PROGRESS REPORT ON SPECIAL GRASS PLANTINGS ON AIRFIELDS

By
Howard L. Hyland, Agronomist
Office of Airports, Civil Aeronautics Administration

The Federal Government is now engaged in an extensive program for the development of airports. As in the similar program for the development of public roads, turf is used rather extensively, and many problems in establishment and maintenance practices are involved.

Although much has been accomplished in the past, relative to the development of turf, there is still a great deal more to be learned. This point was well brought out by Mr. Neale in his paper "Soil Mechanics in Relation to Turf Production on Highway Shoulders" presented at the Syracuse Turf Conference last April. I quote, "The need for further investigation of such problems is becoming more and more apparent . . . . The American public and highway engineers are alike disturbed by the increase in serious traffic accidents daily recorded by the press and radio. The Committee on Roadside Development suggests that nothing may do more to make our highways safer, more convenient and more beautiful than improvement in design of highway cross sections. The traffic lanes, the shoulder, the drainage area, the slopes and the strip of land bordering the highway must be considered as of equal importance in improving highway design. We have learned to construct excellent pavements. Is it not high time that we resolved to design shoulders, and other portions of the highway cross section to equally high engineering standards?"

The need for further investigational work on turf for airports is even greater than on highways. This is due primarily to the fact that turf alone is used for traffic areas on the smaller airports, as well as for the shoulders of paved runway fields, and also because turf for airport or highway use is a relatively new field.

It is known that CAA is in the early stages of the airport program. It seems appropriate, therefore, that any information which we could obtain regarding any of the above factors would be valuable for future projects, whether they pertain to airports, highways, parks or other areas where turf is to be utilized. In view of these circumstances, CAA has initiated, during this past season, several special planting areas of turf grasses, as well as a few fertilizer trials, under a rather wide variety of soil conditions.

Field Testing Work for Practical Turfing Problems - The field testing work on turf which is being conducted by CAA is on a scientific basis, and is designed for direct application to turfing projects. It should not be confused with research programs which are often academic in nature and may require years of detailed work to obtain results.

Although the plan under consideration contemplated a widespread testing on airports of promising grasses, fertilizers, and other materials, equipment and methods, the work this year had to be restricted to limited areas and to few materials. This report, therefore, will be confined primarily to some test plantings with Zoysia japonica as an example of the type of testing to be undertaken.

It has been recognized for many years by those who are familiar with airport problems that two species of Zoysia (Zoysia japonica and Zoysia matrella) have many characteristics that mark them as promising grasses for airport surfaces. They form dense, tough mats which, because of the naturally low habit of growth, require little or no mowing. In spite of the general recognition of the merits of these species for airport use, it is significant that over the long period of years, during which their potentialities have been recognized for this special field there had been no testing of these grasses on airports. In view of the extensive Federal-aid Airport construction program that is now under way, it is evident to all who are directly connected with this phase of the work that such a testing program has already been delayed too long. Past experience with these grasses, as with many others, has demonstrated that this type of testing has not and will not be carried on by private organizations. This failure is due to the simple reason that no provisions are available for reimbursements of expenses for tests by means of sales control of the improved material, as is possible in the case of patentable materials and equipment. Unless such work is sponsored by public agencies which make or share large investments in turfed areas, the work will not be done. Our recently initiated testing program on airports, together with some similar work recently undertaken by a few highway organizations represented in this meeting, may be expected to give practical field data that will be of great value in guiding wise use of public funds in future turfing programs.

Tests Show Need for Additional Facts and Information - Tests with Zoysia for other than airport and highway use over a period of years have demonstrated that this grass cannot be successfully propagated by the careless slip-shod methods that are likely to give satisfactory results with such species as Bermuda grass. It has been demonstrated that it has a limited range of adaptation. There are other items concerning its growth and usefulness that have been demonstrated or indicated by past tests. The program we have undertaken recognizes past experiences with this grass, and that additional facts and information are needed before any organization can use this grass most efficiently for airports or roadsides. Largely through cooperation with state aviation personnel and private airport owners or operators, we were able to place these tests on 17 airport sites in North and South Carolina, Virginia and Pennsylvania.

The tests unfortunately had to be delayed beyond the planting dates generally considered most likely to give best results. Some of the planting had to be supervised by individuals who were inexperienced in handling this type of plant material. The seed that was available was not of high quality and was not hulled. The above handicaps in planting the test areas naturally resulted in less satisfactory results than would have been anticipated had it been practical to start them under more favorable circumstances. Nevertheless, the results obtained this season have been well worth while in substantiating some previous limited observations on this grass, in providing some new information, and in establishing some test areas that may be expected to yield additional information on the subject as the grass develops on these sites.

Preliminary Findings from Tests on Zoysia - Among the items indicated thus far by these tests are the following:

1. Seeding not satisfactory. This was most likely due to one or more factors such as poor quality seed, using unhulled seed, or late seeding.

2. Spot sodding more effective than sprigging. Such results are to be expacted, especially with unfavorable moisture conditions following late season planting.

3. Spot sodding not as universally effective as would have been expected from such grasses as Bermuda grass.

4. Sprigging not generally effective, partly due to lateness of planting, but confirming previous experience that it cannot be handled as carelessly as Bermuda grass.

5. Growth indicated tolerance to wide range of soil pH (4.5 to 7.6) and texture (fine sand to heavy clay).

6. Some benefit from fertilizer. The response from fertilizer was usually greater for other grass species grown under similar soil conditions.

7. The growth in some locations was rapid in spite of planting handicaps, indicating possibilities for use under such local conditions.

8. Failures and successes from same material and methods of planting indicate need for more detailed data as to factors that are responsible for such extreme differences. Modifications of soil condition may prove to be relatively simple to make them most favorable for development of this grass. This is indicated by evidence of inability to grow under wide differences in acidity and texture of soils.

Special Plantings of Alta Fescue - This report has been confined to the special plantings of Zoysia largely to illustrate the type of work that should be followed for determining the suitability of other grasses. A few plantings of other species were made however, including Alta Fescue which has been receiving recently favorable comments only as an all-purpose airport grass. Limited data obtained this season indicated the need for additional information, which certainly has been and will continue to be necessary, before making too broad recommendations, regardless of what grass species is being considered.

Discussion - The discussion of this paper was limited to the general expression of the importance and need for similar work, both as pertaining to highway and airport development.

Reports by the various State highway officials on the performance of Alta Fescue, showed a majority not too optimistic over its possibilities, although the trials have not been too extensive.