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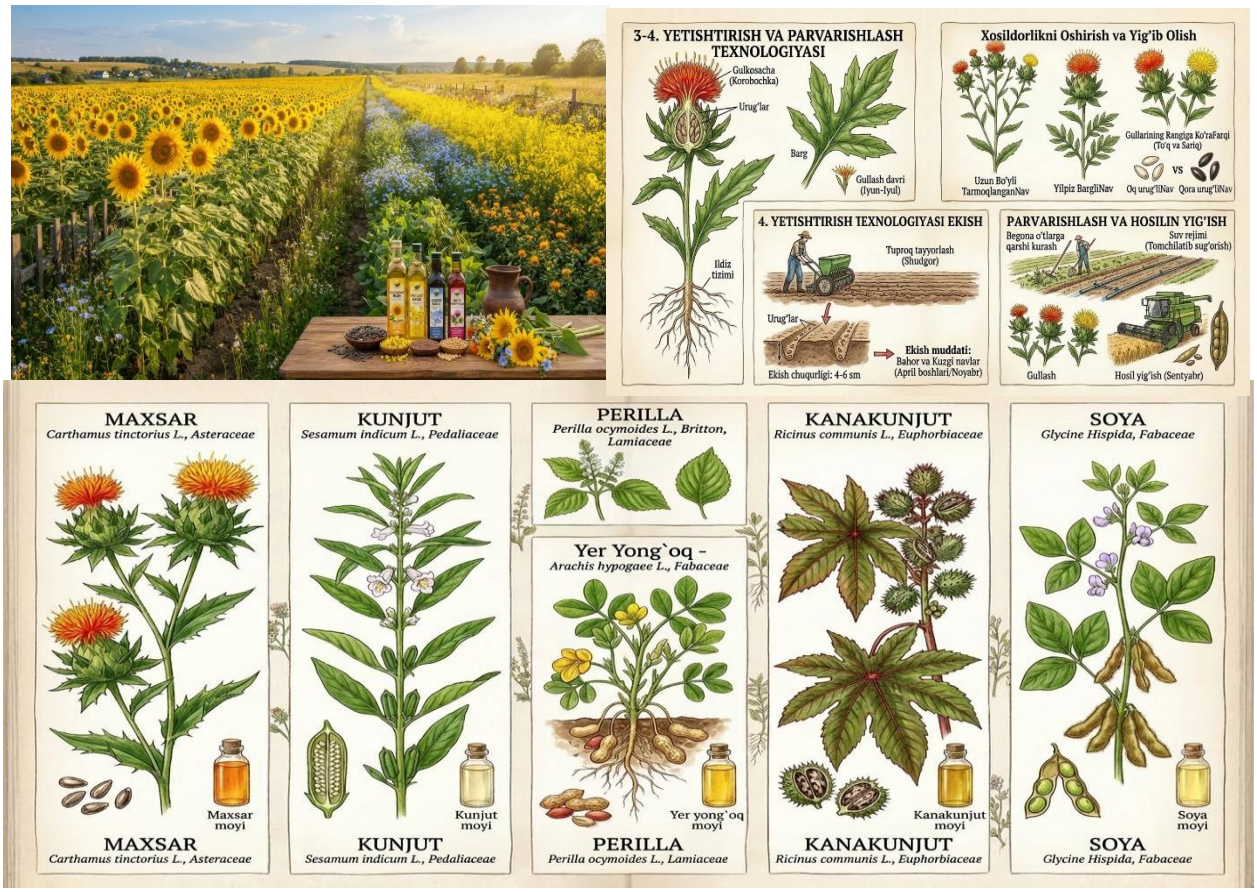
DEPARTMENT OF AGROSOIL SCIENCE AND RECLAMATION

THE SIGNIFICANCE OF OILSEEDS.

SUNFLOWER CULTIVATION TECHNOLOGY.

MOYLI EKINLARNING AHAMIYATI.

KUNGABOQAR- YETISHTIRISH TEXNOLOGIYASI



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D.V.Kim The significance of oilseeds. Sunflower cultivation technology. (Moyli ekinlarning ahamiyati. Kungaboqar- yetishtirish texnologiyasi) – Gulistan, 2026.- __. p

Ushbu ma‘ruza matni O‘simlikshunoslik fanidan o‘tiladigan “Moyli ekinlarning ahamiyati. Kungaboqar- yetishtirish texnologiyasi” mavzusiga bag‘ishlangan bo‘lib, ushbu ishda mamlakatimiz qishloq xo‘jaligi va oziq-ovqat xavfsizligini ta’minlashda moyli ekinlarning tutgan o‘rni va xalq xo‘jaligidagi ahamiyati atroflicha yoritilgan. Ayniqsa, asosiy moyli ekin hisoblangan kungaboqar (*Helianthus annuus* L.) o‘simligining biologik xususiyatlari, tuproq-iqlim sharoitlariga talabi va yuqori hosil olish imkoniyatlari tahlil qilingan. haqidagi ma‘umotlar ingliz va o‘zbek tillarida bayon etilgan hamda asosiy atamalar izohi–glossariy keltrilgan. Ma‘ruza 2 -bosqich Agrokimyo va tuproqshunoslik ta‘lim yo‘nalishi talabalariga mo‘ljallangan

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THE SIGNIFICANCE OF OILSEEDS.
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Plan:

1. The significance of oilseeds.
2. Sunflower - significance, origin, distribution.
3. Sunflower biology and varieties.
4. Sunflower cultivation technology.

Key phrases: oil crops, sunflower, sesame, peanuts, castor, soybean, oil flax, rapeseed, white mustard, mustard, perilla, rijik, lyallemancia, white cumin, black cumin, anise, cilantro, crambe, poppy, indau, chufa, milk tea, food, margarine, soap, varnish, dye, alif, stearin, linoleum

Reja:

1. Moyli ekinlar ahamiyati.
2. Kungaboqar - ahamiyati, kelib chiqishi, tarqalishi.
3. Kungaboqar biologiyasi va navlari.
4. Kungaboqar yetishtirish texnologiyasi.

Tayanch iboralar: moyli ekin, kungaboqar, kunjut, yer yong‘oq, kanakunjut, soya, moyli zig‘ir, raps, oqxantal, xantal, perilla, rijik, lyallemansiya, oqzira, qorazira, arpabodiyon, kashnich, krambe, mak, indau, chufa, molochay, oziq-ovqat, margarin, sovun,lak, bo‘yyoq,alif, stearin, linoleum

1. General characteristics of oilseeds

The group of oilseed crops consists of various crops. These crops belong to different botanical families and differ in morphological and biological characteristics. The quantity, quality, and application of oil vary. ' Representatives of this group:

1. Sunflower-Helianthus annus L., Asteraceae
2. Maple - Carthamus tinctorius L. Asteraceae

Sesame - Sesamum indicum L., Pedaliaceae,

4. Arachis hypogae L., Fabaceae '

5. Buckwheat - Ricinus communis L., Euphorbiaceae

6. Soybean - Glycine Hispida, Fabaceae

7. Zygophyllum oleaginous - Linum uzitatissimum L., Linaceae '

8. Rapeseed - Brassica napus L.ssp, oleifera Metzg, Brassicaceae

9. Mustard - Sinapis alba, Brassicaceae

Mustard - Brassica junceae Czern, Brassicaceae

10. Perilla - Perilla ocymoides L.

11. Ridge.

12. Lyallemantia-L Germantia iberica F. et M.

13. Foeniculuv vulgare L.

Carum carvi - Carum carvi L.

15. Anise - Hbmpinella anisum L.

16. coriander - Coriandrum sativum L.

17. Crambe - Grambe abyssinica Z., Brassicaceae

18. Poppy - Papaver somniferum L.

19. Indau - Eruca sativa Gars

20. Cyperus esculenthus L.

21. Milk - Euphorbia lathyris L. and others.

The seeds and fruits of these crops contain 20-60% oil and are used in food, canning, confectionery, and bakery products. ' In addition, vegetable oil is used in the production of margarine, soap, varnishes, paints, linseed oil, stearin, linoleum, in medicine, perfumery, and skin care. ' However, the share of oilseeds varies. Sunflower, soybean, and rapeseed are widespread as oilseeds; other crops are modest: oilseed, sesame, safflower, mustard, castor oil, oil-bearing clover, eryong-oq, crambe, perilla, and lyallemancia. ' The significance of oilseeds depends on the use of their oil in the national economy. '

Due to the growing industrial demand for vegetable oils in global agriculture, interest in oilseeds has sharply increased over the last 25 years. ' While the area of

oilseed crops in 1980 amounted to 160 million hectares, by 2005 it reached 247 million hectares, representing an increase of 87 million hectares. ' The annual production of vegetable oil amounted to 278 million tons in 1860, and by 2005, it reached 711 million tons. ' This remarkable result was achieved thanks to the development of a comprehensive concept for oilseeds in the industry and the implementation of interesting projects. '

From 1981 to 2005, the yield of palm and rapeseed crops increased by 69-82%. Similar indicators were also observed in the cultivation of fiber flax and sunflower crops. ' Soybean yield increased by 34% from 17 c/ha to 23 c/ha.

Attention to oilseeds and the cultivation of these crops vary across different countries. According to projects for 2006–2015, the production of oilseeds in Europe and North America will slow down slightly, while in countries such as Brazil, Argentina, Malaysia, and Indonesia, it will, on the contrary, increase sharply. '[1]

The oil cake and meal remaining after oil production are considered highly nutritious feed for livestock. ' Some oilseeds are used in silage production. '

Oilseed crops are widespread on Earth, with an area exceeding 140 million hectares. ' The most common crops are soybeans (73.5 million hectares), sunflowers (18.33 million hectares), rapeseed - 22.25 million hectares, soybeans - 21.78 million hectares, oilseeds - 7.5 million hectares, sesame - 6.75 million hectares. ' Oilseeds are distributed in the USA, Canada, India, Brazil, Argentina, China, Pakistan, Russia, Moldova, and Ukraine.

In Uzbekistan, oilseeds such as safflower, sunflower, sesame, white oil flax, and soybeans are grown. '

Oilseeds belong to various botanical families: cabbage family, legume family, spurge family, and others.

Vegetable oils are esters formed by the combination of glycerol with fatty acids. ' Oil contains 75–79% carbon, 11–13% hydrogen, and 10–12% oxygen. Oil is two to three times more potent than protein and carbohydrate.

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[1] Johann Vollmann, Istwan Rajjan. Oil Crops. Spring, New York 10013, USA. 2009 u.

The quality of oils depends on the acids they contain, namely unsaturated oleic linoleum, linoleum, and saturated (palmatin, stearin) acids. ' The amount and quality of oil in oilseed crops depend on the cultivation conditions. '

Table 1.15.

1. Amount and quality of oil in oilseeds

(data from G.S. Posipanov)

Crops	Oil content in dry seeds, % '	Iodine number	Soap number of niches	Acid number	Drying level
1	2	3	4	5	6
Lyallemancy	23,3-37,3	162-103	181-185	0,8-4,4	Drying
Perilla	261-49,6	181-206	189-197	0,6-3,9	-"-
Oil flax '	30,0-47,8	165-192	186-195	0,5-3,5	drying
Oil poppy '	46,0-56,0	131-143	189-198	-	drying
Sunflower	29,0-56,9	119-144	183-186	0,1-2,4	semi-drying
Saffron	25,0-32,0	115-155	194-203	0,8-5,8	--"--
Sesame	48,0-63,0	1-3-112	186-195	0,2-2,3	--"--
Shadow	15,5-24,5	107-137	190-212	0,0-5,7	--"--
White mustard	30,2-39,8	92-112	170-184	0,06-8,5	--"--
Yeryong'white	41,2-56,5	83-103	182-207	0,03-2,24	non-drying
Sesame	47,2-58,6	81-86	167-185	0,10-11,0	--"--
Autumn rapeseed	45,0-49,6	94-112	167-185	0,1-11,0	semi-drying
Spring rapeseed	33.0-44,0	101	187	2,0	semi-drying

Cotton is mainly grown in the western regions of South Africa, of which 40% is distributed in the western and northwestern parts, 29% in the northwestern part of the African continent, and 24% in the western part. ' It is rare in Limpado and Mpumanlanga. In 2000-2001, Yeryong'white product increased significantly (by 200,000 tons) due to the expansion of cultivated area (14,000 ha).[2]

The iodine number is determined based on how much iodine 100 g of oil absorbs. Oil with a high iodine content dries quickly. ' Depending on this, vegetable oil is divided into 3 groups: '

- the iodine number in drying oil (perilla, jalemancia, zighir oil) is more than 130; '

- in semi-drying oil, the iodine number is 85-130, which is used in food oils (sunflower, sesame, soybean, rapeseed, mustard, safflower); - in non-drying oil (Eryong-oq and castor oil), the iodine number is less than 85. '

Oil used in food and technology must contain a low number of unbound fatty acids. ' Solvent potassium is used to neutralize these oils. ' The oxygen number is determined based on the amount of caustic potassium consumed to neutralize unbound fatty acids in one gram of oil. ' In incompletely ripe seeds, the acid number is high. '

- Vegetable oil is used in soap production. ' To evaluate this property, the number of saponifications is determined. The number of soapings is determined based on the amount of soluble potassium consumed to neutralize all fatty acids in the uncoupled and glycerin-bound state in one gram of oil. It is desirable for technical oils to have a high acid number and soaping number. '

- Oilseeds contain high-quality protein. ' It contains essential amino acids such as lysine, tryptophan, cystine, and arginine. Among oilseeds, soybean oil is produced the most, followed by sunflower, peanut, cotton, rapeseed, sesame, and safflower oil.

- Among oilseed crops, essential oil crops stand out. These crops contain 5-7% essential oil (in seeds, fruits, leaves, and stems). The main representatives of this group are anise, cilantro, cumin, mint, and white cumin. '

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[2] Groundnut, production guidelines. Kalule Okello David, Monyo Emmanuel 2015u.

- Essential oil crops are used in medicine, perfumery, and food. ' Its waste serves as high-quality feed for livestock. '

Although the highest yield increases were observed in oil palm and rapeseed crops, these crops do not play a major role in oil production. ' Oil palm is mainly grown in Indonesia and Malaysia, while rapeseed is cultivated in European countries. Nevertheless, the sown areas of these crops have been increasing over the past 25 years, and new high-yielding varieties and hybrids are being created. ' In particular, the use of scientific achievements and biotechnology in the creation of varieties and hybrids showed good results. ' This situation, in turn, led to an increase in economic efficiency and increased attention to these crops. '[3]

2. Moyli ekinlarning umumiy tavsifi

Moyli ekinlar guruhini xilma xil ekinlar tashkil qilgan.Bu ekinlar har xil botanik oilalarga mansub bo`lib morfologik va biologik xususiyatlari bilan farqqiladi.Moyning miqdori, sifati, qo`llanishi har xil bo`ladi. SHu guruhning vakillari:

1.Kungaboqar-Helianthus annus L., Asteraceae

2.Maxsar- Carthamus tinctorius L. Asteraceae

3.Kunjut - Sesamum indicum L., Pedaliaceae,

4.Yer Yong`oq - Arachis hypogae L., Fabaceae

5.Kanakunjut- Ricinus communis L., Euphorbiaceae

6.Soya - Glycine Hispida, Fabaceae

7.Moyli zig`ir-Linum uzitatissimum L., Linaceae

8.Raps - Brassica napus L.ssp, oleifera Metzg, Brassicaceae

9.Oqxantal -Sinapis alba, Brassicaceae

9.Xantal - Brassica junceae Czern, Brassicaceae

10. Perilla - Perilla ocymoides L.

11.Rijik

12.Lyallemansiya-Lallemantia iberica F. et M.

13.Oqzira - Foeniculuv vulgare L.

[3] Johann Vollmann, Istvan Rajcan. Oil Crops. Spring, New York 10013, USA. 2009 it.

14.Qorazira - Carum carvi L.

15.Arpabodiyon – Hbmpinella anisum L.

16.Kashnich - Coriandrum sativum L.

17.Krambe - Grambe abyssinica Z., Brassicaceae

18.Mak - Papaver somniferum L.

19.Indau - Eruca sativa Gars

20.CHufa - Cyperus esculenthus L.

21.Molochay - Euphorbia lathyris L. vaboshqalar.

Ushbu ekinlarning urug`i va mevasi tarkibida 20-60% moybo`lib, oziq-ovqatda, konserva ishlab chiqarishda, qandolat va non mahsulotlari tayyorlashda qo`llaniladi. Bundan tashqari, o`simlik moyi margarin, sovun, lak, bo`yyoq, alif, stearin, linoleum ishlab chiqarishda, tabobatda, parfyumeriyada, teriga ishlovberishda qo`llaniladi. Ammo moyli ekinlarni ulushi har xil. Kungaboqar, soya raps moyli ekin sifatida keng tarqalgan, boshqa ekinlar kamtarqalgan: moylizig`ir, kunjut, maxsar, xantal, kanakunjut, moyliko`knori, Yeryong`oq, krambe, perilla, lyallemansiya. Moyli ekinlarning ahamiyati ularning moyini xalq xo`jaligida foydalanishiga bog`liq.

Jahon qishloq xo`jaligida sanoatning o`simlik moyiga ehtiyoji ortib borishi hisobiga so`ngi 25 yil davomida moyli ekinlarga bo`lgan qiziqish keskin kuchaydi. Moyli ekinlar maydoni 1980 yili 160 mln.ga ni tashkil etgan bo`lsa, 2005 yilga kelib 247 mln.ga ni tashkil etdi, ya’ni 87 mln.ga ga ortdi. Bir yilda o`simlik moyi yetishtirish 1860 yili 278 mln. tonnani tashkil etgan bo`lsa, 2005 yilga kelib 711 mln tonnani tashkil etdi. Bu juda ajoyib natijaga sohada moyli ekinlar bo`yicha mukammal konsepsiyaning ishlab chiqilgani, qiziqarli loyihalar bo`yicha ishlar olib borilgani tufayli erishildi.

1981 yildan 2005 yilgacha palma va raps ekinlar hosildorligi 69-82 % ga oshdi. Bunday ko`rsatkichlar tolali zig`ir, kungaboqar ekinlarida ham kuzatildi. Soya ekinida hosildorlik 17 s/ga dan 23 s/ga ga 34 % ga ortdi.

Moyli ekinlarga e’tibor, bu ekinlarni ekib yetishtirish turli mamlakatlarda turlicha kechmoqda. 2006-20015 yilga mo`ljallangan loyihalarga ko`ra moyli ekinlar

yetishtirishni Evropa va SHimoliy Amerikada biroz sekinlashadi, Braziliya, Argentina, Malayziya, Indoneziya singari mamlakatlarda esa aksincha keskin ortadi.[4]

Moy ishlab chiqarilgandan keyin qolgan kunjara va shrot chorva mollariga yuqori to`yimli ozuqa hisoblanadi. Ayrim moyli ekinlar silos tayyorlashda qo`llaniladi.

Yer yuzida moyli ekinlar ko`p tarqalgan, ekin maydoni 140 mln. ga dan ortiqdir. Eng ko`p tarqalgan ekinlar -soya (73,5 mln.ga), kungaboqar (18,33mln.ga), raps-surepitsa-22,25 mln.ga, erYong`oq-21,78mln.ga., moylizig`ir-7,5 mln.ga, kunjut-6,75 mln.ga. Moyli ekinlar AQSH, Kanada, Hindiston, Braziliya, Argentina, Xitoy, Pokiston, Rossiya, Moldova, Ukrainada tarqalgan.

O`zbekistonda moyli ekinlardan maxsar, kungaboqar, kunjut, Yeryong`oq moyli zig`ir va soya ekilmoqda.

Moyli ekinlar turli botanik oilalarga mansub, ular - karamdoshlar, dukkakdoshlar, sutlamaguldoshlar va boshqalardir.

O`simlik moyi glitserinning moy kislotalari bilan birikishidan vujudga keladigan murakkab efirlardir. Moy tarkibiga uglerod-75-79%, vodorod-11-13% va kislorod-10-12% kiradi. Oqsil va uglevodga nisbatan moyning quvvati ikki-uch barobar ortiqdir.

Moyning sifati ularning tarkibidagi kislotalarga, ya’ni to`yinmagan oleinlinoleum, linol) va to`yingan (palmatin, stearin) kislotalarga bog`liq. Moyli ekinlar tarkibidagi moyning miqdori, sifati yetishtirish sharoitiga bog`liq.

1.15-jadval

1.Moyli ekinlarning tarkibidagi moy miqdori va sifati

[4] Johann Vollmann, Istvan Rajcan. Oil Crops. Spring, New York 10013, USA. 2009 y.

(G.S.Posipanov ma’lumotlari)

Ekinlar	Quruq urug`da moy miqdori,%	Yod soni	Sovunlanish soni	Kislota soni	Qurish darajasi
1	2	3	4	5	6
Lyallemansiya	23,3-37,3	162-103	181-185	0,8-4,4	Quriydigan
Perilla	261-49,6	181-206	189-197	0,6-3,9	-"-
Moyli zig`ir	30,0-47,8	165-192	186-195	0,5-3,5	quriydigan
Moyli ko`knori	46,0-56,0	131-143	189-198	-	quriydigan
Kungaboqar	29,0-56,9	119-144	183-186	0,1-2,4	yarim quriydigan
Maxsar	25,0-32,0	115-155	194-203	0,8-5,8	--"--
Kunjut	48,0-63,0	1-3-112	186-195	0,2-2,3	--"--
Soya	15,5-24,5	107-137	190-212	0,0-5,7	--"--
Oq xantal	30,2-39,8	92-112	170-184	0,06-8,5	--"--
Yeryong`oq	41,2-56,5	83-103	182-207	0,03-2,24	qurimaydigan
Kanakunjut	47,2-58,6	81-86	167-185	0,10-11,0	--"--
Kuzgi raps	45,0-49,6	94-112	167-185	0,1-11,0	yarim quriydigan
Bahorgi raps	33.0-44,0	101	187	2,0	yarim quriydigan

Yeryong`oq asosan Janubiy Afrikaning g`arbiy regionlarida yetishtiriladi, qaysiki 40% g`arbiy va shimoliy-g`arbiy qismida, 29% Afrika qit’asining SHimoliy G`arb va 24% G`arbiy qismda tarqalgan. Limpado va Mpumanlanga da kam

uchraydi. 2000-2001 yillari Yeryong`oq mahsuloti ekin maydonini (14000 ga) kengayishi hisobiga sezilarli darajaga (200 000 tonnaga) oshdi.[5]

100 g moy qancha yodni qabul qilsa, shunga qarab yod soni aniqlanadi. Yod soni ko`p bo`lgan moy tez quriydi. Shunga qarab o`simlik moyi 3 guruhga bo`linadi:

- quriydigan moy (perilla, yalemansiya, zig`ir moyida) yod soni 130 dan ortiq bo`ladi;

- yarim quriydigan moyda yod soni 85-130 bo`lib, bu oziq-ovqatda ishlatiladigan moy (kungaboqar, kunjut, soya, raps, xantal, maxsar); -qurimaydigan moyda (Yeryong`oq va kanakunjut moyida)yod soni 85 dan kam bo`ladi.

Oziq-ovqatda va texnikada qo`llaniladigan moy tarkibida bog`lanmagan moy kislotalar soni kam bo`lishi kerak. Bu moylarni neytrallashtirish uchun o`yuvchi kaliy qo`llaniladi. Bir gramm moy tarkibidagi bog`lanmagan moy kislotalarini neytrallash uchun sarflanadigan o`yuvchi kaliy miqdoriga qarab kislorta soni aniqlanadi. To`la pishmagan urug`da kislota soni yuqori bo`ladi.

- O`simlik moyi sovun ishlab chiqarishda qo`llanadi. SHu xususiyatga baho berish uchun sovunlanish soni aniqlanadi. Bir gramm moy tarkibidagi bog`lanmagan va glitserin bilan birikkan holatdagi hamma moy kislotalarni neytrallash uchun sarflangan o`yuvchi kaliy miqdoriga qarab sovunlaish soni aniqlanadi.Texnikada qo`llanadigan moyda kislota soni va sovunlanish soni yuqori bo`lgani ma’qul.

- Moyli ekinlarning tarkibida yuqori sifatli oqsil bo`ladi. Tarkibida lizin, triptofan, sistin, arginin kabi muhim aminokislotalar mavjud. Moyli ekinlar orasida eng ko`p soya o`simligidan moy ishlab chiqarilmoqda, undan keyin kungaboqar, yerYong`oq, chigit, raps, kunjut, maxsar moyi turadi.

- Moyli ekinlar orasida efirmoyli ekinlar ajralib turadi.Bu ekinlarning tarkibida (urug`ida, mevasida, bargida, poyasida )5-7% efir moyi bo`ladi.Bu guruhning asosiy vakillari arpabodiYon, kashnich, qora zira, yalpiz, oq ziradir.

- Efirmoyli ekinlar tabobatda, parfyumeriya va oziq-ovqatda qo`llanadi. CHiqindisi chorva mollariga yuqori sifatli oziq bo`ladi.

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[5] Groundnut, production guidelines. Kalule Okello David, Monyo Emmanuel 2015y.

Hosildorlikning ortishi bo`yicha eng yuqori ko`rsatkichlar moyli palma va raps ekinlarida kuzatilgan bo`lsada, ammo, bu ekinlar moy yetishtirishda asosiy o`rinni eg`allamaydi. Moyli palma asosan Indoneziya va Malayziyada yetishtirilsa, raps Evropa mamlakatlarida parvarishlab kelinmoqda. Shunga qaramay bu ekinlar ekin maydoni so`nggi 25 yil davomida toboro ortib bormoqda, yangi serhosil nav va duragaylari yaratilmoqda. Ayniqsa nav va duragaylar yaratishda fan yutuqlari va biotexnologiyaning ko`llanishi yaxshi natijalar ko`rsatdi. Bunday holat o`z navbatida iqtisodiy samaradorlikni ortishiga hamda bu ekinlarga bo`lgan e'tiborni ortishiga olib keldi.[6]

2. Sunflower - significance, origin, and distribution

Sunflower (Helianthus annuus L.) is an annual plant that holds a significant place among oilseed crops. It is widely used in the food industry, animal husbandry, and other production sectors. Sunflower seeds contain a large amount of oil, which is used to produce high-quality vegetable oil. Sunflower seeds are also consumed as a food product. The oil cake and meal remaining after oil extraction are considered protein-rich feed for livestock. Therefore, sunflower is one of the economically important crops in agriculture.

-Food significance: vegetable oil is obtained from the seeds. Sunflower oil is used in cooking and the food industry.

- Nutritional value: seeds contain oil, protein, and other nutrients.

Significance in animal husbandry: the oil cake and meal remaining after oil extraction serve as protein-rich feed for livestock.

- Industrial significance: sunflower oil is also used in the production of certain technical products and biodizel.

- Agro-ecological significance: flowers are a source of nectar and pollen for bees, attracting pollinating insects.

Oil content varies depending on the variety and cultivation conditions. Therefore, when growing sunflowers, it is important to select high-yielding, oil-rich varieties suitable for the local climate.

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[6] Johann Vollmann, Istvan Rajcan. Oil Crops. Spring, New York 10013, USA. 2009 y.

The importance of sunflower is determined, first of all, by the oil obtained from its seeds. Sunflower oil is used in daily nutrition, food production, and for some technical purposes. In addition to fats, its seeds also contain proteins, vitamins, and minerals. The sunflower plant attracts bees and other pollinating insects during its flowering period. This contributes to the maintenance of biodiversity. In addition, the production of oil from sunflower seeds contributes to the development of the agricultural processing industry.

North America is considered the homeland of the sunflower. It originally grew wild in these areas and has been cultivated by local indigenous peoples since ancient times. Initially, its seeds were consumed as food, as well as used for oil production and other household needs. Humans have long created cultivated sunflower forms by selectively breeding plants with large seeds, large inflorescences, and beneficial properties.

In the early 16th century, sunflowers were brought to Europe. Initially, it was primarily cultivated as an ornamental plant. Later, the possibilities of obtaining oil from its seeds were studied, and its importance as an oilseed crop increased. In Russia, sunflower cultivation and oil production are particularly developed. As a result of breeding work, varieties with high seed oil content, high yield, and suitable for various climatic conditions have been created. As a result, sunflower has become an important agricultural crop, widespread in Europe and other continents.

Currently, sunflowers are grown in many countries around the world. Its main cultivated areas are located in countries such as Russia, Ukraine, Argentina, the USA, China, Kazakhstan, and Turkey. The sunflower mainly grows well in temperate and warm climates. It is a light-loving, heat-demanding plant that requires sufficient water during its development. To increase yield, it is necessary to take into account sowing dates, soil fertility, moisture supply, and the biological characteristics of the variety.

In Uzbekistan, sunflower is also important as an oilseed crop. By cultivating it, it is possible to expand the local raw material base for the production of vegetable oil. At the same time, soil and climatic conditions, irrigation opportunities, and the

biological requirements of the crops must be taken into account. To obtain a high yield of sunflowers, it is important to use high-quality seeds, adhere to sowing rates, feed plants, and combat weeds and pests.

Today, sunflowers are grown in many countries around the world, especially in temperate and warm climates. Its widespread distribution is due to the oil content of its seeds, its demand in the food industry, and the creation of varieties suitable for various soil and climatic conditions.

The main areas of cultivation include:

• *Europe and the Black Sea region: Russia, Ukraine, and other European countries are important sunflower growing regions.*

• *Asia: cultivated in Kazakhstan, China, Turkey, and other countries.*

• *America: cultivated for oil and seed production in the USA, Argentina, and other countries.*

• *Other regions: It is also cultivated in suitable climatic regions of Africa and Australia*.

In conclusion, sunflower is an important oilseed crop whose origin is associated with North America, which is widely distributed worldwide today. The oil obtained from its seeds is used in the food industry, and the products remaining from processing are used in animal husbandry. The development of sunflower cultivation plays an important role in increasing agricultural efficiency, increasing the production of oilseed raw materials, and providing the food industry with local products.

2.Kungaboqar — ahamiyati, kelib chiqishi va tarqalishi

Kungaboqar (Helianthus annuus L.) moyli ekinlar orasida muhim o‘rin egallaydigan bir yillik o‘simlik hisoblanadi. U oziq-ovqat sanoati, chorvachilik va boshqa ishlab chiqarish tarmoqlarida keng qo‘llaniladi. Kungaboqar urug‘i tarkibida ko‘p miqdorda moy mavjud bo‘lib, undan sifatli o‘simlik moyi olinadi. Shuningdek, kungaboqar urug‘i oziq-ovqat mahsuloti sifatida ham iste’mol qilinadi. Moy ajratib olingandan keyin qoladigan kunjara va shrot chorva hayvonlari uchun oqsilga boy ozuqa hisoblanadi. Shu sababli kungaboqar qishloq xo‘jaligida iqtisodiy jihatdan muhim ekinlardan biri sanaladi.

Kungaboqarning asosiy ahamiyati quyidagilardan iborat:

- *Oziq-ovqat ahamiyati: urug‘idan o‘simlik moyi olinadi. Kungaboqar moyi ovqat tayyorlashda va oziq-ovqat sanoatida ishlatiladi.*
- *Ozuqaviy ahamiyati: urug‘i tarkibida moy, oqsil va boshqa oziq moddalar mavjud.*
- *Chorvachilikdagi ahamiyati: moy ajratib olingandan keyin qoladigan kunjara va shrot chorva hayvonlari uchun oqsilga boy ozuqa hisoblanadi.*
- *Sanoatdagi ahamiyati: kungaboqar moyi ayrim texnik mahsulotlar va biodizel ishlab chiqarishda ham qo‘llanadi.*
- *Agroekologik ahamiyati: gullari asalarilar uchun nektar va gulchang manbai bo‘lib, changlatuvchi hasharotlarni jalb qiladi.*

Moydorligi nav va yetishtirish sharoitiga qarab o‘zgaradi. Shu sababli kungaboqarni yetishtirishda yuqori hosildor, moydorligi yaxshi va mahalliy iqlimga mos navlarni tanlash muhimdir.

Kungaboqarning ahamiyati, avvalo, uning urug‘idan olinadigan moy bilan belgilanadi. Kungaboqar moyi kundalik ovqatlanishda, oziq-ovqat mahsulotlari ishlab chiqarishda va ayrim texnik maqsadlarda ishlatiladi. Uning urug‘lari tarkibida yog‘lardan tashqari oqsil, vitaminlar va mineral moddalar ham mavjud. Kungaboqar o‘simligi gullash davrida asalarilar va boshqa changlatuvchi hasharotlarni jalb qiladi. Bu esa biologik xilma-xillikni qo‘llab-quvvatlashga xizmat qiladi. Bundan tashqari, kungaboqar urug‘idan moy ishlab chiqarish qishloq xo‘jaligi mahsulotlarini qayta ishlash sanoatining rivojlanishiga yordam beradi.

Kungaboqarning vatani Shimoliy Amerika hisoblanadi. U dastlab shu hududlarda yovvoyi holda o‘sgan va mahalliy tubjoy xalqlar tomonidan qadim zamonlardan boshlab yetishtirilgan. Dastlab uning urug‘lari oziq-ovqat sifatida iste’mol qilingan, shuningdek, moy olish va boshqa maishiy ehtiyojlar uchun foydalanilgan. Insonlar uzoq vaqt davomida yirik urug‘li, katta to‘pgulli va foydali xususiyatlarga ega o‘simliklarni tanlab ko‘paytirish orqali madaniy kungaboqar shakllarini yaratganlar.

XVI asr boshlarida kungaboqar Yevropaga olib kelingan. Dastlab u asosan manzarali o‘simlik sifatida ekilgan. Keyinchalik uning urug‘idan moy olish imkoniyatlari o‘rganilib, moyli ekin sifatidagi ahamiyati ortib borgan. Ayniqsa, Rossiyada kungaboqarni yetishtirish va moy ishlab chiqarish rivojlangan. Seleksiya ishlari natijasida urug‘ining moydorligi yuqori, hosildor va turli iqlim sharoitlariga mos navlar yaratilgan. Natijada kungaboqar Yevropa va boshqa qit’alarda keng tarqalgan muhim qishloq xo‘jaligi ekiniga aylangan.

Hozirgi vaqtda kungaboqar dunyoning ko‘plab mamlakatlarida yetishtiriladi. Uning asosiy ekin maydonlari Rossiya, Ukraina, Argentina, AQSh, Xitoy, Qozog‘iston va Turkiya kabi mamlakatlarda joylashgan. Kungaboqar, asosan, mo‘tadil va iliq iqlimli hududlarda yaxshi o‘sadi. U yorug‘likni yaxshi ko‘radigan, issiqlikka talabchan va rivojlanish davrida yetarli miqdorda suvga muhtoj o‘simlikdir. Hosildorlikni oshirish uchun ekish muddati, tuproqning unumdorligi, namlik bilan ta’minlanish va navning biologik xususiyatlarini hisobga olish zarur.

O‘zbekistonda ham kungaboqar moyli ekin sifatida muhim ahamiyatga ega. Uni yetishtirish orqali o‘simlik moyi ishlab chiqarish uchun mahalliy xomashyo bazasini kengaytirish mumkin. Bunda hududlarning tuproq-iqlim sharoiti, sug‘orish imkoniyatlari va ekinning biologik talablari hisobga olinishi kerak. Kungaboqardan yuqori hosil olishda sifatli urug‘lardan foydalanish, ekish me’yoriga rioya qilish, o‘simliklarni oziqlantirish, begona o‘tlarga va zararkunandalarga qarshi kurashish muhim hisoblanadi.

Bugungi kunda kungaboqar dunyoning ko‘plab mamlakatlarida, ayniqsa, mo‘tadil va iliq iqlimli hududlarda yetishtiriladi. Uning keng tarqalishiga urug‘ining moyliligi, oziq-ovqat sanoatidagi talabi va turli tuproq-iqlim sharoitlariga mos navlar yaratilgani sabab bo‘lgan.

Asosiy yetishtirish hududlari quyidagilarni qamrab oladi:

- *Yevropa va Qora dengizbo‘yi: Rossiya, Ukraina va boshqa Yevropa mamlakatlari kungaboqar yetishtirishning muhim hududlari hisoblanadi.*
- *Osiyo: Qozog‘iston, Xitoy, Turkiya va boshqa mamlakatlarda ekiladi.*

- *Amerika: AQSh, Argentina va boshqa mamlakatlarda moy olish hamda urug‘ yetishtirish uchun parvarish qilinadi.*
- *Boshqa hududlar: Afrika va Avstraliyaning mos iqlimli mintaqalarida ham yetishtiriladi.*

Xulosa qilib aytganda, kungaboqar kelib chiqishi Shimoliy Amerika bilan bog‘liq bo‘lgan, bugungi kunda dunyo miqyosida keng tarqalgan muhim moyli ekindir. Uning urug‘idan olinadigan moy oziq-ovqat sanoatida, qayta ishlashdan qoladigan mahsulotlari esa chorvachilikda foydalaniladi. Kungaboqar yetishtirishni rivojlantirish qishloq xo‘jaligi samaradorligini oshirish, moyli xomashyo ishlab chiqarishni ko‘paytirish va oziq-ovqat sanoatini mahalliy mahsulotlar bilan ta’minlashda muhim ahamiyat kasb etadi.

3. Sunflower biology

From sunflower germination to the full ripening of the sunflower seeds, a temperature range of 2600 to 2850°C is required. This indicator varies depending on the variety and soil-climatic conditions. Depending on the northern regions, the irrigation period increases. Sunflower seeds germinate at 5-10°C, and they germinate much faster at a temperature of 10-12°C. '° The optimal temperature is 18° C'. At higher temperatures, the germination process accelerates. The grass is cold-resistant at 6°C. ° Early-maturing varieties can also be grown in the Moscow region. If the temperature is high and water is insufficient, the yield decreases sharply. ' The negative impact of high temperatures is observed from full germination to the end of the flowering period. '

Demand for water. Due to its well-developed roots, the sunflower is drought-resistant, utilizing the water required from deep soil layers; the thick hairs on the stems and leaves protect it from evaporation. ' It does not require water uniformly during the growing season. From germination to the development of the basket, it requires 20-25% of the annual norm. The most water-intensive period is the flowering period, during which it absorbs 60% of the total water requirement. ' In conditions of drought, the yield decreases significantly. '

Demand for soil. ' Sunflower is grown in various soils. Only on marshy and sandy soils does it not develop well and yield no crops. Its advantage over other field crops is its salt-tolerance. ' Depending on the degree of salinity, sunflowers can be placed on the saline soils of Uzbekistan. ' Sunflower grows and develops well in black, gray, and gray soils with a pH of 6.0-6.8. '

Food requirements. According to scientists, sunflower absorbs 25% of the required nutrients after flowering. ' During the flowering period, it absorbs most of the nutrients. ' The main part of phosphorus is absorbed from germination to the time of basket formation; nitrogen is absorbed from basket formation to the end of the flowering period, and potassium from basket formation to the early ripening period. ' At the beginning of the growing season, the plant grows well if it is supplemented with low rates of nitrogen, phosphorus, and potassium. ' If the remaining parts of the mineral fertilizers are applied to the soil during the basket's development, the sunflower will develop quickly and yield a good harvest. ' In the absence of nitrogen, the plant absorbs phosphorus instead, but potassium is also poorly absorbed. ' High doses of phosphorus after the formation of the basket yield a negative result. '

To produce 1 ton of seeds and the corresponding additional yield, the sunflower absorbs 60 kg of nitrogen, 26 kg of phosphorus, and 186 kg of potassium in pure form. '

A light-loving short-day crop, it stops growing and developing in shady areas and in cloudy weather, and its leaves become small. '

Sunflower grows and develops well on black, gray, and gray soils with a pH of 6.0–6.8. '

The following developmental stages have been identified in sunflower during the wet period: '

- germination lasts 10-15 days, the embryonic root develops, and the seed'palla emerges onto the Earth's surface;
- basket formation takes 30-40 days, during this stage, the first true leaves develop. A basket is formed when the plant develops an average of 13 leaves. '

- budding-flowering lasts 25-30 days, the plant grows quickly, flowering begins, and yellow tongue-shaped flowers develop; '

Flowering and ripening last 35-40 days, with the formation of bisexual tubular flowers. ' According to sunflower biology, it is a cross-pollinated plant, but it can also self-pollinate in nature. ' According to the results of the experiments, 25% of the seeds can be self-pollinated, but the seeds remain empty. ' According to scientists, the ability to self-pollinate is inherited, and in some forms, self-pollination can reach up to 90%. ' Foreign pollination occurs in most cases with the help of insects, and in some cases with the help of wind. ' One plant blooms for an average of 8–10 days, and one flower blooms and pollinates for 24–36 hours. ' During the flowering period, if the plant is fully provided with water, nutrients, and light, the flower is pollinated from the outside, and the seeds are filled. ' It has a color characteristic of the variety; '

- When fully ripe, the basket becomes yellow or brown, and the moisture content of the pistachios decreases to 18-12%. ' Sunflower grows and develops well on black, gray, and gray soils with a pH of 6.0–6.8. '

Varieties: O'New varieties distributed in Uzbekistan - Krasotka, RQ-8506, Sambred-254, Luchaferul.

Vniimk 8931-Created at the Krasnodar Research Institute of Oilseeds, variety authors: Pustovoyt V.S., Pustovoyt G.V., Mironov K., Chuprina V., Surovikin V.N., Gubin I.A., Ilatovsky V.P. Since 1971, it has been included in the State Register for the Jizzakh, Kashkadarya, Navoi, Samarkand, Surkhandarya, Syrdarya, and Tashkent regions. '

The stem is unbranched, erect, up to 180 cm high, and easily threshed. ' The pistils are large, with elongated sharp ribs, and the weight of 1000 seeds is 60.0-80.0 g. ' Average yield - 18-20 c/ha. ' The variety is medium-ripening, with a growing season of 95-120 days. ' The variety is resistant to soot, rust, sclerotin, and gray rot. ' Oil content - 43.4%.

3. Kungaboqar biologiyasi

Kungaboqar unib chiqishdan boshlab pistasi to`la pishish davrigacha 2600 dan 2850°C gachaissiqlik talab qilinadi.Bu ko`rsatkich nav va tuproq-iqlim sharoitiga qarab o`zgarib turadi.Shimoliy rayonlarga qarab o`suv davri uzayadi.Kungaboqarning urug`i 5-10°C da unib chiqadi,harorat 10-12°C bo`lganda ancha tez unadi. Optimal harorat 18° C bo`ladi.Bundan yuqori haroratda unib chiqish jaraYoni tezlashadi. Maysa 6°C sovuqqa bardoshlidir. Ertapishar navlar Moskva viloyatida ham etilishi mumkin. Harorat yuqori bo`lib, suv yetishmasa hosil keskin kamayadi. Yuqori haroratning salbiy ta'siri to`la maysalanishdan gullash davrining oxirigacha kuzatiladi.

**Suvga bo`lgan talabi.** Ildizi yaxshi rivojlanganligi tufayli kungaboqar qurg`oqchilikka chidamli, talab qilinadigan suvni tuproqning chuqur qatlamlardagi suvdan foydalanadi; poya va barg ustidagi qalin tuklari bug`lanishdan saqlaydi. Suvni amal davrida bir xil talab qilmaydi. Maysalanishdan savat rivojlanish davrigacha yillik me'yorning 20-25% ni talab qiladi. Suvni ko`p talab qiladigan davri - gullash davri, bu davrda talab qiladigan suvning umuiy me'yoridan 60 % ni o`zlashtiradi. Qurg`oqchilik sharoitida hosil ancha kamayadi.

**Tuproqqa bo`lgan talabi.** Kungaboqar har xil tuproqlarda yetishtiriladi. Faqat botqoqlangan va qumoq yerlarda yaxshi rivojlanmaydi, hosil bermaydi. Boshqa dala ekinlari orasida afzalligi-sho`rga chidamliligi. O`zbekistonning sho`rlangan tuproqlarida sho`rlanish darajasiga qarab kungaboqar joylashtirilishi mumkin. Kungaboqar qora, bo`z, sur, muhiti pH 6,0-6,8 bo`lgan tuproqlarda yaxshi o`sadi va rivojlanadi.

**Oziqaga bo`lgan talabi.** Olimlar ma'lumoti bo`yicha kungaboqar talab qilinadigan oziqa moddalarning 25% gullashdan keyin o`zlashtiradi. Gullash davrida oziqa moddalarning aksariyat qismini o`zlashtiradi. Fosforning asosiy qismini maysalanishdan savat hosil qilish vaqtigacha o`zlashtiradi; azotni –savat hosil qilishdan gullash davrini oxirigacha, kaliyni esa – savat hosil qilishdan dumbul pishish davrigacha o`zlashtiriladi. Amal davrining boshlanishida azot, fosfor va kaliyning kam me'yorlarida qo`shimcha oziqlantirilsa o`simlik yaxshi o`sadi. Mineral

o`g`itlarning qolgan qismlari savat rivojlanish davrida tuproqqa solinsa, kungaboqar tez rivojlanadi yaxshi hosil beradi. Azot yetishmasa uning o`rniga o`simlik fosforni ko`p o`zlashtiradi, ammo kaliy ham kam o`zlashtiriladi. Savat hosil bo`lgandan keyin fosforning yuqori me'yorlari salbiy natija beradi.

Kungaboqar 1 t urug` va tegishli qo`shimcha hosil yetishtirish uchun sof holda 60 kg azot, 26 kg fosfor va 186 kg kaliy o`zlashtiradi.

Yorug`sevar qisqa kun ekini, soya joylarda va bulutli havoda o`sishi va rivojlanishi to`xtaydi, barglari maydalashadi.

Kungaboqar qora, bo`z, sur, muhiti pH 6,0-6,8 bo`lgan tuproqlarda yaxshi o`sadi va rivojlanadi.

O`suv davrida kungaboqarda quyidagi rivojlanish bosqichlari aniqlangan:

- unib chiqish 10-15 kun davom etadi, murtak ildiz rivojlanadi, urug`-pallasi Yer betiga chiqadi;
- savatning shakllanishi 30-40 kun, bu bosqichda birinchi chinbarglari rivojlanadi.O`simlikda o`rtacha 13 ta barg rivojlangshanda savat hosil bo`ladi.
- shonalash-gullash 25-30 kun davom etadi, o`simlik tez o`sadi gullash boshlanadi, sariq rangli tilsimon gullari rivojlanadi;

gullash-pishish 35-40 kun davom etadi, ikki jinsli naychasimon gullar hosil bo`ladi. Kungaboqar biologiyasi bo`yicha chetdan changlanadigan o`simlik, ammo tabiatda o`zidan changlanishi ham mumkin. O`tkazilgan tajribalar natijasi bo`yicha 25% o`zidan changlanishi mumkin, ammo pistalari puch bo`lib qoladi. Olimlar fikriga ko`ra o`zidan changlanish xususiyati nasldan naslga o`tadi va ayrim shakllarida o`zidan changlanish 90% gacha bo`lishi mumkin. Chetdan changlanish aksariyat holda hashoratlar yordamida, ayrim xollarda shamol yordamida ro`y beradi. Bitta o`simlik o`rtacha 8-10 kun gullaydi, bitta gul 24-36 soat gullab changlanadi. Gullash davrida o`simlik suv, oziqa, yorug`lik bilan to`la ta`minlansa gul chetdan changlanadi, urug`i to`lishadi. Navga xos rangga ega bo`ladi;

- to`la pishganda-savat sariq, jigar rangli bo`ladi, pistasining namligi 18-12% gacha kamayadi. Kungaboqar qora, bo`z, sur, muhiti rN 6,0-6,8 bo`lgan tuproqlarda yaxshi o`sadi va rivojlanadi.

Navlar: O`zbekistonda raYonlashtirilgan yangi navlar-Krasotka, RQ-8506, Sambred-254, Luchaferul.

Vniimk 8931-Krasnodar Moyli ekinlar ITIda yaratilgan, nav mualliflari: Pustovoyt V.S., Pustovoyt G.V., Mironov K., CHuprina V., Surovikin V.N., Gubin I.A., Ilatovskiy V.P. 1971 yildan Jizzax, Qashqadaryo, Navoiiy, Samarqand, Surxondaryo, Sirdaryo, Toshkent viloyatlari bo`yicha Davlat reestriga kiritilgan. Poyasi shoxlamaydi, tik turuvchan.balandligi 180 smgacha bo`lib, yaxshi yanchiladi. Pistasti yirik, cho`zinchoq o`tkir qovurg`ali, 1000-ta urug`ni vazni 60,0-80,0 g. O`rtacha hosildorlik-18-20 s/ga. Nav o`rtapishar, amal davri 95-120 kun. Nav shumg`iya, zang, sklerotin va kulrang chirishga bardoshli. Moy miqdori-43,4%.

4. Sunflower cultivation technology

Sunflowers can be sown in cultivated fields after winter and spring wheat grain crops (barley, wheat). ' Sunflowers are not planted after sugar beets, alfalfa, and alfalfa, as these crops dehydrate the soil. ' It is also not planted after rapeseed, green peas, soybeans, and beans because the diseases are the same. ' Sunflowers can be replanted after 8-10 years.

Two types of sunflower varieties are grown: 1. As vegetable oil for human consumption 2. ' Food products for birds. The edible oil hybrid consists of 3 types of fatty acids: linoleic, medium-oleic, or high-oleic. ' Sunflower seeds are usually covered with a thin black coating. ' The composition of sunflower used for the purpose of edible oils consists of 38-50% oil and the remaining 20% protein. ' Some types of black-seeded sunflower varieties are also used for bird feed. However, sunflower varieties used primarily for bird feed have relatively large sizes with white stripes. '[7]

The main requirements for soil cultivation are cleaning of perennial weeds, leveling, moisture retention, and multi-stage cultivation of areas infested with perennial weeds: 6-8 cm of disking, then 10-12 cm of chiseling, heavy harrowing (BDT-7), and plowing when weeds have sprouted. ' Before sowing, the soil surface is leveled, cultivation is carried out to a depth of 8-10 cm, and harrowing is performed.

[7] Sunflower Production 2012 u.

Before sowing, the soil surface is leveled, cultivation is carried out to a depth of 8-10 cm, and harrowing is performed.

Fertilizing. Organic and phosphorus-potassium fertilizers are applied before plowing. 15-20 t/ha of manure and 4-60 kg of RK are applied as organic fertilizers, along with 10-15 kg of NPK, 30-50 kg of nitrogen and 20-40 kg of phosphorus after germination. '



Fig. 1.19. Sunflower plant. '

Sowing. For sowing, seeds of the selected variety are sown. ' The weight of 1000 seeds should be 50-100 g, the germination rate should be at least 95%, and it is advisable to plant 40-50 thousand plants on moist soils, 30-40 thousand on partially irrigated soils, and 20-30 thousand on rainfed lands. The actual amount of seeds sown depends on the quality of the seeds, the sowing method, and the biology of the varieties. '

Before sowing, sunflower seeds are treated with anise (3 kg/t), and when using intensive cultivation technology, precise seeds are sown to avoid uniformity. ' On average, 45-55 thousand seeds are sown, or to obtain 5-8 kg/ha of seeds and 35-40 kg/ha of silage, sunflower is sown in wide rows using seeders SUPN-8, SKPP-12 with a sowing depth of 6-10 cm and a row spacing of 70 cm. '

Crop care. If planted in dry air, it is compacted with rollers and harrowed against scale. ' During the irrigation period, inter-row cultivation is carried out 2-3 times; KRN-5,6A, KRN-4,2A and additional KLT-360, KLT-350 devices are used for inter-row cultivation. '

Herbicides such as nitrin, gerpeslan, and gezagard-50 are used against weeds, for which OPSH-15, OP-200-2-01, and POM-630 machines are used. '

If beehives are planted in the crops during the flowering period, the flowers are pollinated well, yield increases (1.1–5 hives per hectare), and TMTD 80%–3 kg/t and apron 35%–4 kg/t are used before sowing seeds against diseases and insects. ' This work is performed on a PS-10 or "Mobitox" machine. It is recommended to carry out crop rotation, treat seeds, and plant resistant varieties. '

It is irrigated during the rainy season. ' The irrigation rate is 600-800 m3/ha, with irrigation twice before flowering, twice during flowering, and once before ripening. '

The maturity of the plant can be determined by its color. ' In grain harvesters, only the baskets are harvested using a special device. ' Then the stems are harvested, crushed, and combined with succulent feed for silage. ' Harvesting begins when 60-65% of the baskets turn black. ' The moisture content of stored seeds must not exceed 13%. '

Check questions:

1. Which insect pollinates the sunflower?
2. Name the most dangerous pests of the sunflower.
3. When was sunflower oil first developed? '
4. Why is sunflower not planted after sugar beets, alfalfa, watermelon, rapeseed, green peas, soybeans, and beans? '

5. After how many years is it advisable to plant sunflowers in the same field? '

6. Explain the centers of origin for oilseeds.

7. In which regions is sunflower cultivated?

8. Average sunflower yield in Uzbekistan

9. What conditions are required for sunflower seeds to germinate?

10. What are the nutritional requirements of the sunflower?

11. In which countries are sunflowers widely cultivated?

12. What is the ecological significance of the sunflower?

13. What is the sum of effective temperatures for sunflower varieties during the growing season?

14. How is sunflower pollinated?

4. Kungaboqar yetishtirish texnologiyasi

Kungaboqar ishlov beriladigan dalada, kuzgi va bahorgi bug`doy don ekinlari (arpa bug`doy)dan keyin ekish mumkin. Kungaboqarni qand lavlagi, beda va sudan o`tidan keyin ekilmaydi, chunki bu ekinlar tuproqni quritib yuboradi. Raps, ko`k no`xat, soya va loviyadan keyin ham ekilmaydi, chunki kasalliklari bir xil. Kungaboqar bir ekilgan erga 8-10 yildan keyin qayta ekish mumkin.

Ikki xil turdagi kungaboqar navlari yetishtiriladi: 1. Inson iste'moli uchun sabzavot yog`i sifatida 2. Qushlar uchun ozuqa mahsulotlari. Iste'mol moy gebridi 3 turdagi yog` kislotasidan iborat bo`ladi: linolein, o`rta- oleyn yoki yuqori oleyn. Kungaboqar don mag`zi odatda qora rangdagi yupqa qoplama bilan qoplangan bo`ladi. Istemol moylari maqsadida ishlatiladigan kungaboqar tarkibi 38-50% moydan va qolgan 20% oqsildan iborat bo`ladi. Ayrim turdagi qora donali kungaboqar navlari qush iste'moli uchun ham ishlatiladi. Lekin asosan qush iste'moli uchun ishlatiladigan kungaboqar navlari oq chiziqchali nisbatan yirik hajmda bo`ladi.[8]

Yerga ishlov berishda qo`yiladigan asosiy talab-ko`p yillik begona o`tlardan tozalash, tekislash, namni saqlash, ko`p yillik begona o`tlar bilan zararlangan yerlarga

[8] Sunflower Production 2012 y.

ko`p bosqichli ishlov beriladi: 6-8 sm ga disklanadi, keyin 10-12 sm chizellanadi, og`ir borona yurgiziladi (BDT-7), o`t o`sib chiqqanida yer haydaladi. Ekishdan oldin tuproq yuzasi tekislanadi, kultivatsiya 8-10sm chuqurlikda qilinadi va borona yurgiziladi.

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O`g`itlash. Yer haydashdan oldin organik va fosforli-kaliyli o`g`itlar solinadi.Organik o`g`it sifatida 15-20t/ga go`ng, 4-60 kg dan RK ekish bilan birga 10-15 k NPK unib chiqqandan keyin 30-50 kg azot, 20-40 kg, fosfor qo`llaniladi.



1.19-rasm. Kungaboqar o`simligi.

Ekish. Ekish uchun raYonlashtirilgan navning urug`i ekiladi. Urug` 1000 donasining vazni 50-100 g bo`lishi kerak, unuvchanligi 95% dan kam bo`lmasligi, tupsoni nam yerlarda 40-50 ming, qisman sug`oriladigan yerlarda 30-40 ming, lalmi

yerlarda 20-30 ming o`simlik maqsadga muvofiqdir.Amalda ekiladigan urug` miqdori urug`sifatiga, ekish usuliga, navlarining biologiyasiga bog`liq bo`ladi.

Kungaboqar urug`i ekishdan oldin fentiuram bilan ishlanadi (3kg/t), intensimv yetishtirish texnologiyasi qo`llanganda yagona qilmaslik uchun aniq urug` ekiladi. O`rtacha 45-55 ming dona urug` ekiladi yoki 5-8 kg/ga urug` olish uchun, 35-40 kg/ga silos tayyorlash uchun, ekish chuqurligi 6-10 sm, qator orasi 70sm ekadigan seyalkalar- SUPN-8, SKPP-12da kungaboqar keng qatorlab ekiladi.

Ekinni parvarishlash. Quruq havoda ekilgan bo`lsa, katoklar bilan zichlashtiriladi, qatqaloqqa qarshi borona qilinadi. O`suv davrida qator orasi 2-3 marta kultivatsiya qilinadi, qator orasiga ishlov berishda KRN-5,6A, KRN-4,2A va qo`shimcha moslamalar KLT-360, KLT-350 qo`llaniladi.

Begona o`tlarga qarshi nitrin, treflan, gezagard-50 gerbitsidlari qo`llanadi, buning uchun OPSH-15, OP-200-2-01, POM-630 mashinalari qo`llaniladi.

Gullash davrida ekinzorga asalari uyalari qo`yilsa, gullar yaxshi changlanadi, hosildorlik oshadi (1 gektarga-1,1-5 uya), kasalliklarga va hashoratlarga qarshi urug` ekishdan oldin TMTD 80% -3 kg/t, apron 35%- 4 kg/t ishlatiladi. Bu ishlar PS-10 yoki "Mobitoks" mashinasida bajariladi. Zarazixaga qarshi almashlab ekish, urug`ni dorilash, chidamli nav ekish tavsiya qilinadi.

O`suv davrida sug`oriladi. Sug`orish me'yori 600-800 m3/ga bo`lib, gullash davrigacha 2 marta, gulash davrida 2 marta, pishish davrigacha 1 marta sug`oriladi.

O`simlik rangiga qarab yetilganligini aniqlash mumkin. Hosil don kombaynlarida maxsus moslama bilan faqat savatlari o`riladi. So`ngra poyalar o`rib olinadi, maydalanib shirali oziqalarga qo`shilib siloslanadi. Savatlarning 60-65% qismi qorayganda hosil yig`ish boshlanadi. Saqlanadigan urug`larning namligi 13% dan oshmasligi lozim.

Nazorat savollari:

1. Kungaboqarni qaysi hashorat changlatadi?
2. Kungaboqarni eng ashaddiy zararkunandasini ayting?
3. Ilk bor kungaboqar yog`i qachon ishlab chiqilgan?

4. Nima uchun kungaboqarni qand lavlagi, beda, sudan o`ti, raps, ko`k no`xat, soya va loviyadan keyin ekilmaydi.

5. Kungaboqarni bir ekilgan erga necha yildan so`ng ekish maqsadga muvofiq?

6.Moyli ekinlarining kelib chiqish markazlarini yoritib bering

7. Kungaboqar qaysi mintaqalarda ekiladi?

8. O‘zbekistonda o‘rtacha kungaboqar hosildorligi

9. Kungaboqar urug‘ini unib chiqish uchun qanday sharoit talab qilinadi?

10. Kungaboqarning oziqaga bo‘lgan talabi qanday bo‘ladi?

11. Qaysi davlatlarda kungaboqar ko‘p ekiladi?

12. Kungaboqarning ekologik ahamiyati nimaga bog‘liq bo‘ladi?

13.Amal davrida kungaboqar navlari uchun effektiv harorat yig‘indisi qancha bo‘ladi?

14. Kungaboqar qanday changlanadi?

GLOSSARY (ГЛОССАРИЙ)

Atamaning nomlanishi			Atamaning ma’nosi
O‘zbek tilida	**Ingliz tilida**	**Rus tilida**	
Agronomiya	**Agronomy**	**Агрономия**	qishloq xo‘jaligi ekinlarini yetishtirish, tuproq unumdorligini saqlash va hosildorlikni oshirish usullarini o‘rganuvchi fan.
Sabzavot ekinlari	**Vegetable crops**	**Овощные культуры**	oziq-ovqat uchun bargi, mevasi, ildizi, poyasi yoki boshqa qismlari iste’mol qilinadigan ekinlar..
Poliz ekinlari	**Cucurbit crops**	**Бахчевые культуры**	asosan mevasi oziq-ovqat sifatida ishlatiladigan qovun, tarvuz va qovoq kabi ekinlar
Vegetatsiya davri	**Growing season**	**Вегетационный период**	o‘simlikning unib chiqishidan hosili yetilishigacha bo‘lgan rivojlanish davri.
Nav	**Cultivar (variety)**	**Сорт**	muayyan irsiy va xo‘jalik belgilariga ega bo‘lgan o‘simliklar guruhi.
Gibrid (duragay)	**Hybrid**	**Гибрид**	genetik jihatdan farqlanuvchi ota-ona shakllarini chatishtirish natijasida olingan avlod..
Urug‘lik material	**Seed and planting material**	**Семенной и посадочный материал**	ekish va yangi o‘simliklarni yetishtirish uchun foydalaniladigan urug‘lar yoki ko‘paytirish materiallari
Unuvchanlik	**Seed germination capacity**	**Всхожесть семян**	urug‘larning belgilangan sharoitda normal nihol hosil qilish qobiliyati