

## A STUDY ON DETERMINATION OF ACCOUNTANCY APPLICATIONS' PROBLEMS OF PER ANNUAL PLANTS IN THE GREENHOUSE ENTERPRISES AND SOLUTIONS IN TURKEY

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### **Abstract**

Greenhouse plant production in Turkey started in 1950's and rapidly increased after 1970's. Various groups of plants such as vegetables, flowers and some fruits are commonly cultivated in the greenhouse nowadays. Most of the crops grown in the greenhouses are annuals and a limited number of them are per annuals. Economic life span of per annuals varies from 2 to 8 years. Production costs of these plants consist of all the expenses until harvesting period. These expenses include; starting materials such as seedlings, irrigation systems, pesticides, fertilizers along with labor costs, food, social security payments, which are all considered direct expenses beside indirect ones which include electricity, water, maintenance, communication, insurance so on. All these expenses should be activated and kept into depreciation during economical cultivation period of the plants.

The purpose of this study was to determine the problems encountered during the valuation, activation and depreciation separation of the per annual greenhouse plants and also to suggest legitimate solutions. Panel method was used in this study. The panel group was formed by related units of Akdeniz University, owners and associated bookkeepers of the greenhouse enterprisers and accountants. The group indicated that there was not any valid example of accountancy application to per annual greenhouse plants, so far. In this paper as a result of the research and investigations conducted it is found that neither the legal regulations nor the uniform account plans are enough in the capitalization and depreciation of per annual plants in the green house enterprises which is a form of agricultural enterprises.

**Keywords:** Greenhouse Enterprises, Per Annual Plants, Accounting Problems, Valuation, Activation

### **Türkiye'de Seracılık İşletmelerinde Çok Yıllık Bitkilerde Muhasebe Uygulama Sorunları Ve Çözüm Önerileri**

#### **Özet**

Türkiye'de seracılık işletmeciliği 1950'lerden sonra başlamış ve 1970'li yılların sonundan itibaren de hızlı bir gelişme eğilimi göstermiştir. Günümüzde meyve, sebze ve süs bitkilerinde örtüaltı yetiştiriciliği yaygın bir şekilde yapılmaktadır. Seralarda yetiştirilen bitkilerin çoğunluğu yıllık ve az bir kısmı ise çok yıllıktır. Çok yıllık bitkilerin ömürleri 2-8 yıl arasında değişmektedir. Bu bitkilerin yetiştirilme maliyetleri ürün alınıncaya kadar geçen sürede yapılan harcamalardan oluşur. Bu harcamalar; fide, bitki soğanları, kimyasal ilaçlar ve gübreler vb gibi direkt ilk madde ve malzeme giderleri, esas üretim gider yerlerinde çalışan işçiler için ödenen normal ve fazla çalışma ücretleri, yemek, sosyal güvenlik primleri vb gibi direkt işçilik giderleri ile endirekt malzeme ve işçilikler, elektrik, su, bakım-onarım, haberleşme, sigorta, amortisman vb gibi genel üretim giderleridir. Söz konusu yetiştirme maliyetlerinin aktifleştirilmesi ve bitkinin ekonomik ömür süresince amortismanına tabi tutulması gerekir.

Bu çalışmada çok yıllık bitkilerin değerlendirilmesi, aktifleştirilmesi ve amortisman ayırma işlemlerinde karşılaşılan muhasebe uygulama sorunları tespit edilmiş ve çözüm önerileri getirilmeye çalışılmıştır. Çalışmada araştırma yöntemi olarak panel yöntemi uygulanmıştır. Akdeniz Üniversitesinin ilgili birimleri, işletmelerin sahipleri ve muhasebeden sorumlu yetkilileri ve muhasebecilerden oluşan panel grubu üyeleri; ülkemizde çok yıllık bitkilerin muhasebe uygulamalarında bir örnekliğin olmadığını ifade etmişlerdir. Çalışmada yapılan araştırma ve incelemeler sonucunda bir tarım işletmesi olan seracılık işletmelerinde çok yıllık bitkilerin değerlendirilmesi, aktifleştirme ve amortisman konusunda hem yasal düzenlemelerin hem de tek düzen hesap planının yeterli olmadığı tespit edilmiştir.

**Anahtar Kelimeler:** Seracılık İşletmeleri, Çokyıllık Bitkiler, Muhasebe Problemleri, Değerleme, Aktifleştirme

### **1. Introduction**

Greenhouse crop production and management gained a good momentum in the southern Turkey after 1970's and

expanded rapidly in too many parts of Turkey. According to the recent statistics, Turkey has more than 60000 hectares of

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greenhouses, excluding low tunnels, of which 90% is located in the Mediterranean shore (DİE, 2003; Baktır, 2003: 25; Titiz, 2004: 13). Growing some important horticultural crops such as vegetables, flowers, and fruits are becoming widespread in various regions of the country. Per annual crop producing in the greenhouses is very limited compared to annuals. Examples of per annuals grown under cover are gypsophila, strelitzia, roses, eucalyptus, banana, peach, grape, loquat and some aromatic and medicinal plants (DİE 2003, Titiz, 2004: 23-28).

Life spans of per annuals grown in the greenhouses vary from 2 to 8 years. However, economic life is generally shorter than 8 years. For these plants, all the expenses from beginning of plantation or sowing to harvesting time should be activated as cultivation or starting material costs and should also be changed to production cost through the depreciation method during the cultivation period. Production cost is increasing especially during the first few months because of the intensive use of pesticides and fertilizers imported and starting materials (ex. plantlets, seedlings, bulbs) of some ornamentals. The aim of this study is to determine the problems encountered during the cultivation period of per annual crops grown in the greenhouses in relation to valuation of production costs, activations and application of depreciation and also to suggest legitimate solutions to the problems.

## **2. Method**

Firstly literature works were done. In this respect, present internet pages, books and booklets, research papers and studies dealing with or related to the subject were searched and studied in detail. Meanwhile, legitimate and present tax regulations were carefully overviewed.

Panel method was used in this study. The researchers from two departments of Akdeniz University whom are involved or related to the research topic were invited to the panel and the subject was discussed in details with each panelist individually.

The researchers, officials and private units, organizations and enterprises involved in the formed panel are given below.

- Some researchers from the departments of Agricultural Economics and Horticulture at Akdeniz University,
- Project and Statistics Units of Agriculture Department in Antalya, belongs to the Ministry of Agriculture and Rural Affairs
- Owners, managers, and bookkeepers of two big and well organized private greenhouse farms in Antalya,
- Antalya Tax Office
- An accountant and a certified public accountant

The reason why all the panelists and the greenhouse enterprises were chosen in Antalya is that most of the greenhouses in Turkey are located in Antalya province and the greenhouse enterprises are intensively employee hiring units beside the incomes of the greenhouses are much higher than the other sectors of agriculture or more specifically even more than other sub-sectors of horticulture.

The following titles for the problems of per annual plants were chosen for the study by the panelists.

- Valuation of the per annual plants,
- Activation of the per annual plants, and
- Applying depreciation for the per annual plants

## **3. Accountancy Applications for the Per Annual Plants**

### *3.1. Valuation of the Per Annual Plants*

The first products (flowers, fruits etc.) are harvested at least three months after planting or sowing the per annual plants and harvesting lasts not less than 2 years in the greenhouses (Gübbük et al, 2004: 250; Korkut,1998: 40). The cost of the greenhouse crop production is much higher than open field crop production because of intensive use of fertilizers, pesticides, and

especially heating expenses. Therefore, valuation of production cost is becoming very important in relation to the need of capitalization for these plants.

Valuation for per annual plants can be done in various ways. The following valuation methods will be discussed briefly.

a) The value of production costs

Cost of per annual crop production consists of the items indicated below; Starting material and application expenses such assurance of seedlings or plantlets, soil preparation, use of fertilizers and pesticides beside production site expenses namely wages of workers, overtime payments, food, social security payments all together are considered direct and indirect expenses. In addition to indicated ones above, overhead expenses such as necessary equipments and machineries, electricity, water, maintenance, communication, insurance, depreciation etc. also take a big share in production costs. All these expenses are valued during the economical production period and then subjected to depreciation. Pesticide and fertilizer applications, irrigation, pruning, harvesting, grading and similar some other cultural practices are valued as production costs of commodities (Tetik, 2002: 64).

b) Production cost value calculation including the interest

In this valuation method, the interest which is not obtained from the money invested for the production is taken into account during the calculation of commodity cost (Erdamar, 1985: 62-63). Because of high inflation rate ,relative share of plants takes places in active part of balance sheet is lessen in comparison with the other items and information given in financial statements can be misleading in case of using cost value in appraisal since the economic life span of per annual plants is longer than a year. Therefore, interest rate should be included during the valuation of production value of commodities in the mentioned method.

An alternative way to the one given method above is revaluation of the plants. The total value of revaluation is close to the real value of the commodities on revaluation

time. Net book value is figured out by subtracting accumulated depreciation subjected to revaluation from this value. If revaluation is done at regular intervals, significant differences can not occur between the net book value of the plants and appropriate values in balancing date (No 16 Türkiye Muhasebe Standartları(TMS): 459).

c) Production value

The main purpose of this valuation is to calculate the value of commodities during the economical period of the production (Erdamar, 1985: 64-67). In order to calculate the value of a plant, it is essential to predict total yield and possible market prices of it in forthcoming years. For instance, the yield of cut roses in the 1<sup>st</sup> year is relatively low and it is considerably increasing in the following 2-4 years. A deviation in the yield is not common in the greenhouse crop production because of intensive cares and precautions, thus it is not difficult to predict the yield in general.

d) The Fair Value

In the IAS article coded 41 the fair value is accepted as a valuation method for the living entities. In the 8<sup>th</sup> article of the standards the fair value is described as the “value which should be formed as a result of exchange of a good or a payment of a debt in between the informed and volunteer groups in a cross-market media . However in the standards it is noticed for the goods like living things or per annual plants which don’t have active market prices or the estimations on the fair value are not clearly reflecting the actual case; the actual value is measured by reducing the cumulative depreciation and the value increases from the actual cost

### 3.2. The activation of Per Annual Plants

Although there is not any clear application of uniform system to per annual plants in Turkey, growers can get good yield for 2 or more years if appropriate ecological conditions and maintaining cultural practices are provided. The commodities of per annual plants can possibly be considered as a machine or as a factory from a production

point of view. Nevertheless, it should be kept in mind that these plants do not have the features of well equipped machines (Tetik, 2002: 66). Under these circumstances, it will not be appropriate to follow the active side of balance sheet for per annual plants.

The Private Depletable Assets which is referred in the uniform account plan in the number 2 asset groups as "including the costs which have a life span limited with the time and density of the productive affords for assets which are totally depletable or related very closely to a particular asset" could also be suitable for the per annual plants (Akdoğan and Sevilengül, 2000: 277). However when the description is inspected, it is seen to suit more to the under-land resources like mines, petroleum, etc and not to the per annual plants. Thus it is crucial that in the uniform account plan there should be a sub account formed as the living assets under the main group of fixed assets. In the living assets sub account group, the growth costs of the per annual plants that occurs until harvest shall be good to be collected in a manner like the Conducted Living Assets Investments for the living animals (Deran 137-196). Yet at the phase of harvest, it should be transferred to the accounts for example 210 per annual plants, 210-01 Rose Seedlings which will still be opened under the same group of accounts. In this way the capitalization matter of the per annual plants in the green house enterprises which is a type of agricultural enterprises is overstepped.

### *3.3. Depreciation of Per Annual Plants*

The fixed assets which are recorded in assets are used in activities which lose their value in time due to some physical reasons such as technological obsolescent, aging or corrosion excluding the land in use and construction sites (Meigs et al., 1996: 514). The indicated losses which directly or indirectly affects the cost of agricultural commodities is not the same in every item, it differs. Therefore, it is necessary to allocate the values of such assets on costs of the commodities during the period of their

usage; this is the main area of depreciation (Needles et al., 1999: 98).

There are different definitions for depreciation. In the 6<sup>nd</sup> article of TMS no 16, depreciation is described as value decrease of detained assets and machines due to aging, deformation and obsolescent because of use and technological improvements in time. In other words, allocating the total value which is considered in depreciation to the period of service (TMS, 2006: 451).

When we examine the definition, it is easily seen that the depreciation process is not a valuation; rather it is an operation of allocating it in the years in a ratio which regards its cost of assets in its economical life span. In order to allocate and also to calculate the cost of depreciation in a given period: some criteria such as cost of existence, economical life span, residual value, preferred depreciation method, etc are needed (TMS, 2001: 191-192).

There are a number of depreciation valuation methods for calculation of annual cost of depreciation both in accountancy theory and application. These methods can be put in four groups (Meigs et al., 1996: 514-517);

- The straight –line method
- The declining-balance method
- The variable -depreciation method
- The progressive- depreciation method

Among these methods, there has been no chance of using progressive depreciation method because of high inflation rates experienced for years in Turkey. The first three methods can be used in the greenhouse enterprises. However, it is more appropriate to use variable amortizing method for per annual plant production in the greenhouse enterprises. Because these plants have more than one year economical life span, and meantime they give less yield in the first and last years of their life compared to the other years. Therefore, giving lesser shares to production cost of the commodities from the cost of beginning materials such as young plants and plantlets in the first year will let accountants to calculate the cost value much closer to fair value.

This method is also known as a method of depreciation for working period or quantity of commodities. In this method, total cost of depreciation is calculated according to yield quantity of the assets. An example of variable depreciation method for yield value of per annual plants is given below.

Example: The production cost of 2000 m<sup>2</sup> greenhouse roses is 58.460\$. Approximately 980.000 roses are cut in 2000 m<sup>2</sup> green house in a 4 year period (T.K.B., Cost Table of Years 2004-2005). In the first year, 170.000 rose cuts were obtained.

*Depreciation cost =*

Starting material cost (58.460\$)  
Amount of cut roses (980.000)

Depreciation cost of one cut rose  $\approx 0.06\$$

When we multiply this cost with the number of rose cuts produced in the first year, we get the total cost of depreciation as given in the calculation below.

Depreciation cost =  $0.06\$ \times 170000 = 10200\$$

### *3.4. Accountancy Application Problems of Per Annual Plants in Turkey*

Valuation of production cost is an example of valuation ways for per annual plants. This way is very much reasonable by uniform system and also by legal arrangements. As it is known uniform system has been used since 1994. The production value obtained after the calculation of nominative production value and its interests together can be used by the enterprises during their management decisions. Although these three valuation methods are theoretically especially when high inflation rate is experienced, it can not be applicable in respect to legal arrangements. A specially for the fair value to be applied there should be a market of the per annual plants actively. On the other hand there is no market for the per annual plants unless they have the properties of a tree. And in general these plants are either removed and thrown out or sold with very low prices for gardening when the fair life

span is over. However the method of valuation from the beginning which was applied to the assets subjected to the depreciation in 1983-2003 in Turkey and was cancelled because of high inflation which can be applied to per annual greenhouse plants (Pekdemir and Selvi, 2004: 20). After discussing with panel group members, it was noticed that the valuation method over again from the beginning was never used for activated per annual plants from accountancy point of view.

On the other hand, to apply the truthful value which declared in the 41 numbered standard, the accounts, concerned with increase and fall in value on live assets should be opened in Turkish Uniform Account Plan. There are different methods which have been used on activation of per annual plants in accountancy applications in Turkey. In application using different accounts make comparing the statements of accounts difficult. On this head Turkish Uniform Accounting System is not adequate. The following calculations were found by one by one discussion with panel group members about these plants: 280-Prepaid Expenses (Expenses of Forthcoming Years), 151-Work-in-Process, 253-Machinery and Equipments and An Account which opened in The Private Depletable Assets Groups)

Using Work-in-Process Account for activation of per annual plants in accountancy application will lead over calculations of the first year's total assets as well as net enterprise capitals. This situation will cause mistakes both in analysis which will be realized (ex analysis of liquidity of enterprises) and also on decisions will be made by administrations. Therefore, these plants should not be into current asset groups of active parts of balance sheet. On the other hand, this calculation method is not suitable for the control of other expenses like the Machinery and Equipments, the Private Depletable Assets beside Prepaid Expenses which will be done in forthcoming years, due to special characteristics of the plants. Panel members claimed that the reason why this accountancy system is used, that is because there is no harmony between actual life span of some per annual plants

and over legitimate tax collection system. This disharmony is results in depth of tax assessments. Meantime, Antalya Tax Office agrees that there is still an uncertainty on accountancy of per annual greenhouse plants, and the department also informed us that the case was conveyed to the Ministry of Treasury in Ankara.

Under the frame of suggested arrangements based on economical life of the plants (V.U.K.Md.315), it is indicated that the enterprises are responsible to depreciation their existences, subject to depreciation, according to the ratio(s) on a list which will be released by the Ministry of Treasure (<http://www.muhasabenet.net/amortismanoranlari.htm>, 15.08.2006). It is also indicated that the ratio(s) for the existence which are not taken a place in the legislation can be freely determined by the enterprises unless the ratio(s) will not exceed 20% of the depreciation. It is known that per annual greenhouse plants are not put on the list. This situation causes problems in calculation of depreciation of the plants such as roses which have more than 2- year economical life-span- Antalya Agricultural Department, is also panel member, is using economical life method for calculating depreciation, too.

#### **4. Conclusion**

According to 2005 census, nearly 29,9% of the Turkish population is working in agriculture ([http://www.sendika.org/yazi.php?yazi\\_no=5957](http://www.sendika.org/yazi.php?yazi_no=5957), 17.10.2006). The share of agriculture in the Gross National Products was realized as 11,5% in the same year ([http://www.sendika.org/yazi.php?yazi\\_no=5957](http://www.sendika.org/yazi.php?yazi_no=5957), 17.10.2006). In recent years, the importance of greenhouse enterprises in national economy has been steadily increased. In reality, cash crops such as cut roses and vegetables are easily produced in the greenhouses wherever the climate is suitable even in smaller land pieces (250m<sup>2</sup>). Therefore, the effect of greenhouse enterprises in the national economy can not be overlooked.

There is an intimate relation between

the success of the enterprises and management system along with applied accountancy system and use of data and knowledge already available in the system itself. Low educational levels of the farmers, being small size enterprises which put the interest of their capitals into incomes and finally the lack of clear evidences in accountancy systems and legality of the greenhouse enterprises are creating problems in accountancy applications. Panel members often indicated that they frequently encountered with problems in per annual plants grown in the greenhouses. Necessary precautions have not been taken to overcome the uncertainties in the greenhouse activities, legitimacy and accountancy applications even though there has been considerable increment in greenhouse products in export since 1980.

The purpose of this study was to find out solutions to the accountancy problems encountered in the greenhouse enterprises and also to discuss the problems with growers, exporters and responsible officers and to draw their attentions to the problems. This purpose was very much realized. It was also intended to find out legitimate and applicable solutions to the accountancy problems encountered by emphasizing the necessity of re-arrangement. The financial statements in use were submitted to people and enterprises (take advantage of them) according to similar principles. Thus, the knowledge presented by the greenhouse enterprises which are considered as agricultural activities was evaluated and put into an uniformity and submitted to public. In this study, the problems encountered in activation, depreciation and valuations were examined and also tried to eliminate the differences in applications and to establish uniformity in accountancy records. In addition, the need of legitimate arrangements of the subject and opening new accounts for the biological assets in the uniform chart of accounting was taken to The Ministry of Treasury as well.

In this paper as a result of the research and investigations conducted it is found that neither the legal regulations nor the uniform account plans are enough in the capitalization and depreciation of per annual

plants in the green house enterprises which is a form of agricultural enterprises.

Considering that the E.U. countries apply the IFRS standards since 2005 in the international operations, it would obviously be a necessity that legal regulations should be made for the application of the TAS which was published in parallel with the IFRS by the Council of Accountancy Standards and new accounts should be opened in the Uniform Chart of Accounting related to the operations of the agricultural enterprises in Turkey as well.

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