Chapter – VI

Summary and Conclusion
An investigation entitled “Seed Quality of Soybean (Glycine max (L.) Merrill) as Influenced by Environment” was undertaken with the following objectives:

1) To study the seed production feasibility in different seasons.
2) To study the effect of seasons on different parameters of seed quality and storability of seed.
3) To study the changes in physico-physiological and physico-biochemical components during storage.

The experiments were carried out in different independent parts during July 2002 to May 2004 at Marathwada Agricultural University, Farbhani.

6.1 Seasonal Performance

Five soybean cultivars viz., JS-335, MAUS-81, MAUS-71, MAUS-47 and MAUS-61 were sown in four replication as per the recommendation in kharif (July 7, 2002), rabi (Oct 17, 2002) and summer (Dec 28, 2002) seasons and observed for different growth and seed yield characters.

The average pre-flowering period of the five varieties over three seasons was found to be 41.60 days, whereas the post-
flowering and pod development period was 57.08 days making 98.68 days as an average duration of soybean crop when taken over three seasons. The average number of pods/plant of the five genotype over the three season was 46.84 pods/plant, whereas, the average yield was 16.31 qt/ha.

The variety MAUS-47 required minimum number of days for 50% flowering and maturity in kharif, rabi and summer season. The MAUS-61 takes highest number of days in all of the three seasons for 50% flowering and maturity as compared to other varieties. It was seen that the pre-flowering period affects the performance of soybean irrespective of varieties when grown in different seasons.

The yield (qt/ha) was found to be highest in the variety MAUS-71 and MAUS-81 in kharif, rabi and summer seasons. Both the varieties are most ideal type, more stable and best suited for seed production in all the three seasons followed by JS-335 and MAUS-61. The variety MAUS-47 was found to be lowest in average yield performance in all the three seasons.

Kharif season is the best season for soybean seed production irrespective of varieties. However, if crop failed its seed viability due to rains or field weathering at the time of maturity, seed production may be taken in the summer season looking to comparable yield.

6.2 Effect of environments, varieties and Storage containers on seed quality of soybean

The soybean varieties MAUS-71, MAUS-47 and MAUS-61 were used for the present studies. The seeds of kharif, rabi and
summer seasons of these varieties were used. The seeds were threshed by stick beating and manual processing. During the storage period seeds obtained were stored in gunny bags and polylined gunny bags.

The monthly and bio-monthly observation for different seed quality characters viz., germination, RS length, vigour index, dry matter content, moisture content, viability by TZ test, electrical conductivity, protein and oil content were taken during storage.

6.2.1 Seed Quality

All the seed quality parameters of soybean viz. germination, root-shoot length, vigour index, dry matter content, moisture content, viability by TZ test, electrical conductivity. Protein content and oil content differed significantly due to seasons, varieties and storage containers during storage. The germination, RS length, vigour index, dry matter content, viability as tested by TZ test, protein and oil content decreased, whereas moisture content and electrical conductivity increased as storage period advances irrespective of environments, varieties and storage containers. The decrease and increase for the above characters were more in the variety MAUS-61 irrespective of environments and storage. The seed stored in gunny bag showed the same trend for decrease and increase for the above characters.

The germination above minimum seed certification standard (70%) was maintained up to 420, 360 and 300 days in the variety MAUS-71, MAUS-47 and MAUS-61, respectively irrespective of seasons and storage containers. Whereas, upto
390, 360 and 330 days germination above MSCS were maintained in the seeds of summer, *kharif* and *rabi* seasons, respectively irrespective of varieties and storage containers. The germination above minimum seed certification standard (70%) was maintained upto 360 and 330 days seed stored in polylined gunny bags and gunny bags, respectively irrespecting of the corresponding factors.

Regarding the storability among the seasons, it was seen that the seeds of *kharif* season escaped from field weathering or rains was better storer followed by seeds of summer season than the seeds of *rabi* season. Among the varieties, it was also seen that the variety MAUS-71 followed by MAUS-47 was better stored than the variety MAUS-61. It was noticed that the storage of seed in polylined gunny bags had significantly increased the storability of soybean seed over the seed stored in gunny bags.

In general, it could be stated that the viability of soybean seed can be successfully maintained one month more above Minimum Seed Certification Standard (MSCS) (70%) if the seed stored in polylined gunny bags than seed stored in gunny bags.

6.3 **Conclusions**

1) The *kharif* was found to be the best season for soybean seed production in concerned with seed yield followed by summer irrespective of varieties.

2) The variety MAUS-71 and MAUS-81 were found to be most ideal and stable over year round cultivation.
3) The varieties MAUS-71, followed by MAUS-81, JS-335 and MAUS-61 were found to be the best suited for seed production in all the three seasons.

4) The variety MAUS-47 was found most unstable nature for yield performance in all the three seasons.

5) The *kharif* followed by summer was found to be the best season for seed quality parameters.

6) The *rabi* season was found to be most unsuitable for seed production and seed quality parameters.

7) If crop failed its viability due to rain or field weathering at the time of maturity, seed production may be taken in the summer season looking to comparable yield.

8) The variety MAUS-71 followed by MAUS-47 was found to be better stored than the variety MAUS-61, irrespective of treatments.

9) The germination, RS length, vigour index, dry matter content, viability as tested by TZ test, protein and oil content were found to be decreased, whereas, moisture content and electrical conductivity increased during all the periods of storage as storage period advances irrespective of seasons, varieties and storage containers.

10) The seed stored in polylined gunny bags was found to be with better storability by 30 days than the seed stored in gunny bags irrespective of seasons and varieties.