1976):

- define a group or team assigned a specific task or function;
- define and sharpen the status of those attending the meeting, where members of the assembled group can clearly perceive leadership of the group and improve their understanding of the working relationships among various members of the group;
- organize knowledge and information possessed by various individuals within the organization, and bring diverse viewpoints, experience, authority, and imagination together to bear on particular problems;
- force interaction among individuals with specific assignments within the organization who might otherwise interact infrequently, if at all;
- define a collective aim of the group and reach collective decisions; and
- create a commitment by individuals within the group to carry out the collective decisions reached by the group.

Yet, even though meetings have the potential for achieving the objectives outlined above, there is never any guarantee that they will in fact do so. Managers arrange for and attend a variety of meetings in carrying out their responsibilities. But they and many others often complain about the time often wasted attending unproductive meetings. As a manager, you have the responsibility to see that meetings conducted within your organization serve a real need, and are as productive as possible. The following are some suggestions (adapted from Jay 1976) for making meetings that you organize and conduct within your organization more productive.

Before the meeting you should:

Define the objective of the meeting. If you are organizing the meeting, you should have clearly in mind just what it is that you want the meeting to accomplish. What is its purpose? Is it to be strictly informative (in that case, perhaps a meeting is not necessary, and the same purpose could be achieved through a memo, newsletter, or some other means)? Is it to
generate new ideas about or solutions to a critical problem, about what should be done and how it should be done, where the input of different people within the organization are needed? Is it to generate support for a proposed course of action by key individuals inside or outside of the organization? Whatever the purpose of the meeting, the objective should be clearly stated and understood well in advance, not only by the one organizing the meeting, but by all those who will be attending.

**Determine the location, date, time, and length of the meeting.** The location, date, and time of the meeting often are determined by the objective and by consideration of who will attend, and what their schedules are. In general, shorter meetings, focused on specific subjects and objectives, are likely to be more productive that lengthy meetings that try to cover too much. Yet, if there is a need to involve larger numbers of people in a meeting, it may be more desirable to hold longer meetings so as to cover more material, but hold them less frequently, due to the difficulty of arranging acceptable meeting schedules when so many people are involved. Meetings that go much beyond an hour and a half or so can become counterproductive as people become tired and overloaded with information. When it is necessary to hold longer meetings, it may be desirable to break them up into shorter sessions that focus on specific issues.

**Identify and notify meeting participants.** Care must be taken in selecting participants to ensure the attendance of those who must be at the meeting in order to accomplish the purpose of the meeting, and to avoid including those who are not essential to the meeting. The number of participants at a meeting will affect how the meeting can be conducted, and what it can be expected to accomplish. Small group meetings are invariably more productive than large groups. They are also less costly in terms of time lost and any travel, per diem, and other meeting expenses. The ideal size is likely to be less than ten. However, if a diversity of views and opinions are needed, a larger number may be necessary. If larger numbers of people need to be included, it may be more profitable to hold a series of smaller group meetings, or structure the meeting around smaller working groups. Participants should be informed about the meeting well enough in advance to make arrangements to attend, and to prepare any required or assigned input for the meeting.

**Prepare for the meeting.** A firm written agenda, agreed to in advance by participants, can be of great help in conducting an organized meeting. A tentative agenda circulated among participants in advance of the meeting can be revised to accommodate their suggestions. It is helpful to indicate by each item on the agenda whether it is for information only, for discussion, and/or for decision, so that participants know what is expected of them. Normally, the most important items on the agenda should be listed first, to ensure adequate time for discussion and action. Care should be taken to arrange the order of the items on the agenda so that any action required as a precondition to some other action is taken up prior to that final action. The final agenda can be sent to participants a few days before the
meeting. If it is sent too far in advance, it is likely to be misplaced. Background and informational papers distributed in advance of the meeting should be brief and to the point, otherwise they are unlikely to be read. Arrangements for a meeting place and facilities should be made well in advance, and confirmed shortly before the meeting. Arrangements should be made to ensure that visual aids and other materials needed for the meeting will be available where and when they are needed.

**Remind participants of the meeting.** It may be necessary to remind participants of the meeting a few days in advance, especially if some time has elapsed since the meeting announcement was originally made, and to confirm their attendance and any special arrangements that may be necessary for their attendance.

**During the meeting you should:**

*Keep the discussion on track.* Following an agreed-upon agenda provides participants at a meeting with a sense of direction and accomplishment. When you lead a meeting, it is your responsibility to see that the discussion is kept on track by following the framework provided by the agenda. Before discussing each item on the agenda, it is helpful for the leader to make sure that all participants understand the issue and the reason for its being on the agenda. To do this it may be necessary to provide a brief explanation. The person chairing the meeting will have to decide whether or not a consensus has been or can be reached, and suggest an appropriate action—acceptance of a proposal, postpone action for a future time, refer the matter for further study by a committee, etc.

*Keep within the proposed time framework.* Meetings that do not start on time, or that run longer than the scheduled time are often great time wasters. Time spent in meetings is time not available for other tasks. Those who arrive on time are forced to wait for those who are late. Those attending may have made other appointments for the period following the scheduled meeting. An excessive amount of discussion on any one item on the agenda may subtract from the time available for other agenda items. Time must be allowed for all fruitful discussion, but the leader must also try to cut off or redirect discussion when it becomes repetitious or goes off in unproductive directions. This requires considerable tact so as to not offend some of those attending the meeting. Members may have to be reminded of the purpose of the meeting, and the time frame available within which to accomplish everything.

*Encourage participation.* The leader of the meeting may have to make a special effort to refrain from entering into the discussion at length, and to concentrate on eliciting the input of others at the meeting. There is a natural tendency of a leader to dominate the discussion. This is to be avoided if you wish to encourage participation and input from others. One way to encourage participation from the more junior members present, is to ask for their input first, reserving for last the input from the more senior members of the committee. In this way,
junior members have a chance to offer their suggestions and advice for consideration. If senior members have their say at the beginning, it may discourage younger members from offering their suggestions. One technique for encouraging participation is to begin with what has been termed a "brainstorming" session, where one asks only for ideas and suggestions, and allows no criticism or discouraging remarks of any kind until all ideas are on the table for discussion. The aim is to get as many ideas as possible on the table for consideration, without making any immediate judgements as to whether they are good, bad, or ridiculous. After all suggestions have been offered, then each suggestion can be taken up in turn, to be discussed and debated, and to be accepted or rejected on its own merits. It may be necessary to redirect discussion from those who talk a great deal and thus dominate the meeting to other quieter members. The chairperson can encourage the participation of those who are more reluctant to speak out by asking for specific comments on items being discussed. One trick is to encourage a clash of ideas to bring out opposing points of view, but avoid arguments that degenerate into personal conflicts. In the face of debate over strongly held positions, it may be necessary to continuously redirect the discussion towards the issue under discussion, rather than the personalities of the participants.

**Obtain commitment for tasks and responsibilities.** If the meeting is to accomplish its purposes, then it is up to the leader of the meeting to see that discussion of agenda items leads to some sort of closure, with agreement as to what is to be done, who is to do it, by when. At the end of the discussion on each agenda item, the leader should review what decision has been reached and what action is proposed, so that all participants understand what has been decided. The need to assign responsibility and obtain commitment for action for those items requiring it cannot be stressed too strongly. It is critical that those who are expected to do something about an agenda item clearly understand what it is they are expected to do and what timetable is involved, and are willing to accept responsibility for that task.

**Keep a record of discussion and accomplishments.** It is important to keep a record of the meeting, including where and when it was held, who attended, what was discussed, what actions were proposed, and what decisions were made regarding each item on the agenda at the meeting. This can be in the form of formal minutes, kept by a recording secretary appointed for that task, or it can be informal notes kept by the meeting leader or a designated note taker. Such a record provides a summary of what the meeting has accomplished, and provides a basis for follow-up on expected accomplishments. Before the end of the meeting, it is well to ensure that the names, titles, and addresses of attendees have been recorded correctly.

**End with a summary of achievements.** It is well to end the meeting on a positive note, by summarizing what has been accomplished. It also provides one last chance to go over any job.
assignments that might have been made during the discussion. This is also a good time to decide on the time and place for future meetings, if they are needed for any follow-up activities.

**After the meeting you should:**

*Prepare and distribute a summary of discussion and achievements.* As soon as possible after the meeting, a summary of the meeting discussion, decisions, and achievements should be prepared and sent to participants to reinforce in writing what was discussed at the meeting. This summary provides a formal record of what took place at the meeting, including a record of the date, time, and place of the meeting, those who attended, and the date and time of the next meeting, if that had been decided. Participants can be asked to verify and validate the contents of the summary. Such summaries provide a good review and starting point for any subsequent meetings.
Activities - Study Unit 6.4

By completing the following exercises, you will be able to determine your own style of time management, and will discover new ways to improve your own effectiveness.

Activity 1

Read the following questions and answer according to how you see yourself operating on the job.²

<table>
<thead>
<tr>
<th>Activity</th>
<th>I'm good at this</th>
<th>I'm OK at this</th>
<th>I should try this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you make a written &quot;to do&quot; list every day?</td>
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<tr>
<td>2. Do you set priorities on your list?</td>
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<tr>
<td>3. Do you handle each paper that comes across your desk only once or at least take some action to keep it moving?</td>
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<tr>
<td>4. Do you read books and magazines like you read newspapers, skimming for key ideas?</td>
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<td>5. Do you group similar projects such as phone calls or copying?</td>
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<tr>
<td>6. Do you distinguish between what is &quot;vital&quot; and what is &quot;trivial&quot; on your job?</td>
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<td>7. Do you break large projects into smaller, more manageable tasks?</td>
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<td>8. Do you set aside large blocks of time when you have to concentrate on big projects?</td>
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<td>9. When working on large projects, do you make brief notes to know where you left off?</td>
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<td>10. Do you avoid striving for perfection on tasks that don't require it?</td>
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<td>11. Do you leave time for unexpected interruptions when planning?</td>
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<td>12. Do you make an outline of essentials to cover before making phone calls?</td>
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<td>13. Do you have effective methods for getting rid of unwanted visitors?</td>
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<tr>
<td>14. Do you set realistic deadlines for yourself and others?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>I'm good at this</th>
<th>I'm OK at this</th>
<th>I should try this</th>
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</thead>
<tbody>
<tr>
<td>15. Do you occasionally look for ways to avoid wasting time of others?</td>
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<tr>
<td>16. Do you make a time survey or record of where your time goes at least one a year?</td>
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<td>17. Do you consider saying no sometimes?</td>
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<td>18. Do you do unpleasant jobs at the time of day when you are at your best?</td>
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<td>19. Do you document your assignments and decisions?</td>
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<tr>
<td>20. Do you try to make all your phone calls at one particular time during the day, freeing up larger blocks of time for other activities?</td>
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<tr>
<td>21. Do you always respond to a memo with another memo, or do you respond via telephone when appropriate?</td>
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<td>22. Do you place all your calls yourself, or do you delegate placing calls to your secretary?</td>
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<tr>
<td>23. Do you have your secretary or other assistant screen calls and visitors?</td>
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<td>24. Have you established a specific time when people know they can phone you?</td>
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<tr>
<td>25. Do you keep on your desk only those documents and papers regarding the project you are currently working on?</td>
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<tr>
<td>26. To save their time and yours, do you refuse to take incoming calls when you have a visitor or subordinate in your office?</td>
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<tr>
<td>27. When you wish to meet with your subordinates, do you schedule time with them in advance?</td>
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<tr>
<td>28. Do you tell visitors in advance how much time you can spend with them?</td>
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<tr>
<td>29. If, after searching for something for a reasonable amount of time, do you use a substitute instead of searching further?</td>
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<tr>
<td>30. Do you screen your inbasket from time to time, taking care of any items that would take a minute or so to do?</td>
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<tr>
<td>31. Before you start something, do you consider delegating it or having someone else do it?</td>
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<tr>
<td>32. Do you agree with the statement &quot;Never put off until tomorrow what you can get someone else to do today&quot;?</td>
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<tr>
<td>33. Before starting a project, do you straighten up your desk so thins are in good order?</td>
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<tr>
<td>34. Do you prepare a clear, tight agenda for all meetings?</td>
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<tr>
<td>35. Do you utilize meetings to deal with issues that can only be dealt with by the group, leaving issues regarding individuals for one-on-one discussions?</td>
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</tbody>
</table>
## Module 6- Implementing the Research Program

<table>
<thead>
<tr>
<th>Activity</th>
<th>I'm good at this</th>
<th>I'm OK at this</th>
<th>I should try this</th>
</tr>
</thead>
<tbody>
<tr>
<td>36. Do you state the closing time of the meeting or appointment at the beginning of the meeting?</td>
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<tr>
<td>37. When conducting decision-making sessions with others, do you list the alternatives, advantages, and disadvantages where everyone can see them?</td>
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</tbody>
</table>
Comment 1

This exercise was intended to help you identify your weak spots when it comes to time management. We selected many different activities and situations to help you focus on specific improvements that you could make. Those items with a check in the "I should try this" column can easily become a action list for you to incorporate into your own time management activities, enabling you to become more effective, productive and efficient.
Activity 2

Now that you've identified your weak spots that you wish to change (from the third column labeled "I should try this" above), use the format below to develop a plan of action to improve your time management and efficiency.

<table>
<thead>
<tr>
<th>Time Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Controlled Time:</td>
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<tr>
<td>Supervisor-Controlled Time:</td>
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<tr>
<td>Other-Controlled Time:</td>
<td></td>
</tr>
<tr>
<td>System-Controlled Time:</td>
<td></td>
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</tbody>
</table>
Comment 2

To help you generate a program to improve your time management skills, we have provided you with this format for planning self-improvement. By categorizing time by the controller, you can easily determine what can and cannot be changed, and strategically plan your attack on time wasters. Remember, this is your plan: by giving it considerable thought you can achieve significant improvements in your overall effective use of time!
Situation Analysis

Mamadou is a middle manager in a relatively large forestry research organization. His twelve-month goal is to become an upper level manager in the organization. He was bogged down with many pressing matters one day, when one of his superiors asked him to handle a small problem raised by an influential policy maker in the executive branch of government.

Being a busy and competent manager, Mamadou had many important tasks to handle, but he knew that this policymaker was an extremely important and influential supporter of the research organization during the budget allocation process. The matter was not complex, and was one that Mamadou would ordinarily delegate to a subordinate and, although the problem was relatively minor to the policymaker, it was considered to be quite important to the research organization since its proper resolution might eventually result in increased core funding from the government. Thus, since the visibility of the task to his superiors was high and its importance to the research organization quite significant, Mamadou assigned a top priority to the task and took a moment to rethink and reprioritize his day.

But what about the day's other priorities? Mamadou looked at the pressing matters before him. Reviewing his daily list, he found he had planned to complete four specific tasks today. One was a rather time-consuming matter of addressing continuing problems with several collaborating scientists from another organization. While interorganizational cooperation was highly desirable and important, these particular scientists were difficult to work with, and had accomplished little except to waste considerable staff time. Since there was little to lose because of further delays, Mamadou decided that this matter could wait, and thus assigned it a lower priority. So Mamadou's solution, based on his assessment of the situation, was to substitute a minor-but-high-reward policy problem for the major-but-low-reward collaborating scientist problem. In this way, Mamadou organized his priorities to maximize his organization's rewards. And he did not make the mistake of trying to complete five jobs in a day that only had room for four.

Activity 3

Identify and describe below three positive behaviors or attitudes that indicate that Mamadou is an efficient manager of his time.

1.

2.

3.
Comment 3

Three indications that Mamadou manages his time effectively are:

1. He normally delegates any work he can to his subordinates.

2. He took some time to analyze and rethink his priorities for the day, realizing that it is better to do 4 things well, than 5 things badly or incompletely.

3. He thought strategically about his priorities, determining what activities would bring the biggest return for his time, particularly in term of his long-range goals.

Winston (1983) suggests a quick method to determine task priorities:

If certain tasks seem to demand considerable time and energy without yielding much in the way of return, take 30 seconds to ask yourself these four questions:

1. Must the job be done at all? What would happen if it were cut?

2. Can the job be delegated? As a whole? To whom?

3. Is the time expenditure—your own and others—commensurate with the project's importance?

4. If time expenditure seems excessive, can the task be downscaled: simplified, made less exhaustive, less detailed, etc.?
Activity 4

Assuming Mamadou had not recognized the strategic importance of this task to the organization, how do you think he would have reacted to the added task presented to him by his superior?
Comment 4

If Mamadou had not clearly understood his organization’s strategic, long-range view, he might not have recognized the importance of the task placed before him by his superior. Since he was a good manager who efficiently delegated minor, less complex tasks to his subordinates, it is likely he would have acted in a predictable manner, delegating the task to his subordinates, and thus losing some of the strategic recognition of his superiors. Thus, understanding your organization’s long-term goals and focusing daily activities on these goals whenever possible is essential.

Since Mamadou sensed that this was an important strategic issue, he decided to complete the task himself. However, if his time management skills were less developed, he might have decided to try to complete all the tasks on his list, plus the new one, resulting in a rushed, poorly conceived and executed schedule, and increasing the possibility that errors in judgement might occur.
Summary - Study Unit 6.4

We hope that you now have a better appreciation for the value of time in the management of forestry research. While it often seems that there is never enough time, managers can take positive, aggressive steps to take back control of their work (and personal!) time.

To help you to become more effective at managing time, we showed you how to establish selective control over your time, by refocusing and harnessing the time you control, and by instituting defensive measures to minimize the impact of the demands you can’t control. This study unit provided a number of practical suggestions and decision making systems to help you to better prioritize your activities, to organize and manage your working environment and time, and to ultimately improve your productivity.

If you would like more information about managing time, we encourage you to obtain and review the interesting articles identified in the literature cited and other references listed at the end of the module. A key article directly related to the topics covered in the module, and cited in the text, is reprinted for your use in the section on readings at the end of the module.
Final Skill and Knowledge Assessment

Module 6 - Implementing the Research Program

On the following page are listed a number of skill and knowledge statements derived from the objectives of the study units in module 6. These are identical to those listed in the initial skill and knowledge assessment at the beginning of the module.
Module 6- Implementing the Research Program

Now that you have completed all of the study units in Module 6, please read each statement carefully and indicate with a check mark the competence level that best describes your current level of competence, from 1 to 5, using the following descriptions:

1 - I cannot perform this skill, or I have not been exposed to the information.
2 - I cannot perform this skill, but have observed the skill or have been exposed to the information.
3 - I can perform the skill or express the knowledge with assistance from others.
4 - I can perform the skill or express the knowledge without assistance from others.
5 - I can perform the skill or express the knowledge well enough to instruct others.

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<tr>
<th>Skill or Knowledge Statement</th>
<th>Your Level of Skill or Knowledge</th>
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<tr>
<td>a) Assess your own research organization's research capacity, and identify key factors or</td>
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<td>constraints that could hinder successful completion of proposed research projects and</td>
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<td>programs that your research organization might undertake.</td>
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<td>b) Describe the functions of annual planning and budgeting.</td>
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<td>c) Utilize timelines to assist in annual work planning.</td>
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<td>d) Understand the importance of and need for coordinating the use of resources needed in</td>
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<td>implementing your organization's research program.</td>
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<td>e) Utilize several techniques to identify and resolve potential resource use conflicts within</td>
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<td>your organization.</td>
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<td>f) Describe a number of practices that can help you better organize your work.</td>
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<td>g) Identify some weaknesses in your personal style of time management, and take steps to</td>
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<td>address or minimize those weaknesses.</td>
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Literature Cited


Additional Sources of Information


Readings for Module 6

The following reading has been selected to provide you with additional information related to the material covered in module 6. We hope you will find it of interest.