



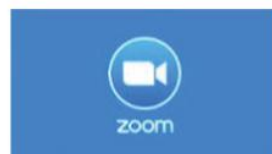
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International Journal of World Languages Online ISSN 2775-9628

**International conference Innovative research of the
XXI century science and education**

**Konferensi internasional Penelitian inovatif ilmu
pengetahuan dan pendidikan abad XXI**

March-April, 2021 Djakarta, Indonesia

DOI http://doi.org/10.37057/J_1

Available at virtualconferences.press

Conference form: correspondence Internet conference.

Working languages: Indonesian, Russian, Uzbek, and English.

Chief Editor Eko Susanto

PHILOSOPHICAL SCIENCES

Govsiddinov Maruf Nasridinovich

ALISHER NAVOI AND ABDURAHMAN JAMI'S VIEWS ON SUFISM (IN YE BERTELS INTERPRETATION).106

Валиева Садокат Шокировна, Махмудова Азиза Нугмановна

ЎЗБЕКИСТОН РЕСПУБЛИКАСИНИНГ БИРИНЧИ ПРЕЗИДЕНТИ ИСЛОМ КАРИМОВ ТАРИХ, МАЪНАВИЙ-МАЪРИФИЙ МАСАЛАЛАР ҲАҚИДА109

PSYCHOLOGICAL SCIENCES

Qodirova Malikaxon Qaxramonovna, Do'ngboyeva E'tibor

TALABALAR MA'NAVİYATINI SHAKLLANTIRISHDA IJTIMOİY – PSIXOLOGIK OMILLARNING O'RNI.....112

Yusupova Hurliman Salamatovna, Orazbaeva Zulxumar Quwanishovna

ПРОБЛЕМА ПРОФЕССИОНАЛИЗАЦИИ В ФОРМИРОВАНИИ ЛИЧНОСТИ.....115

AGRICULTURAL SCIENCES

Usmanov S. P., Nurjono F. A., Nurjanov A. A.

GIS TECHNOLOGY AND LOCUST MONITORING IN UZBEKISTAN117

STATE AND LAW

Фазлидин Жамолиддинович Очилдиев

ЯНГИЛАНАЁТГАН ЎЗБЕКИСТОНДА ФУҚАРОЛАРНИ МУРОЖААТ ҚИЛИШ ҲУҚУҚИНИНГ КАФОЛАТЛАРИ.....119

TECHNICAL SCIENCE

Abduvoidov Hasan Ilhomovich

DISCOVERING THE POSSIBILITY OF LIFE AMONG OTHER PLANETS122

Arabov Jasur Olimboyevich

QIYA –NAMLANADIGAN QUYOSH SUV CHUCHUTGICHLARINING TUZILISHI VA ISHLASH PRINSPI.123

Kamolova Yulduzkhon Mamurjonovna

THE USE OF MODERN COMPUTER TECHNOLOGIES FOR SPEECH CORRECTION IN CHILDREN125

Shixova Inobat Omonovna

MALAKA OSHIRISH TIZIMIDA MATEMATIKADAN SINFDAN TASHQARI MASHG'ULOTLARNI FANLARARO INTEGRATSIYA ASOSIDA SAMARALI TASHKIL QILIN USULLARI.....127

Курбонов Тохир Алдияр угли

ЗАЩИТА ИНФОРМАЦИИ ОТ КОМПЬЮТЕРНЫХ ВИРУСОВ.129

Қодиров Жобир Рўзимамаатович, Нуриллоева Феруза Амрилло қизи,

Ҳакимова Сабина Шамсиддин қизи

ПАРАБОЛОЦИЛИНДРИК КОНЦЕНТРАТОРЛАРНИНГ ЎЛЧАМЛАРИ АНИҚЛАШ УСУЛЛАРИ.131

AGRICULTURAL SCIENCES

УДК: 632. 937. 15

GIS TECHNOLOGY AND LOCUST MONITORING IN UZBEKISTAN

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Annotation The article presents information on the relevance and application of GIS (geographic information systems) technologies in locust monitoring.

Keywords: GIS, monitoring, remote sensing, Asian locust, Moroccan locust, desert locust.

Despite the fact that humans are constantly trying to control harmful locusts, the locust problem remains an urgent problem. outbreak Desert Locust in 15 million hectares in 2020 in the north of the African continent create \$ 0. 5 billion threat to agricultural products.

According to FAO, in Central Asia and the Caucasus, if not provide locust control on time due to damage to pastures and crops on an area of more than 25 million hectares, can be created a disaster threat to 20 million people.

Over the years, modern countries made developed monitoring systems for locust control based on GIS technologies and remote sensing. In particular Europe, the USA, Australia, the Russian Federation and Kazakhstan use of GIS technologies to prevent the control of the spreading locusts.

GIS technology, based on remote sensing and GPS data, is also used to monitor and control locust outbreaks in the African continent, where the Desert Locust is most widespread and dangerous.

The purpose of using GIS technology is to record locust information and its distribution with great accuracy and to use this information efficiently on the basis of automated methods. Its main functions include the following:

1. Collect locust information with great precision using computerized methods.
2. Further increase in the efficiency of their use due to the visualization of information obtained with the help of maps.
3. Optimizing locust control measures based on collected data (Fig. 1).

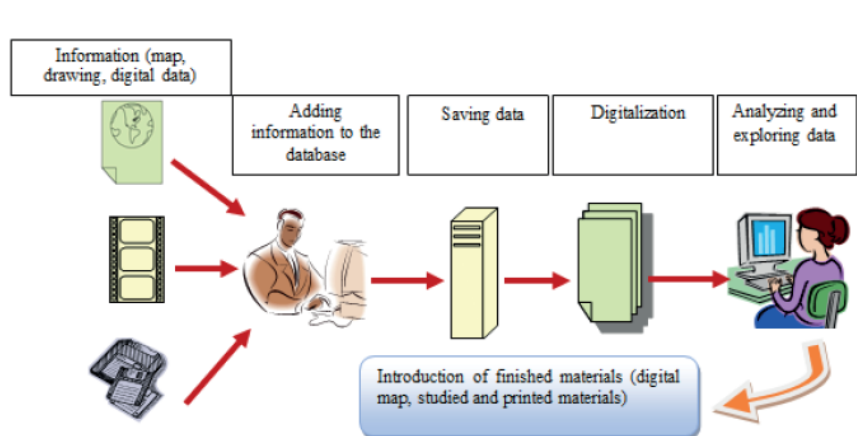


Fig. 1. Geographic information systems diagram

Although the initial costs of putting this industry into practice are high, the results of very accurate surveys of locusts, especially the Moroccan, Asian and Italian locusts, with a precise location of their distribution and other similar data, will be collected in a database and a more efficient use of this information in the future will lead to an annual increase in the profitability of GIS technologies in the locust control system.

A number of works by foreign scientists are known on the use of GIS technologies in the development of locust control in Africa, as well as to the study of the spread of the Asian locust in the Amu Darya delta.

According to this data, as a result of the overall development of the desert locust from 2003 to 2005, 13 million hectares were treated with chemical insecticides in 26 countries of North and Central Africa against locusts. The implementation of which was spent 500 million US dollars.

About 11.5 million US dollars was spent for monitoring and early detection of the Desert Locust outbreak in Central Africa and 7 million US dollars for 10 years of operation.

During this period, the system was used to track the transboundary outbreak of the Desert Locust in over 30 countries and an estimated 390 million US dollars in damage was prevented.

GIS Laboratory of Urgench State University carried out research using the remote sensing method to determine the distribution area of the Asian locust. Based on the results of the work, the area of outbreaks of the Asian locust located in the Amu Darya delta was determined.

By determining the area of reed beds, areas where the Asiatic locust occurs were identified. Remote sensing has also identified a water-covered surface basin in the area and has collected data on how reeds can create favorable conditions for the future development of the Asiatic locust. Based on the results, practical assistance was provided in planning and conducting the control of the Asian locust in the South Aral Sea region. 70,000 hectares of Asian locust spread using GIS technology to control Asian locust for the first time in the country, according to the International Satellite Database.

Locust locations in the countries, including in the border areas of the Fergana Valley with neighboring countries, were determined by remote sensing of the Moroccan locust distribution area, and based on the data obtained, studies were carried out to predict the distribution of the locust. the size of their development zones. These data are used in practice in the fight against harmful locusts.