Farm Production & Practice

Ministry of Agriculture and Fisheries

Beekeeping
Apiary Sites
Selecting and Planning

Keywords: Planning; registration; size; location.

Selecting good apiary sites can make the difference between profitable and unprofitable beekeeping in an area. Thought must be given to the general location of apiaries, the selection of a particular site, and the layout of hives within the site.

Registration of Apiaries

All apiaries must be registered with the Ministry of Agriculture and Fisheries (MAF) within 14 days of occupation. There is no charge made for this. Apiaries that are located away from a beekeeper's residence must be clearly identified with a code number which is allocated by MAF. The use of code numbers helps MAF staff to identify quickly the owner of a particular apiary.

MAF does not control where apiaries are located, or how far apart they must be. That question must be resolved by beekeepers and land owners working together.

Location of Apiaries

Evening out fluctuating incomes: It is far better in most cases to try to achieve relatively uniform economic returns, than to have years of very high and very low crops. It is preferable for a beekeeper to spread his risks, which means placing apiaries over an area which contains a variety of environmental conditions, including different rainfall potential, soil types, altitudes, and nectar and pollen sources.

These factors can vary tremendously from year to year even within the same area, so honey crops will also fluctuate. Very seldom, though, will a complete crop failure occur in all bee yards during the same season.

Bees from any given colony will generally gather pollen and nectar from a variety of sources and at numerous locations on any one day. They readily forage within a distance of 2.5–3 km from the apiary, although on occasions they will fly much further.

It is often better to look for an apiary location between two major nectar sources (providing that the sources are within 5 or 6 km of each other), than to place colonies at or near one or the other of the sources.

In this way the bees have more than one potential source of pollen and nectar, especially if the areas contain plant species which yield differently under similar weather conditions, or which have different flowering periods. In general, the more sources of pollen and nectar there are in the vicinity of the bees, the better the chances are of securing a profitable honey crop.

Evening out peak work loads: A second advantage gained from dispersing apiary locations over a wider area is that the main nectar flow does not start in all places at the same time. With apiaries in different microclimatic areas, it is possible to stagger the work load of colony manipulation, supering up, and harvesting honey.

Where colonies are to be moved to the main crop, the strongest ones should be moved to those locations from which the flow is expected to start early, and the weaker colonies to the later areas.

Reducing travel costs: Where a beekeeper operates colonies in many locations, one of the major expenses will be the cost of travelling between the out-apiaries and home base. This travel can be reduced considerably by locating the yards in circuits in such a way that a number of apiaries in a given area will allow for a full day's work, and not leave isolated yards that will require part-day operations in the area.

Evaluating performance: It is essential to keep good field records to be able to evaluate hive and apiary performance. Expenses can be heavily pruned, or honey crops or queen matings increased, by relocating some unproductive apiaries. A site that produces a good crop once in every 7 years is not a good investment.

Size of Apiaries

The physical limit of a beekeeping district is reached when it contains as many hives in an apiary, and as many apiaries in the area, as it can support during the poorest part of the season. This applies particularly to pollen sources, and will vary markedly between seasons. A trial apiary in a new area should be managed for at least three years before a sound decision can be made.

In practice, the number of hives in a site also depends on other factors, such as the size of the beekeeper's truck deck, the number of staff working the site, and individual

aglink 2/3000/5/84 : FPP 537
1st revise

Information Services, MAF, Private Bag, Wellington, N.Z.

preferences. For most situations, beekeepers on their own will operate 12–25 hives per apiary. By the time a beekeeper has worked through this number of hives the bees may be robbing, and the beekeeper probably feels like a rest.

If a larger field crew is available numbers can be increased to 30–35 hives. In some places, such as the honeydew areas of the South Island, apiaries of over 1,000 hives are known.

Selection of Apiary Site

The selection of suitable apiary sites is one of the most important operations performed by the beekeeper, and is one that can have far-reaching effects on the honey crop produced. Too often honey bee colonies are placed in the vicinity of a particular nectar source, with little thought given to the many other factors involved in honey production.

Fig. 1: An apiary located in a sunny, well-sheltered corner of a paddock.

Permission: It is essential to obtain the permission of both the land owner and occupier. Special permits are required to site hives on land administered by the NZ Forest Service, Lands and Survey or Maori Affairs Departments. Beekeeping rights for Lands and Survey blocks are usually balloted for, and purchasing hives on such a block does not necessarily guarantee continued rights to the sites.

Arrange apiary sites on farms in full consultation with the farmer. Discuss plans for future use of the land, as it is difficult to gain access to hives across paddocks which have been shut up for hay or cultivated for a crop. Farmers will also know of flood-prone spots.

Ensure that farmers have your name and address, so that contact can be made in case hives are damaged by floods, winds, or vandals.

Shelter: Protection from prevailing winds is essential. Locate hives in the lee of patches of bush, shelter belts, stopbanks, or whatever feature can be found in the area. If no shelter is available, either use artificial shelter or plant some quick-growing shelter trees. You must be prepared to trim hedges if access by contractors is prevented.

Although apiaries should be sheltered, do not locate them in the bottom of deep gullies where cold damp air lies. Some air drainage is essential to prevent stress on colonies and rotting of hive woodware.

Sunlight: Apiaries should receive as much sunlight as possible, especially in the morning. Take particular care to ensure that sites are not shaded in winter when the sun is lowest in the sky. Hives at a site which does not receive sun until the middle of the day miss out on a lot of potential foraging time.

Food sources: A site must be within flying range of nectar sources which will result in surplus honey. The availability of spring forage is also important, as early nectar sources will result in better colony development and reduced sugar feeding bills.

There is currently no completely satisfactory substitute for pollen, so adequate sources of pollen near an apiary are vital.

Access: Vehicle access to an apiary site, all year round, is essential. Being cut off from a site for several weeks or months at a critical time can be a very costly exercise. It is also expensive to run a four-wheel drive vehicle that is only really needed for a handful of sites.

Remember that bees can fly over gates and rivers more quickly and easily than you can drive through them. Locate apiaries as conveniently as possible to reduce time spent driving across farms. Within practical limits, position hives in one apiary rather than in small groups all over the farm.

It is desirable to conceal apiaries from public roads because of the risk of vandalism or theft. However, this can usually be achieved without going right to the back of the farm.

Public relations: Another consideration when selecting sites is good public relations for the beekeeping industry. Do not place apiaries close to busy roads, where they may interfere with pedestrians or passing motorists. On the farm take all due care not to interfere with the farmer's activities.

Apiary Layout

Having selected an apiary site and obtained permission to use it, the next step is to set out the hives. Several things should be considered at this stage.

Physical factors: The size and shape of an apiary location, as well as the position of any restraints (trees, bushes, or fences) within and around the area are usually beyond your control. However, they do have a bearing on how many colonies can be placed in the site and how they are distributed.

Fig. 2: Lack of planning in this site has made working hives very difficult.

Beekeeping equipment: The amount of free space needed around the hives depends on the type and size of truck and hive loaders to be used in servicing the hives. Your own personal preferences are important here.

Protection from stock: Having hives knocked over by stock can cost a whole season's crop if it happens at the wrong time, and can also spread AFB if it is present. Stock damage can be reduced by placing hives in pairs or groups of four for mutual support. The groups should be spread out far enough for a cattle beast to be able to turn around between them.

If stock damage persists the site must be fenced. Electric fences are convenient and are easily relocatable if the

apiary has to be shifted. They can be run off a farm fence or a separate energiser.

Permanent fences should be at least 2–3 strands of barbed wire, well battened. Barbed wire should be wrapped around the corner posts to prevent them from being used as rubbing posts.

Use a Taranaki gate for easy access. Grass inside the fence should be sprayed with a herbicide to stop grazing pressure on the fence, to increase the life of hive woodware, and to speed up bee movement. (Refer to AgLink FPP 807 for information on herbicides.)

Bee flight patterns: These should be considered when setting out hives. It is no pleasure working colonies while standing in the flight line of foragers between the hive and food sources. The paths taken by these bees are influenced by many factors, including wind speed and direction, the presence of obstacles such as fences and trees, the direction of the sources being worked, and by the position of the hives (especially the hive entrances).

Drifting: Drifting occurs when bees become disorientated and return to the wrong hive. It is a problem which occurs where hives are laid out in regular patterns such as straight rows, and when hives are painted the same colour.

Drifting takes place in certain patterns. If hives are placed in straight rows, bees drift to the ends of rows. Where two or more rows are used, the front row collects bees at the expense of hives in the rear.

Heavy drifting means that some hives become so depleted in worker bees that they gather little surplus honey. Others become overcrowded and may swarm. Apiary management is made difficult, as each hive must be treated individually. Selection of breeding stock based on honey production records is not reliable in apiaries where there is a lot of drifting.

Drifting can largely be avoided by:

- Arranging hives in irregular patterns, with entrances facing different directions.
- Painting hive boxes different colours.
- Leaving some landmarks, such as bushes, in an apiary.

Further information on drifting is contained in AgLink FPP 535.

Shifting Apiaries Short Distances

Changes in farming practices may mean that beekeepers are asked to shift apiaries short distances, e.g. from one paddock to a neighbouring one. Considerable numbers of bees will be lost unless certain precautions are taken.

Methods of shifting apiaries short distances are:

- Remove all hives at least 5 km away for 3–4 weeks, by which time most of the field bees will have died. Then move the hives back on to the farm to their new location.
- Shift the hives directly to the new site, leaving a "catcher" hive on the old site. This catcher hive will have to be moved at least 5 km away later. It is easy to forget to do this, and neglected catcher hives are often the causes of disease outbreaks.
- A direct shift can be made in winter, especially after the bees have been confined for a period of several days. Few bees return to the old site, and those that do soon die of exposure and do not become a nuisance. Vehicle access in winter may be a problem for this method.

Summary

When selecting sites for establishing apiaries, consider these factors to make your operation more profitable:

- Spread risks by having apiaries in a variety of different environments.
- Have a reasonably large number of hives per site.
- Arrange sites in circuits, within economical travelling distance of base.
- Provide shelter from prevailing winds.
- Choose a sunny aspect.
- Have apiaries close to nectar and pollen sources.
- Have good year-round vehicle access.
- Protect hives from stock.
- Reduce drift between hives.

Further reading

FPP 535: Beekeeping; apiary sites; how to reduce drifting.
FPP 538: Beekeeping; urban areas; management to prevent nuisance.
FPP 807: Vegetation control; herbicides (non-selective); properties and uses.

A.G. Matheson
Apicultural Advisory Officer
MAF Advisory Services
Nelson

MAF Information